

Appendix A: Summary of Jobs and Dwelling Units by Block, Bethesda CBD

Block*	Employees			Dwelling Units		
	Existing	Net Change	Future	Existing	Net Change	Future
1	44.7	234.7	279.4	34	93	127
2	97.9	40.4	138.3	4	0	4
3	75.5	86.6	162.1	7	0	7
4	12.2	161.5	173.7	2	104	106
5	21.8	51.5	73.3	11	164	175
6	39.1	16.7	55.8	16	0	16
7	18	9.9	27.9	7	0	7
8	365.7	48	413.7	0	127	127
9	1,116.5	112.7	1,229.2	245	0	245
10	357	123.4	480.4	112	122	234
11	143.3	59.2	202.5	0	0	0
12	1,009.3	150.1	1,159.4	0	0	0
13	197.7	288.6	486.3	0	103	103
14	92	78.1	170.1	260	314	574
15	234.3	83.9	318.2	0	56	56
16	1,061.3	275.9	1,337.2	273	418	691
17	0	0	0	749	88	837
18	0	0	0	89	0	89
19	0	0	0	264	0	264
20	520.1	134.4	654.5	8	7	15
21	230	56.2	286.2	0	0	0
22	356.8	140.5	497.3	0	0	0
23	763.9	162.7	926.6	0	0	0
24	34.5	45.2	79.7	0	0	0
25	180.4	26.9	207.3	0	0	0
26	0	41.2	41.2	0	-1	-1
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0

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Block*	Employees			Dwelling Units		
	Existing	Net Change	Future	Existing	Net Change	Future
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	2	0	2
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	195.9	235.7	431.6	0	0	0
40	558.8	107.7	666.5	60	95	155
41	38.1	150.1	188.2	284	253	537
42	71	95.9	166.9	586	5	591
43	707.2	105.2	812.4	0	0	0
44	873.7	238.5	1,112.2	0	21	21
45	371.1	76.9	448	0	264	264
46	2,390.8	1477	3,867.8	0	0	0
47	669.8	196	865.8	0	0	0
48	0	252.4	252.4	312	0	312
49	3,831.6	646.5	4,478.1	0	0	0
50	0	0	0	0	0	0
51	0	0	0	37	0	37
52	1,021.4	141.8	1,163.2	1	0	1
53	384.1	655.8	1,039.9	0	0	0
54	754.1	181	935.1	0	0	0
55	1,219.3	181.4	1,400.7	0	0	0
56	2,830.9	483.8	3,314.7	204	0	204
57	107.6	75.2	182.8	59	0	59
58	186.7	1,048.7	1,235.4	0	263	263
59	0	0	0	27	0	27
60	424	142	566	18	49	67
61	0	0	0	12	0	12
62	2,261.6	812.5	3,074.1	371	-1	370
63	1,545.4	454.1	1,999.5	0	0	0
64	660.5	698.3	1,358.8	0	0	0
65	985.1	271.4	1,256.5	0	198	198

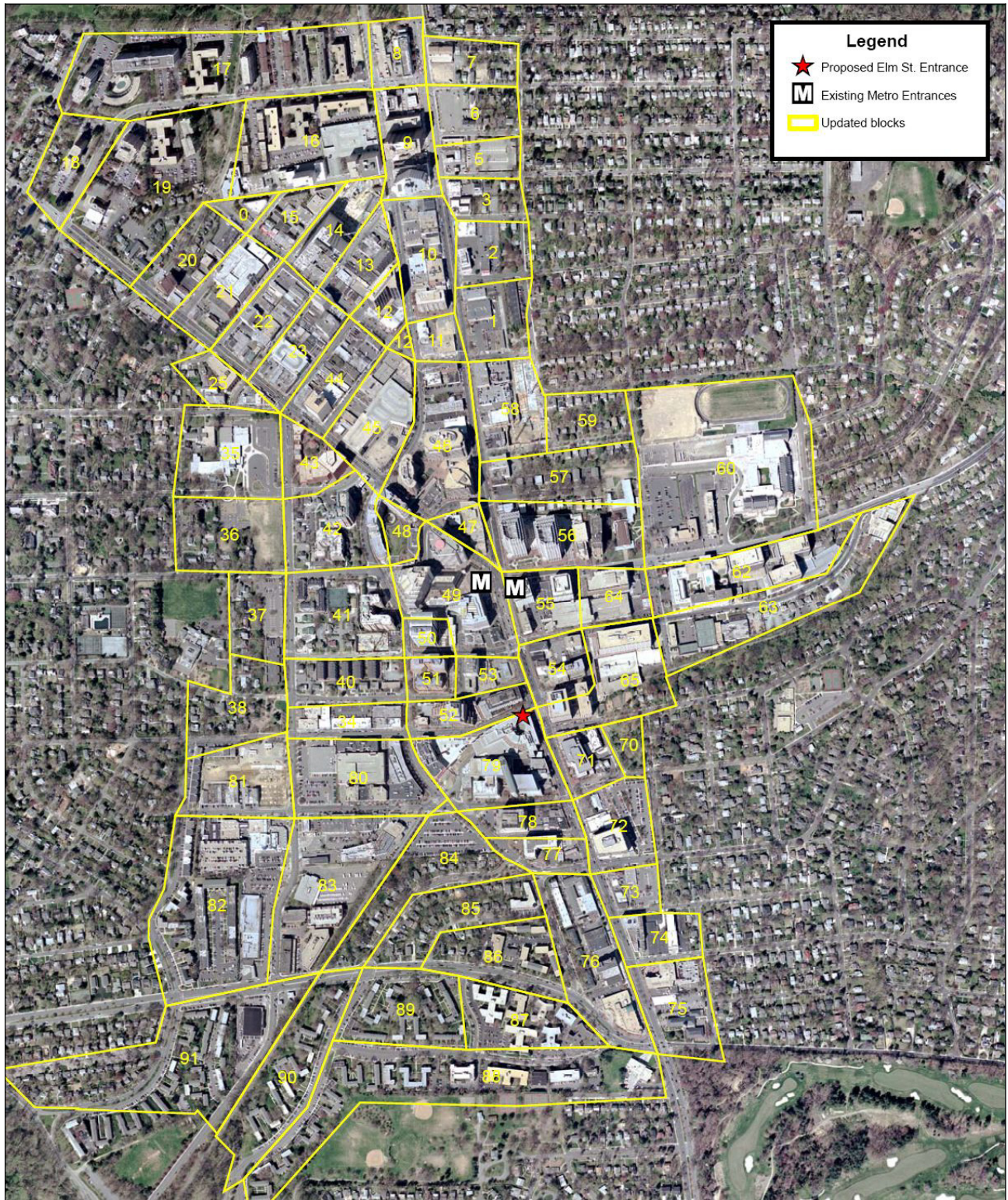
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Block*	Employees			Dwelling Units		
	Existing	Net Change	Future	Existing	Net Change	Future
66	392	58.3	450.3	0	0	0
67	0	0	0	0	0	0
68	0	0	0	0	0	0
69	0	0	0	0	0	0
70	0	0	0	0	0	0
71	739.4	145.7	885.1	3	0	3
72	888.1	132.2	1,020.3	0	0	0
73	31	69.1	100.1	0	2	2
74	226.2	46	272.2	1	21	22
75	221.4	71.9	293.3	0	16	16
76	402.1	360.4	762.5	54	103	157
77	0	25.9	25.9	149	60	209
78	38.7	36.9	75.6	247	10	257
79	2,070.2	386.2	2,456.4	0	0	0
80	1,075.7	434.4	1,510.1	0	180	180
81	168.5	205.8	374.3	63	0	63
82	383.7	123.5	507.2	306	0	306
83	1342	418	1760	0	105	105
84	0	32.6	32.6	21	100	121
85	0	0	0	70	0	70
86	0	0	0	179	0	179
87	0	0	0	369	0	369
88	28.9	4.3	33.2	274	17	291
89	0	0	0	88	0	88
90	0	0	0	110	0	110
91	43	62.6	105.6	103	-1	102
TOTAL	37,111.6	13,770	50,881.6	6,091	3,355	9,446

Source: Maryland National Capital Park and Planning Commission, 2004

* Block number designations per M-NCPPC, as shown on attached map.

Bethesda CBD Block Map



Source: Maryland National Capital Park and Planning Commission

Appendix B: Modeling and Operating Assumptions

Bi-County Transitway Assumptions

Travel Demand Model

- *Model Version:* MWCOG Version 2.1/TP+, Release C
- *Demographic Forecast:* Round 6.2 of the MWCOG Cooperative Forecasts
- *Background Networks:* FY 2003-2008 TIP/2002 CLRP Air Quality Conformity Networks adopted in July, 2002.
- *Horizon Year:* 2025

Transit Operations

- *Mode:* Light Rail
- *Vehicle:* Low-floor, 60 seats, 60 standees
- *Consist:* Peak: 2-car trains; Off-Peak: 2-car trains
- *Fleet:* Bethesda to New Carrollton: 47 cars (including 8 spares)
- *Travel Time:* Bethesda to New Carrollton: 32 min (27 mph)
- *Fares:* LRT uses Metrorail fare structure

Rail Operations

Rail operations are as coded in the CLRP, adding the Purple Line between Bethesda and New Carrollton Metrorail stations. The following additional transitway stations are coded:

- Chevy Chase Lake
- West Silver Spring
- Silver Spring Metrorail station
- New Hampshire Avenue
- University of Maryland West
- University of Maryland East
- College Park Metrorail station
- Riverdale Road

Headways are assumed as 6 minutes during peak periods, 10 minutes midday and early evening, and 15 minutes in late evening.

