



