Bus Operations

Bus operations are as coded in the CLRP with the following changes:

METROBUS

- 84, 85 - code to serve the Riverdale LRT station
- C2 – code to serve the New Hampshire, UM West, and UM East LRT stations
- C4 – code to serve the New Hampshire LRT station
- C8 – code to serve the UM West and UM East LRT stations
- F4 – code to serve the Riverdale LRT station
- F6 – eliminate, duplicates the Purple Line
- F8 – code to serve the New Hampshire LRT station
- J1 – terminate at proposed Chevy Chase Lake LRT station
- J2, J3 – reduce frequency to 20 minutes each
- J4 – eliminate
- J5 – reroute along Rockville Pike to the Bethesda Metrorail Station
- K6 - code to serve the New Hampshire LRT station
- L7, L8 – code to serve the Chevy Chase Lake LRT station
- R3 – code to serve the UM West LRT station

RIDE-ON

- 1 – reroute to serve the proposed West Silver Spring LRT station
- 3 & 5 - code to serve the Woodside station

THE BUS

- G – code to serve the UM East LRT station
- 14 – code to serve the Riverdale LRT station

STATION SERVICE (new stations)

- Chevy Chase Lake – Metrobus J1, L7, L8
- West Silver Spring – Ride-On 1
- New Hampshire Av. –Metrobus C2, C4, F8, K6, Z19
- UM West – C2, C8, F8, R3
- UM East – C2, C8; The Bus G
- Riverdale Rd. – 84, 85, F4; The Bus 14

Assumed Ride-On Bus Service to Silver Spring and Bethesda, 2025 Build Scenario

Route	Route Description	Span of Service	Headway* (minutes)	
			Peaks	Off-Peaks
1	Friendship Heights Station - Silver Spring Station	5:00 AM - 10:45 PM	30	30
2	Silver Spring Ride-On Operations Center - Silver Spring Station	4:45 AM - 10:45 PM	20	30
3	Takoma Station - Silver Spring Station	7:00 AM - 8:45 AM 5:15 PM - 6:45 PM	30	NA
4	Kensington Station - Silver Spring Station	6:00 AM - 7:00 PM	30	30
5	Twinbrook Station - Silver Spring Station	5:00 AM - 1:00 AM	8	30
8	Wheaton Station - Forest Glen Station - Silver Spring Station	6:00 AM - 8:00 PM	30	30
9	Wheaton Station - Silver Spring Station	5:15 AM - 10:45 PM	15	30
11	Friendship Heights Station - Silver Spring Station	6:00 AM - 10:00 AM 2:00 PM - 7:30 PM	8	NA
12	Takoma Station - Silver Spring Station	4:30 AM - 1:00 PM	10	30
13	Takoma Station - Silver Spring Station	6:30 AM - 9:45 AM 4:15 PM - 7:00 PM	20	NA
14	Takoma Station - Silver Spring Station	5:30 AM - 9:00 PM	25	30
15	Langley Park - Silver Spring Station	4:15 AM - 1:15 AM	4	12
16	Langley Park - Silver Spring Station	4:30 AM - 1:15 AM	12	15
17	Langley Park - Silver Spring Station	4:45 AM - 12:00 AM	15	20
18	Langley Park - Silver Spring Station	5:15 AM - 10:30 PM	7	15
19	Dallas Avenue - Silver Spring Station	6:15 AM - 9:00 AM 4:15 PM - 8:15 PM	30	NA
20	Hillandale - Silver Spring Station	4:15 AM - 1:00 AM	7	15
22	Hillandale - Silver Spring Station	6:30 AM - 8:45 AM 3:45 PM - 7:00 PM	30	NA
27	Medical Center Station - Bethesda Station - Friendship Heights Station	7:15 AM - 9:15 AM 4:45 PM - 6:30 PM	30	NA
28	Silver Spring - MARC Shuttle	6:15 AM - 7:15 PM	7.5	7.5
29	Glen Echo - Bethesda Station	6:15 AM - 7:15 PM	30	30
30	Medical Center Station - Bethesda Station	6:00 AM - 9:00 PM	20	30

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Route	Route Description	Span of Service	Headway* (minutes)	
			Peaks	Off-Peaks
32	Naval Ship Research and Development Center - Bethesda Station	6:30 AM - 9:30 AM 3:15 PM - 7:45 PM	30	30
33	Wheaton Station - Medical Center Station	6:00 AM - 9:00 AM 3:15 PM - 7:15 PM	30	NA
34	Aspen Hill - Wheaton Station - Bethesda Station	5:45 AM - 10:15 AM 2:15 PM - 7:45 PM	25	NA
35	Wheaton Station - Medical Center Station - Montgomery mall	5:00 AM - 10:15 PM	25	30
36	Potomac - Bethesda Station	6:30 AM - 8:00 PM	20	30
42	Medical Center - Bethesda Station - Friendship Heights Station	5:15 AM - 12:45 AM	20	30
92	Bethesda 8 Shuttle	7:00 AM - 2:00 AM	8	NA

*Headway is the time between buses on a given route.

Assumed MTA Bus Service to Silver Spring, 2025 Build Scenario

Route	Route Description	Span of Services	Headway* (minutes)	
			Peaks	Off Peaks
929	Baltimore - Columbia - Silver Spring Station - Washington	5:00 AM - 8:45 PM	12	limited service
915	Columbia - Silver Spring Station – Washington	5:15 AM - 8:00 PM	8	limited service

*Headway is the time between buses on a given route.

Assumed WMATA Metrobus Service to Silver Spring & Bethesda, 2025 Build Scenario

Route	Route Description	Span of Services	Headway* (minutes)	
			Peaks	Off-Peaks
B11	Bethesda Reverse Commute	6:00 AM – 9:45 AM 4:00 PM – 7:45 PM	20	NA
F4,6	New Carrollton Station - Silver Spring Station	5:15 AM - 10:45 PM	15	40
J1,2,3	Silver Spring Station - Montgomery Mall	4:45 AM – 3:00 AM	6	20
J4	College Park – Bethesda	5:45 AM – 9:15 AM 3:30 PM – 7:15 PM	20	20
J5	Twinbrook Station - Silver Spring Station	6:15 AM - 9:30 AM 3:45 PM - 6:45 PM	30	NA
J8-9	1-270 Express	5:45 AM – 9:00 AM 3:00 PM – 7:00 PM	15	20
L7,8	Aspen Hill - Wheaton Station - Friendship Heights Station	5:15 AM - 11:30 PM	8	30
Q2	Shady Grove Station - Silver Spring Station	4:15 AM – 2:45 AM	15	30
S2,4	Silver Spring – Federal Triangle	4:15 AM – 3:00 AM	5	15
Y7,8,9	Rockville Station - Wheaton Station - Silver Spring Station	4:30 AM - 3:15 AM	7	15
Z1,4	Glenmont – Silver Spring	5:00 AM – 9:45 AM 3:00 PM – 9:15 PM	30	NA
Z3,5	Colesville - Fairland - Silver Spring Station	5:30 AM - 8:45 AM 4:00 PM - 8:45 PM	15	NA
Z2	Colesville Road - Silver Spring Station	6:00 AM – 7:45 PM	30	30
Z7,17,19	Old Columbia Pike - Silver Spring Station	6:15 AM - 9:00 AM 12:15 PM - 7:00 PM	30	NA
Z8	Fairland - Silver Spring Station	5:00 AM - 3:00 AM	15 (8)	30
Z11, Z-13	Briggs Chaney Park-and-Ride Lot - Silver Spring Station	5:15 AM – 9:30 AM 3:30 PM – 8:15 PM	10	NA
Z9,29	Burtonsville Park-and-Ride Lot - Silver Spring Station - Laurel	5:15 AM - 10:00 AM 3:15 PM - 7:45 PM	20	NA
14A,B	Old Georgetown Rd/ Bethesda Corridor – Tysons Beltway Express Service	6:30 AM – 10:00 AM 3:15 PM – 7:45 PM	20	30

*Headway is the time between buses on a given route.

Appendix C: Metrorail Service and Headway Comparison (minutes)

Line	Branch	MWCOG Version 2.1C Model Type			
		2025 CLRP Network		2030 Bi-County Network	
		Peaks	Off-Peaks	Peaks	Off-Peaks
Orange	A, Vienna to New Carrollton	4	12	7	12
	B, Dulles/R772 to Stadium/Armory	4	12	7	12
	C, Vienna to Largo	N/A	N/A	14	N/A
Blue	A, Franconia-Springfield to Largo	4	12	14	12
	B, Franconia-Springfield to Greenbelt	N/A	N/A	14	N/A
Red	A, Shady Grove to Glenmont	4	12	2.5	6
	B, Grosvenor to Silver Spring	4	12	N/A	N/A
Yellow	Huntington to Mt. Vernon Square	4	12	7	12
Green	Greenbelt to Branch Ave.	4	12	7	12
	Tripper, Branch Ave. to Greenbelt	N/A	N/A	*	N/A
*4 trains for tripper service					

Appendix D: Comparison between Land Use Forecasts in the Bethesda CBD

	TAZ	Households	Population	Employment				
				Total	Industrial	Retail	Office	Other
A. 2025/6.2	343	2,890	7,318	8,376	10	1,607	6,247	512
	344	2,665	6,713	28,984	9	2,059	25,636	1,280
	345	2,100	5,288	10,408	30	2,705	7,255	418
	Total	7,655	19,319	47,768	49	6,371	39,138	2,210
B. 2030/6.4A	343	4,786	7,954	7,549	9	1,476	5,422	642
	344	4,648	7,387	26,109	8	1,799	23,167	1,135
	345	3,752	5,753	9,454	24	2,793	6,293	344
	Total	13,186	21,094	43,112	41	6,068	34,882	2,121
C. 2005/6.4A	343	2,431	4,027	6,530	9	1,307	4,617	597
	344	2,263	3,706	22,843	8	1,616	20,171	1,048
	345	2,282	3,593	8,369	24	2,454	5,574	317
	Total	6,976	11,326	37,742	41	5,377	30,362	1,962
Percent Change (B vs. A)	343	66%	9%	-10%	-10%	-8%	-13%	25%
	344	74%	10%	-10%	-11%	-13%	-10%	-11%
	345	79%	9%	-9%	-20%	3%	-13%	-18%
	Total	72%	9%	-10%	-16%	-5%	-11%	-4%
Percent Change (C vs. B)	343	97%	98%	16%	0%	13%	17%	8%
	344	105%	99%	14%	0%	11%	15%	8%
	345	64%	60%	13%	0%	14%	13%	9%
	Total	89%	86%	14%	0%	13%	15%	8%

Appendix E: Summary of Transit Forecasting Results and Initial Ridership Adjustments

Part I - General Demand

1. 2005 Existing Year

Per Acc.	Regional Transit Person Trips (2005)						Rail Trips		
	HBW	HBS	HBO	NHB	Sum	PrdSum	Rail Trips		PrdSum
AM Wk	137,077	4,144	30,939	20,321	192,481	292,254	160,952	239,004	
AM Dr	87,073	1,375	9,547	87,073	99,773		78,052		
PM Wk	148,681	8,009	37,124	45,019	238,833	351,488	201,023	288,154	
PM Dr	94,439	2,695	11,448	94,439	112,655		87,131		
OP Wk	100,424	19,936	86,684	79,885	286,929	391,792	235,132	310,662	
OP Dr	63,826	6,876	26,729	63,826	104,863		75,530		
Total	631,520	43,035	202,471	158,508	1,035,534		837,820		

May-04	
Rail Trips	
AM	196,899
PM	201,580
OP	283,930
Total	682,409

2. 2030 No-Build

Per Acc.	Regional Transit Person Trips (2030NB)						Rail Trips		
	HBW	HBS	HBO	NHB	Sum	PrdSum	Rail Trips		PrdSum
AM Wk	194,144	5,683	42,983	25,761	268,571	399,198	226,192	329,008	
AM Dr	114,898	1,490	11,734	114,898	130,627		102,816		
PM Wk	210,568	10,985	51,563	57,084	330,200	477,638	279,515	394,522	
PM Dr	124,625	2,965	14,104	124,625	147,438		115,007		
OP Wk	142,229	27,322	120,343	101,311	391,205	526,141	325,262	422,558	
OP Dr	84,182	7,499	32,907	84,182	134,936		97,296		
Total	870,646	55,944	273,634	202,753	1,402,977		1,146,088		

2030NB	
Adjusted Rail Trips*	
AM	271,047
PM	275,990
OP	386,198
Total	933,235

3. 2030 Bi-County Transitway

Per Acc.	Regional Transit Person Trips (2030Bi)						Rail Trips		
	HBW	HBS	HBO	NHB	Sum	PrdSum	Rail Trips		PrdSum
AM Wk	190,593	5,784	43,554	27,063	266,994	403,429	229,360	338,922	
AM Dr	120,581	1,674	11,807	120,581	136,435		109,562		
PM Wk	206,685	11,186	52,257	59,955	330,083	483,805	283,907	404,331	
PM Dr	130,785	3,296	14,182	130,785	153,722		120,424		
OP Wk	139,594	27,878	121,984	106,392	395,848	535,526	332,189	434,235	
OP Dr	88,392	8,312	33,113	88,392	139,678		102,046		
Total	876,630	58,130	276,897	211,103	1,422,760		1,177,488		

2030Bi	
Adjusted Rail Trips**	
AM	279,215
PM	282,852
OP	396,870
Total	958,937

* Adjusted = May-04 Observed * (Modeled 2030 NB / 2005)
 ** Adjusted = 2030 NB Adjusted * (Modeled 2030 BI / 2030 NB)

Part II - Bethesda Station Demand

1. 2005 Existing Year

		Boarding	Alighting
AM Wk	Metro	2,186	482
	To CBD	112	2,426
AM Dr	Metro	2,013	292
	To CBD	443	644
Total AM	Metro	4,199	774
	To CBD	555	3,070
	Total	4,754	3,844
OP Wk	Metro	2,935	511
OP Dr	Metro	238	3,280
	To CBD	2,984	361
	From CBD	960	626
Total OP	Metro	5,919	872
	From CBD	1,198	3,906
	Total	7,117	4,778

May-04	Boarding	Alighting
AM	3,298	2,622
PM	2,672	3,200
OP	3,520	3,879
Total	9,490	9,701

2. 2030 No-Build

		Boarding	Alighting
AM Wk	Metro	4,368	821
	To CBD	250	2,261
AM Dr	Metro	2,124	1,045
	To CBD	639	403
Total AM	Metro	6,492	1,866
	From CBD	889	2,664
	Total	7,381	4,530
OP Wk	Metro	4,725	426
OP Dr	Metro	386	5,096
	To CBD	2,971	88
	From CBD	1,421	578
Total OP	Metro	7,696	514
	From CBD	1,807	5,674
	Total	9,503	6,188

2030 No-Build (Adjusted)	Boarding	Alighting
AM*	5,120	3,090
PM**	3,149	4,968
OP*	4,700	5,024
Total	12,969	13,082

* Adjusted = May-04 Observed * (Modeled 2030 NB / 2005)
 ** Adjusted Boarding = 2030 NB AM Adjusted Alighting * (May-04 PM Boarding / AM Alighting)
 ** Adjusted Alighting = 2030 NB AM Adjusted Boarding * (May-04 PM Alighting / AM Boarding)

Part II - Bethesda Station Demand (continued)

3. 2030 Bi-County Transitway

		Boarding	Alighting
AM Wk	LRT	898	0
	Metro	4,439	960
		572	2,172
AM Dr	LRT	67	0
	Metro	2,547	1,066
		685	232
Total AM	LRT	965	0
		0	3,222
	Metro	6,986	2,008
		1,257	2,404
	Total	9,208	7,634
OP Wk	LRT	2,414	0
		0	2,444
	Metro	4,867	1,023
		1,006	4,951
OP Dr	LRT	178	0
		0	606
	Metro	3,252	210
		1,292	450
Total OP	LRT	2,592	0
		0	3,050
	Metro	8,119	1,233
		2,298	5,401
Total	Total	13,009	9,684

Transfers between LRT & Metro		
	L to M	M to L
AM Wk	902	453
AM Dr	287	58
Total AM	1,189	511
OP Wk	1,122	1,090
OP Dr	143	172
Total OP	1,265	1,262

Transfers (Adjusted)		
	L to M	M to L
AM^	819	352
PM^^	349	812
OP^	797	795
Total	1,965	1,959

^ Adjusted = Modeled 2030 BI * (2030 BI Adjusted Sum of B&A / Modeled 2030 BI Sum of B&A)

^^ Adjusted L to M = Modeled 2030 BI Adjusted AM M to L * (2030 BI Adjusted Sum of B&A PM / AM)

^^ Adjusted M to L = Modeled 2030 BI Adjusted AM L to M * (2030 BI Adjusted Sum of B&A PM / AM)

**** Adjusted = 2030 NB Adjusted * (Modeled 2030 BI / 2030 NB)

***** Adjusted Boarding = 2030 BI AM Adjusted Alighting * (2030 NB PM Boarding / AM Alighting)

***** Adjusted Alighting = 2030 BI AM Adjusted Boarding * (2030 NB PM Alighting / AM Boarding)

2030 Bi-County (Adjusted) Access Demand		
	Boarding	Alighting
AM^^^	5,217	4,037
PM^^^	4,145	5,037
OP^^^	4,842	6,270
Total	14,205	15,344

^^^ Adjusted Access Demand = 2030 BI Adjusted - Sum of L to M & M to L Transfers Adjusted

2030 Bi-County (Adjusted)		
	Boarding	Alighting
AM***	6,388	5,207
PM****	5,306	6,198
OP****	6,434	7,862
Total	18,128	19,267

Part III - Bethesda Station Local Access Demand

1. 2005 Existing Year

	TAZ/ node	Boarding	Alighting
AM	Wk Access	16	6
		329	329
		332	59
		340	97
		343	341
		344	480
		345	410
		351	214
		70	70
	Wk Access	1617	2294
	Bus Access	781	1648
	Dr Access	2454	0
	Total Demand	4852	3942
OP	Wk Access	12	23
		329	329
		332	76
		340	119
		343	465
		344	1226
		345	795
		351	192
		235	235
	Wk Access	2885	3400
	Bus Access	357	1447
	Dr Access	3944	0
	Total Demand	7186	4847

2. 2030 No-Build

	TAZ/ node	Boarding	Alighting
AM	Wk Access	20	11
		329	329
		332	72
		340	119
		343	1141
		344	1139
		345	1019
		351	254
		83	83
	Wk Access	3764	2701
	Bus Access	1047	2013
	Dr Access	2754	0
	Total Demand	7565	4714
OP	Wk Access	14	22
		329	329
		332	86
		340	121
		343	970
		344	1892
		345	1419
		351	227
		319	319
	Wk Access	4729	5467
	Bus Access	429	768
	Dr Access	4392	0
	Total Demand	9550	6235

2030 No-Build (Adjusted)

	TAZ/ node	Boarding	Alighting
AM*	Wk Access	14	7
		329	329
		332	49
		340	81
		343	772
		344	771
		345	690
		351	172
		54	54
	Wk Access	2,548	1,770
	Bus Access	709	1,319
	Dr Access	1,864	0
	Total Demand	5,120	3,090
PM**	Wk Access	7	13
		329	329
		332	17
		340	7
		343	244
		344	916
		345	557
		351	55
		167	167
	Wk Access	1,804	2,472
	Bus Access	1,345	688
	Dr Access	0	1,809
	Total Demand	3,149	4,968
OP*	Wk Access	7	18
		329	329
		332	42
		340	60
		343	477
		344	931
		345	698
		351	112
		257	257
	Wk Access	2,327	4,405
	Bus Access	211	619
	Dr Access	2,162	0
	Total Demand	4,700	5,024

* Adjusted = 2030 Access Demand * Modeled Access Mode Shares

** Adjusted = 2030 Access Demand * Inversed AM Modeled Access Mode Shares

Part IV - Model Version Sensitivity

1. Version C	Transit Person Trips
From Bethesda	14,209
To Bethesda	19,597
Total Bethesda Access Trips	33,806
Regional Trips***	1,369,685
2. Version D	Transit Person Trips
From Bethesda	13,095
To Bethesda	23,077
Total Bethesda Access Trips	36,172
Regional Trips***	1,213,464
3. Adjusted Factors****	Transit Person Trips
Bethesda Access Trips	1.07
Regional Trips	0.89

*** Excluding "From & To Bethesda" Trips
 **** Adjusted Factors = Version D Transit Trips / Version C Transit Trips

Part III - Bethesda Station Local Access Demand (continued)

2030 Bi-County Transitway (Adjusted)

	Wk Access	TAZ/ node	Boarding	Alighting
AM*		329	16	10
		332	48	21
		340	90	22
		343	804	282
		344	864	1,378
		345	721	622
		351	284	43
	Wk Access	Total	2,827	2,377
	Bus Access	3048	386	1,659
	Dr Access	7507	2,004	0
	Total Demand		5,217	4,037
PM**		329	10	15
		332	21	46
		340	22	87
		343	290	776
		344	1,415	834
		345	639	696
		351	44	275
	Wk Access	Total	2,441	2,729
	Bus Access	3048	1,704	373
	Dr Access	7507	0	1,934
	Total Demand		4,145	5,037
OP*		329	15	41
		332	38	171
		340	55	160
		343	482	1,016
		344	1,098	2,404
		345	737	1,596
		351	129	259
	Wk Access	Total	2,555	5,647
	Bus Access	3048	259	623
	Dr Access	7507	2,028	0
	Total Demand		4,842	6,270

* Adjusted = 2030 Access Demand * Modeled Access Mode Shares

** Adjusted = 2030 Access Demand * Inversed AM Modeled Access Mode Shares

3. 2030 Bi-County Transitway

	TAZ/ node	Boarding	Alighting
AM	329	23	15
	332	70	31
	340	132	33
	343	1182	426
	344	1270	2080
	345	1060	939
	351	418	65
	Wk Access	4155	3589
	Bus Access	568	2505
	Dr Access	2945	0
	Total Demand	7668	6094
OP	329	33	47
	332	83	196
	340	119	183
	343	1046	1164
	344	2383	2754
	345	1599	1828
	351	281	297
	Wk Access	5544	6469
	Bus Access	563	714
	Dr Access	4401	0
	Total Demand	10508	7183

Appendix F: Calculation of Increased Ridership Caused by South Entrance

Block	2030		Avg. dist. to entrance (ft)		Future mode share (pct.)*				N. Entr. only				Surrogate Ridership N. & S. Entr.				Percent Increase			
	Empl.	DU	North	South	N. Entr. only		N. & S. Entr.		Office	Res	Office	Res	Office	Res	Office	Res	Office	Res	Total	
					Office	Res	Office	Res												Office
1	279	127	1543	2304	14	41	14	41	39	52	39	52	91	91	39	52	91	91	0%	0%
2	138	4	1924	2684	11	39	11	39	15	2	15	2	17	17	15	2	17	17	0%	0%
3	162	7	2254	3018	9	37	9	37	14	3	14	3	17	17	14	3	17	17	0%	0%
5	73	175	2510	3275	7	35	7	35	5	61	5	61	66	66	5	61	66	66	0%	0%
6	56	16	2748	3514	5	33	5	33	3	5	3	5	8	8	3	5	8	8	0%	0%
7	28	7	3072	3839	3	31	3	31	1	2	1	2	3	3	1	2	3	3	0%	0%
8	414	127	3167	3951	2	31	2	31	8	39	8	39	47	47	8	39	47	47	0%	0%
9	1229	245	2633	3418	6	34	6	34	72	84	72	84	155	155	72	84	155	155	0%	0%
10	480	234	1943	2731	11	39	11	39	53	91	53	91	143	143	53	91	143	143	0%	0%
11	203	0	1470	2257	14	42	14	42	29	0	29	0	29	29	29	0	29	29	0%	0%
12	1159	0	1708	2497	13	40	13	40	147	0	147	0	147	147	147	0	147	147	0%	0%
12	1159	0	1478	2268	14	42	14	42	167	0	167	0	167	167	167	0	167	167	0%	0%
13	486	103	2026	2814	10	38	10	38	50	39	50	39	90	90	50	39	90	90	0%	0%
14	170	574	2248	3035	9	37	9	37	15	210	15	210	225	225	15	210	225	225	0%	0%
15	318	56	2417	3198	7	36	7	36	24	20	24	20	44	44	24	20	44	44	0%	0%
16	1337	691	2788	3576	5	33	5	33	63	229	63	229	292	292	63	229	292	292	0%	0%
17	0	837	3370	4155	0	29	0	29	0	245	0	245	245	245	0	245	245	245	0%	0%
18	0	89	3431	4148	0	29	0	29	0	26	0	26	26	26	0	26	26	26	0%	0%
19	0	264	3073	3818	3	31	3	31	0	82	0	82	82	82	0	82	82	82	0%	0%
20	655	15	2597	3328	6	34	6	34	40	5	40	5	45	45	40	5	45	45	0%	0%
21	286	0	2308	3045	8	36	8	36	24	0	24	0	24	24	24	0	24	24	0%	0%
22	497	0	2033	2777	10	38	10	38	51	0	51	0	51	51	51	0	51	51	0%	0%
23	927	0	1755	2506	12	40	12	40	114	0	114	0	114	114	114	0	114	114	0%	0%
25	207	0	1948	2635	11	39	11	39	23	0	23	0	23	23	23	0	23	23	0%	0%
34	0	0	1178	1065	17	44	17	44	0	0	0	0	0	0	0	0	0	0	0%	0%
35	0	0	1709	2324	13	40	13	40	0	0	0	0	0	0	0	0	0	0	0%	0%
36	0	2	1554	2044	14	41	14	41	0	1	0	1	1	1	0	1	1	1	0%	0%
37	0	0	1388	1694	15	42	15	42	0	0	0	0	0	0	0	0	0	0	0%	0%
38	0	0	1640	1677	13	41	13	41	0	0	0	0	0	0	0	0	0	0	0%	0%
40	667	155	1040	1090	18	45	18	45	118	69	118	69	187	187	118	69	187	187	0%	0%
41	188	537	883	1218	19	46	19	46	35	245	35	245	281	281	35	245	281	281	0%	0%
42	167	591	958	1559	18	45	18	45	30	267	30	267	297	297	30	267	297	297	0%	0%
43	812	0	1243	1936	16	43	16	43	131	0	131	0	131	131	131	0	131	131	0%	0%
44	1112	21	1507	2267	14	42	14	42	158	9	158	9	166	166	158	9	166	166	0%	0%
45	448	264	1135	1907	17	44	17	44	76	116	76	116	192	192	76	116	192	192	0%	0%
46	3868	0	820	1610	19	46	19	46	745	0	745	0	745	745	745	0	745	745	0%	0%
47	866	0	289	1076	23	50	23	50	201	0	201	0	201	201	201	0	201	201	0%	0%
48	252	312	593	1289	21	48	21	48	53	148	53	148	201	201	53	148	201	201	0%	0%
49	4478	0	198	818	24	50	24	50	1069	0	1069	0	1069	1069	1069	0	1069	1069	0%	0%

Block	2030		Avg. dist. to entrance (ft)		Future mode share (pct.)*				Surrogate Ridership							
	Empl.	DU	North	South	N. Entr. only		N. & S. Entr.		N. Entr. only		N. & S. Entr.		Percent Increase			
					Office	Res	Office	Res	Office	Res	Office	Res	Office	Res	Total	Total
50	0	0	491	708	22	48	22	48	0	0	0	0	0	0	0	0
51	0	37	682	603	20	47	21	48	0	17	17	18	18	18	18	1%
52	1163	1	820	336	19	46	23	49	224	0	224	266	0	266	19%	7%
53	1040	0	590	269	21	48	23	50	218	0	218	243	0	243	11%	11%
54	935	0	668	285	20	47	23	50	191	0	191	217	0	217	14%	14%
55	1401	0	358	600	23	49	23	49	318	0	318	318	0	318	0%	0%
56	3315	204	509	1020	22	48	22	48	715	98	813	715	98	813	0%	0%
57	183	59	743	1358	20	47	20	47	36	27	64	36	27	64	0%	0%
58	1235	263	1013	1763	18	45	18	45	220	118	338	220	118	338	0%	0%
59	0	27	1103	1719	17	44	17	44	0	12	12	0	12	12	0%	0%
60	566	67	1530	1803	14	41	14	41	79	28	107	79	28	107	0%	0%
62	3074	370	1530	1508	14	41	14	42	431	153	584	436	154	589	1%	0%
63	2000	0	1830	1695	12	39	13	40	236	0	236	256	0	256	8%	8%
64	1359	0	772	824	20	46	20	46	267	0	267	267	0	267	0%	0%
65	1257	198	1036	608	18	45	21	47	222	88	310	262	94	356	18%	6%
70	0	0	1325	660	16	43	20	47	0	0	0	0	0	0	0	0
71	885	3	1237	481	16	43	22	48	143	1	144	193	1	194	35%	12%
72	1020	0	1649	880	13	41	19	46	134	0	134	192	0	192	43%	43%
73	100	2	2035	1255	10	38	16	43	10	1	11	16	1	17	56%	14%
74	272	22	2364	1583	8	36	14	41	21	8	29	37	9	46	74%	14%
75	293	16	2778	1994	5	33	11	38	14	5	19	31	6	37	122%	16%
76	763	157	2328	1539	8	36	14	41	62	57	119	106	65	171	72%	14%
77	26	209	1664	886	13	41	19	46	3	85	88	5	95	100	44%	13%
78	76	257	1436	669	15	42	20	47	11	108	119	15	121	136	39%	12%
79	2456	0	1108	398	17	44	22	49	421	0	421	550	0	550	31%	31%
80	1510	180	1385	1049	15	42	18	45	228	76	304	265	80	346	16%	5%
81	374	63	1883	1748	11	39	12	40	43	25	67	46	25	72	9%	2%
82	507	306	2494	2175	7	35	9	37	35	107	142	47	114	160	34%	6%
83	1760	105	2019	1563	10	38	14	41	183	40	223	242	43	285	32%	8%
84	33	121	1840	1248	12	39	16	43	4	48	51	5	52	58	37%	10%
85	0	70	1973	1294	11	38	16	43	0	27	27	0	30	30	12%	12%
86	0	179	2247	1497	9	37	14	42	0	66	66	0	74	74	13%	13%
87	0	369	2636	1876	6	34	11	39	0	126	126	0	144	144	15%	15%
88	33	291	2971	2253	3	32	9	37	1	93	94	3	107	109	159%	15%
89	0	88	2612	1955	6	34	11	39	0	30	30	0	34	34	13%	13%
90	0	110	3131	2570	2	31	6	35	0	34	34	0	38	38	12%	12%
91	106	102	3331	2872	1	30	4	33	1	30	31	4	33	38	500%	10%
Weighted Average																
7.5% 3.2% 6.2%																

* Source: WMATA Development-Related Ridership Survey, 1987, 1989

Appendix G: Ridership Adjustments to Account for South Entrance

Option 3 adjusted to account for south entrance

Part A: Trips subject to increasing

				Boarding	Alighting
AM Wk	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		3,537	960
		From CBD		572	1,719
AM Dr	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		0	0
		From CBD		0	0
Total AM	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		3,537	960
		From CBD		572	1,719
		Total		4,109	2,679
OP Wk	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		3,745	1,023
		From CBD		1,006	3,861
OP Dr	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		0	0
		From CBD		0	0
Total OP	LRT	B to N		0	0
		N to B		0	0
	Metro	To CBD		3,745	1,023
		From CBD		1,006	3,861
		Total		4,751	4,884

Option 2: South Entrance Only

			Boarding	Alighting
AM Wk	Metro	To CBD	4,508	847
		From CBD	258	2,333
AM Dr	Metro	To CBD	2,124	1,045
		From CBD	639	403
Total AM	Metro	To CBD	6,632	1,892
		From CBD	897	2,736
		Total	7,529	4,629
OP Wk	Metro	To CBD	5,018	452
		From CBD	410	5,412
OP Dr	Metro	To CBD	2,971	88
		From CBD	1,421	578
Total OP	Metro	To CBD	7,989	540
		From CBD	1,831	5,990
		Total	9,820	6,530

2030 South Only (Adjusted)	
	Boardin/Alighting
AM	5,223 3,157
PM	3,217 5,068
OP	4,857 5,302
Total	13,297 13,527

Walk Access Trip Adjustment Factors	
AM Boarding	1.032
PM Alighting	1.032
AM Alighting	1.075
PM Boarding	1.075
Daily	1.062

Option 3 adjusted to account for south entrance (continued)

Part B: Increase in trips due to south entrance

		Boarding	Alighting
AM Wk	LRT	B to N	0
		N to B	0
	Metro	To CBD	113
		From CBD	18
AM Dr	LRT	B to N	0
		N to B	0
	Metro	To CBD	0
		From CBD	0
Total AM	LRT	B to N	0
		N to B	0
	Metro	To CBD	113
		From CBD	18
		Total	131
OP Wk	LRT	B to N	0
		N to B	0
	Metro	To CBD	232
		From CBD	62
OP Dr	LRT	B to N	0
		N to B	0
	Metro	To CBD	0
		From CBD	0
Total OP	LRT	B to N	0
		N to B	0
	Metro	To CBD	232
		From CBD	62
		Total	295
			303

Part C: New total trips, adjusted for south entrance

		Boarding	Alighting
AM Wk	LRT	B to N	898
		N to B	0
	Metro	To CBD	4,552
		From CBD	590
AM Dr	LRT	B to N	67
		N to B	0
	Metro	To CBD	2,547
		From CBD	685
Total AM	LRT	B to N	965
		N to B	0
	Metro	To CBD	7,099
		From CBD	1,275
		Total	9,339
OP Wk	LRT	B to N	2414
		N to B	0
	Metro	To CBD	5,099
		From CBD	1,068
OP Dr	LRT	B to N	178
		N to B	0
	Metro	To CBD	3,252
		From CBD	1,292
Total OP	LRT	B to N	2,592
		N to B	0
	Metro	To CBD	8,351
		From CBD	2,360
		Total	13,304
			9,987

Part D: New total trips, excluding transfers

		Boarding	Alighting
AM Wk	LRT	B to N	445
		N to B	0
	Metro	To CBD	3,650
		From CBD	590
AM Dr	LRT	B to N	9
		N to B	0
	Metro	To CBD	2,260
		From CBD	685
Total AM	LRT	B to N	454
		N to B	0
	Metro	To CBD	5,910
		From CBD	1,275
		Total	7,639
OP Wk	LRT	B to N	1,324
		N to B	0
	Metro	To CBD	3,977
		From CBD	1,068
OP Dr	LRT	B to N	6
		N to B	0
	Metro	To CBD	3,109
		From CBD	1,292
Total OP	LRT	B to N	1,330
		N to B	0
	Metro	To CBD	7,086
		From CBD	2,360
		Total	10,777
			7,460

Option 3 adjusted to account for south entrance (continued)

2030 Bi-County (Adjusted)		
	Boarding	Alighting
AM	6,479	5,344
PM	5,446	6,287
OP	6,580	8,108
Total	18,505	19,739

Transfers (Adjusted)		
	L to M	M to L
AM	819	352
PM	349	812
OP	798	796
Total	1,965	1,960

2030 Bi-County (Adjusted)		
Access Demand		
	Boarding	Alighting
AM	5,309	4,174
PM	4,285	5,125
OP	4,986	6,514
Total	14,580	15,813

Access Demand by Mode (excludes transfers)					
Boarding			Alighting		
M	L	Both	M	L	Both
4,993	315	5,309	2,791	1,383	4,174
2,865	1,420	4,285	4,821	305	5,125
4,371	615	4,986	4,955	1,559	6,514
12,229	2,351	14,580	12,567	3,246	15,813

2030 No-Build (Adjusted)

	TAZ/ Node	Entrance Use Ratios				Trips by Entrance																	
		Boardings		Alightings		Boardings		Alightings															
		North	South	North	South	North	South	North	South														
AM	Wk Access																						
		329	0%	100%	0%	100%	0	14	14	0	0	7	7										
		332	30%	70%	30%	70%	15	34	49	5	12	17	17										
		340	50%	50%	50%	50%	40	40	81	4	4	4	4										
		343	100%	0%	100%	0%	772	0	772	239	0	239	0	239									
		344	87%	13%	77%	23%	671	100	771	692	207	899											
		345	0%	100%	0%	100%	0	690	690	0	547	547											
		351	100%	0%	100%	0%	172	0	172	54	0	54											
	Wk Access	Total					1,670	878	2,548	994	776	1,770											
	Bus Access	3048	90%	10%	90%	10%	638	71	709	1,188	132	1,319											
	Dr Access	7507	70%	30%	70%	30%	1,305	559	1,864	0	0	0											
	Total Demand						3,612	1,508	5,120	2,182	908	3,090											
PM	Wk Access																						
		329	0%	100%	0%	100%	0	7	7	0	0	7	7										
		332	30%	70%	30%	70%	5	12	17	14	33	47											
		340	50%	50%	50%	50%	4	4	7	39	39	78											
		343	100%	0%	100%	0%	244	0	244	749	0	749											
		344	77%	23%	87%	13%	705	211	916	651	97	748											
		345	0%	100%	0%	100%	0	557	557	0	669	669											
		351	100%	0%	100%	0%	55	0	55	167	0	167											
	Wk Access	Total					1,013	791	1,804	1,620	852	2,472											
	Bus Access	3048	90%	10%	90%	10%	1,210	134	1,345	619	69	688											
	Dr Access	7507	70%	30%	70%	30%	0	0	0	1,266	543	1,809											
	Total Demand						2,223	925	3,149	3,505	1,463	4,968											
OP	Wk Access																						
		329	0%	100%	0%	100%	0	7	7	0	18	18											
		332	30%	70%	30%	70%	13	30	42	43	100	143											
		340	50%	50%	50%	50%	30	30	60	64	64	128											
		343	100%	0%	100%	0%	477	0	477	891	0	891											
		344	82%	18%	82%	18%	764	168	931	1,409	309	1,718											
		345	0%	100%	0%	100%	0	698	698	0	1,250	1,250											
		351	100%	0%	100%	0%	112	0	112	257	0	257											
	Wk Access	Total					1,395	932	2,327	2,664	1,741	4,405											
	Bus Access	3048	90%	10%	90%	10%	190	21	211	557	62	619											
	Dr Access	7507	70%	30%	70%	30%	1,513	648	2,162	0	0	0											
	Total Demand						3,098	1,602	4,700	3,221	1,803	5,024											

2030 Bi-County Transitway (Adjusted)

	TAZ/ Node	Entrance Use Ratios				Trips by Entrance						
		Boardings		Alightings		Boardings		Alightings				
		North	South	North	South	North	South	North	South			
AM	Wk Access	329	0%	100%	0%	100%	0	16	16	0	10	10
		332	30%	70%	30%	70%	14	33	48	6	14	21
		340	50%	50%	50%	50%	45	45	90	11	11	22
		343	100%	0%	100%	0%	804	0	804	282	0	282
		344	87%	13%	77%	23%	752	112	864	1,061	317	1,378
		345	0%	100%	0%	100%	0	721	721	0	622	622
		351	100%	0%	100%	0%	284	0	284	43	0	43
	Wk Access Total						1,900	927	2,827	1,403	974	2,377
	Bus Access	3048	90%	10%	90%	10%	348	39	386	1,493	166	1,659
	Dr Access	7507	70%	30%	70%	30%	1,403	601	2,004	0	0	0
	Total Demand						3,650	1,567	5,217	2,897	1,140	4,037
PM	Wk Access	329	0%	100%	0%	100%	0	10	10	0	15	15
		332	30%	70%	30%	70%	6	15	21	14	32	46
		340	50%	50%	50%	50%	11	11	22	43	43	87
		343	100%	0%	100%	0%	290	0	290	776	0	776
		344	77%	23%	87%	13%	1,089	325	1,415	726	108	834
		345	0%	100%	0%	100%	0	639	639	0	696	696
		351	100%	0%	100%	0%	44	0	44	275	0	275
	Wk Access Total						1,441	1,000	2,441	1,834	895	2,729
	Bus Access	3048	90%	10%	90%	10%	1,534	170	1,704	336	37	373
	Dr Access	7507	70%	30%	70%	30%	0	0	0	1,354	580	1,934
	Total Demand						2,975	1,171	4,145	3,524	1,513	5,037
OP	Wk Access	329	0%	100%	0%	100%	0	15	15	0	41	41
		332	30%	70%	30%	70%	11	27	38	51	120	171
		340	50%	50%	50%	50%	27	27	55	80	80	160
		343	100%	0%	100%	0%	482	0	482	1,016	0	1,016
		344	82%	18%	82%	18%	900	198	1,098	1,971	433	2,404
		345	0%	100%	0%	100%	0	737	737	0	1,596	1,596
		351	100%	0%	100%	0%	129	0	129	259	0	259
	Wk Access Total						1,551	1,004	2,555	3,378	2,269	5,647
	Bus Access	3048	90%	10%	90%	10%	233	26	259	561	62	623
	Dr Access	7507	70%	30%	70%	30%	1,420	608	2,028	0	0	0
	Total Demand						3,204	1,638	4,842	3,939	2,331	6,270

2030 Bi-County Transitway (Adjusted) (continued)

	TAZI Node	Access Point Use Ratios (for South Trips)				Boardings			Alightings			
		Boardings		Alightings		West	East	Total	West	East	Total	
		West	East (elev)	West	East (elev)							
AM	Wk Access	329	100%	0%	100%	0%	16	0	16	10	0	10
		332	0%	100%	0%	100%	0	33	33	0	14	14
		340	50%	50%	50%	50%	22	22	45	5	5	11
		343	0%	100%	0%	100%	0	0	0	0	0	0
		344	0%	100%	0%	100%	0	112	112	0	317	317
		345	89%	11%	44%	56%	642	79	721	274	348	622
		351	0%	100%	0%	100%	0	0	0	0	0	0
	Wk Access Total						680	247	927	289	685	974
	Bus Access	3048	0%	100%	0%	100%	0	39	39	0	166	166
	Dr Access	7507	2%	98%	2%	98%	12	589	601	0	0	0
	Total Demand						692	875	1,567	289	851	1,140
PM	Wk Access	329	100%	0%	100%	0%	10	0	10	15	0	15
		332	0%	100%	0%	100%	0	15	15	0	32	32
		340	50%	50%	50%	50%	6	6	11	22	22	43
		343	0%	100%	0%	100%	0	0	0	0	0	0
		344	0%	100%	0%	100%	0	325	325	0	108	108
		345	44%	56%	89%	11%	281	358	639	620	77	696
		351	0%	100%	0%	100%	0	0	0	0	0	0
	Wk Access Total						297	703	1,000	656	239	895
	Bus Access	3048	0%	100%	0%	100%	0	170	170	0	37	37
	Dr Access	7507	2%	98%	2%	98%	0	0	0	12	569	580
	Total Demand						297	874	1,171	668	845	1,513
OP	Wk Access	329	100%	0%	100%	0%	15	0	15	41	0	41
		332	0%	100%	0%	100%	0	27	27	0	120	120
		340	50%	50%	50%	50%	14	14	27	40	40	80
		343	0%	100%	0%	100%	0	0	0	0	0	0
		344	0%	100%	0%	100%	0	198	198	0	433	433
		345	67%	34%	67%	34%	490	247	737	1,061	535	1,596
		351	0%	100%	0%	100%	0	0	0	0	0	0
	Wk Access Total						519	485	1,004	1,142	1,127	2,269
	Bus Access	3048	0%	100%	0%	100%	0	26	26	0	62	62
	Dr Access	7507	2%	98%	2%	98%	12	596	608	0	0	0
	Total Demand						531	1,107	1,638	1,142	1,189	2,331

Appendix H: South Entrance Elevator Analysis

Bethesda South Entrance Elevator Analysis

Time Period	AM Peak
Option	2: South Entrance
No. of cabs required	3

Passenger Forecast	3 hr peak South Ent.	30 min peak South Ent.	Access via trail		Adjusted forecast
			Bi-County	Metro	
From Street to Metro	1611.0	0.2453		0.0	395.2
From Street to Bi-County	0.0	0.0	0.0	0.0	0.0
From Bi-County to Metro	0.0	0.0			0.0
From Bi-County to Street	0.0	0.0	0.0	0.0	0.0
From Metro to Bi-County	0.0	0.0			0.0
From Metro to Street	975.0	239.2		0.0	306.1

Trail Access Proportion	
Boardings	0
Alightings	0

Peaking factor for alighting passengers	1.28
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Elevator Cycle Analysis									
Passengers in peak 30 min	Passengers per cab	Passengers per cab per cycle	Event	Rise (ft)	Time (sec)	Cumulative time (sec)	Passenger load		
395.2	131.7	6.2	Passengers enter at street level		6.2	6.2	6.2		
			Doors close		3.1	9.3	6.2		
			Travel to Bi-County level	24.5	8.2	17.5	6.2		
			Doors open		0.0	17.5	6.2		
0.0	0.0	0.0	Passengers exit at Bi-County level		0.0	17.5	6.2		
0.0	0.0	0.0	Passengers enter at Bi-County level		0.0	17.5	6.2		
			Doors close		0.0	17.5	6.2		
			Travel to Metro level	98	16.8	34.3	6.2		
			Doors open		3.1	37.4	6.2		
395.2	131.7	6.2	Passengers exit at Metro level		6.2	43.6	0.0		
306.1	102.0	4.8	Passengers enter at Metro level		4.8	48.3	4.8		
			Doors close		3.1	51.5	4.8		
			Travel to Bi-County level	98	16.8	68.3	4.8		
			Doors open		0.0	68.3	4.8		
0.0	0.0	0.0	Passengers exit at Bi-County level		0.0	68.3	4.8		
0.0	0.0	0.0	Passengers enter at Bi-County level		0.0	68.3	4.8		
			Doors close		0.0	68.3	4.8		
			Travel to street level	24.5	8.2	76.5	4.8		
			Doors open		3.1	79.6	4.8		
306.1	102.0	4.8	Passengers exit at street level		4.8	84.3	0.0		
TOTAL CYCLE TIME							84.3		
PEAK PASSENGER LOAD								6.2	

Input	
Cab accel & decel time	2 sec
Cab speed	350 ft/min
Cab passenger capacity	9.6
Time per passenger to load/unload	1 sec
Door cycle time	6.22 sec

Elevator Travel Times (sec)	
Average cab arrival interval	28.1
From Street to Metro	43.6
From Street to Bi-County	17.5
From Bi-County to Metro	26.1
From Bi-County to Street	16.1
From Metro to Bi-County	24.7
From Metro to Street	40.8

Bethesda South Entrance Elevator Analysis

Time Period	PM Peak
Option	2: South Entrance
No. of cabs required	3

Passenger Forecast	3 hr peak South Ent.	30 min peak South Ent.	Access via trail		Adjusted forecast
			Bi-County	Metro	
		0.2103			
From Street to Metro	993.0	208.8		0.0	208.8
From Street to Bi-County	0.0	0.0	0.0		0.0
From Bi-County to Metro	0.0	0.0			0.0
From Bi-County to Street	0.0	0.0	0.0		0.0
From Metro to Bi-County	0.0	0.0			0.0
From Metro to Street	1563.0	328.7		0.0	420.7

Trail Access Proportion	
Boardings	0
Alightings	0

Peaking factor for alighting passengers	1.28
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Elevator Cycle Analysis										
Passengers in peak 30 min	Passengers per cab	Passengers per cab per cycle	Event	Rise (ft)	Time (sec)	Cumulative time (sec)	Passenger load			
208.8	69.6	3.1	Passengers enter at street level		3.1	3.1	3.1			
			Doors close		3.1	6.3	3.1			
			Travel to Bi-County level	24.5	8.2	14.5	3.1			
			Doors open		0.0	14.5	3.1			
0.0	0.0	0.0	Passengers exit at Bi-County level		0.0	14.5	3.1			
0.0	0.0	0.0	Passengers enter at Bi-County level		0.0	14.5	3.1			
			Doors close		0.0	14.5	3.1			
			Travel to Metro level	98	16.8	31.3	3.1			
			Doors open		3.1	34.4	3.1			
208.8	69.6	3.1	Passengers exit at Metro level		3.1	37.5	0.0			
420.7	140.2	6.3	Passengers enter at Metro level		6.3	43.9	6.3			
			Doors close		3.1	47.0	6.3			
			Travel to Bi-County level	98	16.8	63.8	6.3			
			Doors open		0.0	63.8	6.3			
0.0	0.0	0.0	Passengers exit at Bi-County level		0.0	63.8	6.3			
0.0	0.0	0.0	Passengers enter at Bi-County level		0.0	63.8	6.3			
			Doors close		0.0	63.8	6.3			
			Travel to street level	24.5	8.2	72.0	6.3			
			Doors open		3.1	75.1	6.3			
420.7	140.2	6.3	Passengers exit at street level		6.3	81.4	0.0			
TOTAL CYCLE TIME						81.4				
PEAK PASSENGER LOAD										6.3

Input	
Cab accel & decel time	2 sec
Cab speed	350 ft/min
Cab passenger capacity	9.6
Time per passenger to load/unload	1 sec
Door cycle time	6.22 sec

Elevator Travel Times (sec)	
Average cab arrival interval	27.1
From Street to Metro	37.5
From Street to Bi-County	14.5
From Bi-County to Metro	23.1
From Bi-County to Street	17.7
From Metro to Bi-County	26.3
From Metro to Street	43.9

Bethesda South Entrance Elevator Analysis

Time Period	AM Peak
Option	3: Bi-County Transitway
No. of cabs required	5

Passenger Forecast	3 hr peak South Ent.	30 min peak South Ent.	Access via trail		Adjusted forecast
			Bi-County	Metro	
From Street to Metro	1540.0	377.8		167.0	210.8
From Street to Bi-County	315.0	77.3	34.2		43.1
From Bi-County to Metro	819.0	200.9			424.1
From Bi-County to Street	1383.0	339.2	86.2		323.9
From Metro to Bi-County	352.0	86.3			179.3
From Metro to Street	862.0	211.4		53.7	201.9

Trail Access Proportion	
Boardings	0.442
Alightings	0.254

Peaking factor for alighting passengers	1.28
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Elevator Cycle Analysis									
Passengers in peak 30 min	Passengers per cab	Passengers per cab per cycle	Event	Rise (ft)	Time (sec)	Cumulative time (sec)	Passenger load		
253.9	50.8	3.4	Passengers enter at street level		3.4	3.4	3.4		
			Doors close		3.1	6.5	3.4		
			Travel to Bi-County level	24.5	8.2	14.7	3.4		
			Doors open		3.1	17.8	3.4		
43.1	8.6	0.6	Passengers exit at Bi-County level		0.6	18.4	2.8		
424.1	84.8	5.6	Passengers enter at Bi-County level		5.6	24.0	8.4		
			Doors close		3.1	27.1	8.4		
			Travel to Metro level	98	20.8	47.9	8.4		
			Doors open		3.1	51.0	8.4		
634.9	127.0	8.4	Passengers exit at Metro level		8.4	59.5	0.0		
381.2	76.2	5.1	Passengers enter at Metro level		5.1	64.5	5.1		
			Doors close		3.1	67.6	5.1		
			Travel to Bi-County level	98	20.8	88.4	5.1		
			Doors open		3.1	91.6	5.1		
179.3	35.9	2.4	Passengers exit at Bi-County level		2.4	93.9	2.7		
323.9	64.8	4.3	Passengers enter at Bi-County level		4.3	98.2	7.0		
			Doors close		3.1	101.4	7.0		
			Travel to street level	24.5	8.2	109.6	7.0		
			Doors open		3.1	112.7	7.0		
525.9	105.2	7.0	Passengers exit at street level		7.0	119.7	0.0		
TOTAL CYCLE TIME							119.7		
PEAK PASSENGER LOAD								8.4	

Input	
Cab accel & decel time	2 sec
Cab speed	350 ft/min
Cab passenger capacity	9.6
Time per passenger to load/unload	1 sec
Door cycle time	6.22 sec

Elevator Travel Times (sec)	
Average cab arrival interval	23.9
From Street to Metro	59.5
From Street to Bi-County	18.4
From Bi-County to Metro	41.1
From Bi-County to Street	25.7
From Metro to Bi-County	34.5
From Metro to Street	60.2

Bethesda South Entrance Elevator Analysis

Time Period	PM Peak
Option	3: Bi-County Transitway
No. of cabs required	5

Passenger Forecast	3 hr peak South Ent.	30 min peak South Ent.	Access via trail		Adjusted forecast
			Bi-County	Metro	
		0.2103			
From Street to Metro	885.0	186.1		47.3	138.8
From Street to Bi-County	1420.0	298.6	75.9		222.8
From Bi-County to Metro	349.0	73.4			141.2
From Bi-County to Street	305.0	64.1	28.4		45.8
From Metro to Bi-County	812.0	170.8			395.5
From Metro to Street	1487.0	312.7		138.2	223.4

Trail Access Proportion	
Boardings	0.254
Alightings	0.442

Peaking factor for alighting passengers	1.28
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Elevator Cycle Analysis									
Passengers in peak 30 min	Passengers per cab	Passengers per cab per cycle	Event	Rise (ft)	Time (sec)	Cumulative time (sec)	Passenger load		
361.6	72.3	4.5	Passengers enter at street level		4.5	4.5	4.5		
			Doors close		3.1	7.6	4.5		
			Travel to Bi-County level	24.5	8.2	15.8	4.5		
			Doors open		3.1	18.9	4.5		
222.8	44.6	2.8	Passengers exit at Bi-County level		2.8	21.7	1.7		
141.2	28.2	1.8	Passengers enter at Bi-County level		1.8	23.4	3.5		
			Doors close		3.1	26.6	3.5		
			Travel to Metro level	98	20.8	47.4	3.5		
			Doors open		3.1	50.5	3.5		
280.1	56.0	3.5	Passengers exit at Metro level		3.5	53.9	0.0		
618.9	123.8	7.7	Passengers enter at Metro level		7.7	61.6	7.7		
			Doors close		3.1	64.8	7.7		
			Travel to Bi-County level	98	20.8	85.6	7.7		
			Doors open		3.1	88.7	7.7		
395.5	79.1	4.9	Passengers exit at Bi-County level		4.9	93.6	2.8		
45.8	9.2	0.6	Passengers enter at Bi-County level		0.6	94.1	3.3		
			Doors close		3.1	97.3	3.3		
			Travel to street level	24.5	8.2	105.5	3.3		
			Doors open		3.1	108.6	3.3		
269.2	53.8	3.3	Passengers exit at street level		3.3	111.9	0.0		
TOTAL CYCLE TIME						111.9			
PEAK PASSENGER LOAD									7.7

Input	
Cab accel & decel time	2 sec
Cab speed	350 ft/min
Cab passenger capacity	9.6
Time per passenger to load/unload	1 sec
Door cycle time	6.22 sec

Elevator Travel Times (sec)	
Average cab arrival interval	22.4
From Street to Metro	53.9
From Street to Bi-County	21.7
From Bi-County to Metro	32.3
From Bi-County to Street	18.3
From Metro to Bi-County	39.6
From Metro to Street	58.0

Appendix I: Metrorail Station Infrastructure Analysis

Bethesda Metrorail Station Infrastructure Analysis

Input	
A	Peaking factor for alighting passengers 1.28
B	Escalator flow rate 83 ppm
C	Stair flow rate 55 ppm
D	30 min peak factor AM: 0.2453 PM: 0.2103
E	Fare gate aisle flow rate 32 ppm
F	Passengers using farecard vendor 30 %
G	Farecard vendor flow rate 2.5 transactions per min
H	Farecard vendor peaking factor 1.1

Scenario Analyzed	
Option	1: No-Build
Entrance	North

Infrastructure Analysis									
	AM			PM			Critical		
	Alighting	Boarding	Total	Alighting	Boarding	Total			
K	Passengers, 3-hr peak	3090	5120	8210	4968	3149	8117		
L	Passengers, 30-min peak	758	1256	2014	1045	662	1707	K x D	
M	Boarding passengers per minute		41.86			22.07		L / 30	
	Alighting passengers per minute	64.68			89.15			A x 2L / 30	
P	Platform Escalators Required	0.78	0.50	2	1.07	0.27	3	M / B	
Q	Farecard Vendors Required		6.08	7		3.21	4	M x F x G x H + 10%	
R	Fare Gate Aisles Required	2.02	1.31	5	2.79	0.69	4	M / E	
S	ADA-Accessible Fare Gate Aisles Required	1	1	2	1	1	2		
T	Total Fare Gate Aisles Required			8			7	R + S + 10%	

Bethesda Metrorail Station Infrastructure Analysis

Input	
A	Peaking factor for alighting passengers 1.28
B	Escalator flow rate 83 ppm
C	Stair flow rate 55 ppm
D	30 min peak factor AM: 0.2453 PM: 0.2103
E	Fare gate aisle flow rate 32 ppm
F	Passengers using farecard vendor 30 %
G	Farecard vendor flow rate 2.5 transactions per min
H	Farecard vendor peaking factor 1.1

Scenario Analyzed	
Option	2: South Entrance
Entrance	North

Infrastructure Analysis									
	AM			PM			Critical		
	Alighting	Boarding	Total	Alighting	Boarding	Total			
K	Passengers, 3-hr peak	2182	3612	5794	3505	2224	5729		
L	Passengers, 30-min peak	535	886	1421	737	468	1205	K x D	
M	Boarding passengers per minute		29.53			15.59		L / 30	
	Alighting passengers per minute	45.67			62.90			A x 2L / 30	
P	Platform Escalators Required	0.55	0.36	2	0.76	0.19	2	M / B	
Q	Farecard Vendors Required		4.29	5		2.26	3	M x F x G x H + 10%	
R	Fare Gate Aisles Required	1.43	0.92	3	1.97	0.49	3	M / E	
S	ADA-Accessible Fare Gate Aisles Required	1	1	2	1	1	2		
T	Total Fare Gate Aisles Required			6			6	R + S + 10%	

Bethesda Metrorail Station Infrastructure Analysis

Input	
A	Peaking factor for alighting passengers 1.28
B	Escalator flow rate 83 ppm
C	Stair flow rate 55 ppm
D	30 min peak factor AM: 0.2453 PM: 0.2103
E	Fare gate aisle flow rate 32 ppm
F	Passengers using farecard vendor 30 %
G	Farecard vendor flow rate 2.5 transactions per min
H	Farecard vendor peaking factor 1.1

Scenario Analyzed	
Option	2: South Entrance
Entrance	South

Infrastructure Analysis									
	AM			PM			Critical		
	Alighting	Boarding	Total	Alighting	Boarding	Total			
K	Passengers, 3-hr peak	975	1611	2586	1563	993	2556		
L	Passengers, 30-min peak	239	395	634	329	209	538	K x D	
M	Boarding passengers per minute		13.17			6.96		L / 30	
	Alighting passengers per minute	20.41			28.05			A x 2L / 30	
P	Platform Escalators Required	0.25	0.16	2	0.34	0.08	2	M / B	
Q	Farecard Vendors Required		1.91	2		1.01	2	M x F x G x H + 10%	
R	Fare Gate Aisles Required	0.64	0.41	2	0.88	0.22	2	M / E	
S	ADA-Accessible Fare Gate Aisles Required	1	1	2	1	1	2		
T	Total Fare Gate Aisles Required			5			5	R + S + 10%	

Bethesda Metrorail Station Infrastructure Analysis

Input	
A	Peaking factor for alighting passengers 1.28
B	Escalator flow rate 83 ppm
C	Stair flow rate 55 ppm
D	30 min peak factor AM: 0.2453 PM: 0.2103
E	Fare gate aisle flow rate 32 ppm
F	Passengers using farecard vendor 30 %
G	Farecard vendor flow rate 2.5 transactions per min
H	Farecard vendor peaking factor 1.1

Scenario Analyzed	
Option	3: Bi-County Transitway
Entrance	North

Infrastructure Analysis									
	AM			PM			Critical		
	Alighting	Boarding	Total	Alighting	Boarding	Total			
K	Passengers, 3-hr peak	1929	3453	5382	3334	1980	5314		
L	Passengers, 30-min peak	473	847	1320	701	416	1118	K x D	
M	Boarding passengers per minute		28.23			13.88		L / 30	
	Alighting passengers per minute	40.38			59.83			A x 2L / 30	
P	Platform Escalators Required	0.49	0.34	2	0.72	0.17	2	M / B	
Q	Farecard Vendors Required		4.10	5		2.02	3	M x F x G x H + 10%	
R	Fare Gate Aisles Required	1.26	0.88	3	1.87	0.43	3	M / E	
S	ADA-Accessible Fare Gate Aisles Required	1	1	2	1	1	2		
T	Total Fare Gate Aisles Required			6			6	R + S + 10%	

Bethesda Metrorail Station Infrastructure Analysis

Input	
A	Peaking factor for alighting passengers 1.28
B	Escalator flow rate 83 ppm
C	Stair flow rate 55 ppm
D	30 min peak factor AM: 0.2453 PM: 0.2103
E	Fare gate aisle flow rate 32 ppm
F	Passengers using farecard vendor 30 %
G	Farecard vendor flow rate 2.5 transactions per min
H	Farecard vendor peaking factor 1.1

Scenario Analyzed	
Option	3: Bi-County Transitway
Entrance	South

Infrastructure Analysis									
	AM			PM			Critical		
	Alighting	Boarding	Total	Alighting	Boarding	Total			
K	1214	2359	3573	2299	1234	3533			
L	298	579	876	483	260	743	K x D		
M		19.29			8.65		L / 30		
	25.41			41.26			A x 2L / 30		
P	0.31	0.23	2	0.50	0.10	2	M / B		
Q		2.80	3		1.26	2	M x F x G x H + 10%		
R	0.79	0.60	2	1.29	0.27	3	M / E		
S	1	1	2	1	1	2			
T			5			6	R + S + 10%		

Appendix J: NFPA-130 Evaluation

WITHOUT SOUTH PORTAL		WITH SOUTH PORTAL	
Platform to mezzanine capacity		Platform to mezzanine capacity	
No. width	pim	No. width	pim
Stairs	0	1	48
Escalators*	1	48	96
Total	76.32	49	152.64
% Escalators: 100%		% Escalators: 67%	
Faregate capacity		Faregate capacity	
North Portal	400	North Portal	400
Faregates	8	Faregates	8
Service gate	1	Service gate	1
Total	481.72	Total	481.72
Mezzanine to street capacity		Mezzanine to street capacity	
North Portal	228.96	North Portal	228.96
Escalators	3	Escalators	3
South Portal		South Portal	
Stairs**	1	Stairs**	1
Total	232.96	Total	232.96
Walking time for longest route		Walking time for longest route	
North Portal	minutes	North Portal	minutes
Platform	358	Platform	242
Escalator	13	Escalator	13
Mezzanine	200	Mezzanine	200
Escalator	100	Escalator	100
Street	10	Street	10
Total	5.1	Total	4.52

* One escalator is assumed to be out of service.
 ** Elevators are assumed to be out of service for evacuation purposes.

Analysis period	AM	Option		
		Existing 2004	1 No-Build	2 S. Entr.
Entraining Load	Peak 3-hr period	3298	5120	5223
	Peak 1-hr period	1507	2339	2386
	0.4568			
	Peak 15-min period	482	748	776
	1.28			
	Headway (min)	2.5	2.5	2.5
	Entraining Load for analysis	161	249	254
	Cars per train	6	8	8
	Car capacity	120	120	120
	Link load, peak direction	720	960	960
	Off-peak direction factor	0.4	0.4	0.4
	Link load, off-peak direction	288	384	384
	Total Occupant Load	1169	1593	1598
	Time to Clear platform (min)	15.3	20.9	7.0
	Wait time at platform esc			
	North Portal	13.5	19.1	5.8
	South Portal		6.2	6.2
	Trips to portal			
	North Portal	1169	1593	1119
	South Portal		480	481
	Faregate flow time			
	North Portal	2.4	3.3	2.3
	South Portal		1.3	1.3
	Wait time at faregates			
	North Portal	0.0	0.0	0.0
	South Portal		0.0	0.0
	Street esc flow time			
	North Portal	5.1	7.0	4.9
	South Portal		6.3	6.3
	Wait time at street esc			
	North Portal	0.0	0.0	0.0
	South Portal		0.0	0.0
	Total exit time			
	North Portal	18.6	24.2	10.3
	South Portal		10.4	10.4
	Evacuation Time (min)	18.6	24.2	10.4

Analysis period	PM	Option			
		Existing 2004	1 No-Build	2 S. Entr.	3 Bi-Co
Entraining Load	Peak 3-hr period	2672	3149	3217	4285
	Peak 1-hr period	1238	1460	1491	1986
	Peak 15-min period	396	467	477	636
	Headway (min)	2.5	2.5	2.5	2.5
	Entraining Load for analysis	132	156	159	212
	Cars per train	6	8	8	8
	Car capacity	120	120	120	120
	Link load, peak direction	720	960	960	960
	Off-peak direction factor	0.4	0.4	0.4	0.4
	Link load, off-peak direction	288	384	384	384
	Total Occupant Load	1140	1500	1503	1556
	Time to Clear platform (min)	14.9	19.6	6.6	6.8
	Wait time at platform esc				
	North Portal	13.1	17.9	5.4	5.6
	South Portal			5.8	6.0
	Trips to portal				
	North Portal	1140	1500	1052	1089
	South Portal			451	467
	Faregate flow time				
	North Portal	2.4	3.1	2.2	2.3
	South Portal			1.2	1.2
	Wait time at faregates				
	North Portal	0.0	0.0	0.0	0.0
	South Portal			0.0	0.0
	Street esc flow time				
	North Portal	5.0	6.5	4.6	4.8
	South Portal			5.9	6.1
	Wait time at street esc				
	North Portal	0.0	0.0	0.0	0.0
	South Portal			0.0	0.0
	Total exit time				
	North Portal	18.2	23.0	9.9	10.1
	South Portal			10.0	10.2
	Evacuation Time (min)	18.2	23.0	10.0	10.2

WITHOUT SOUTH PORTAL				WITH SOUTH PORTAL			
Platform to mezzanine capacity				Platform to mezzanine capacity			
	No. width	pim	p/min	No. width	pim	p/min	
Stairs	0	0	1.59	0	48	1.59	76.32
Escalators*	1	48	1.59	2	96	1.59	152.64
Total			76.32				228.96
% Escalators: 100%				% Escalators: 67%			
Faregate capacity				Faregate capacity			
North Portal	8	8	50	400	8	8	50
Faregates	1	36	2.27	81.72	1	36	2.27
Service gate			481.72				481.72
Total							
South Portal	6	6	50	300	6	6	50
Faregates	1	36	2.27	81.72	1	36	2.27
Service gate			481.72				481.72
Total							
Mezzanine to street capacity				Mezzanine to street capacity			
North Portal	3	144	1.59	228.96	3	144	1.59
Escalators			228.96				228.96
South Portal							
Stairs**	1	48	1.59	76.32	1	48	1.59
Total							
Walking time for longest route				Walking time for longest route			
North Portal	ft	ft/min	minutes	ft	ft/min	minutes	
Platform	358	200	1.79	242	200	1.21	
Escalator	13	50	0.26	13	50	0.26	
Mezzanine	200	200	1	200	200	1	
Escalator	100	50	2	100	50	2	
Street	10	200	0.05	10	200	0.05	
Total			5.1			4.52	
South Portal							
Platform	150	200	0.75	150	200	0.75	
Escalator	13	50	0.26	13	50	0.26	
Mezzanine	225	200	1.125	225	200	1.125	
Stair	98	50	1.96	98	50	1.96	
Street	10	200	0.05	10	200	0.05	
Total						4.145	

* One escalator is assumed to be out of service.

** Elevators are assumed to be out of service for evacuation purposes.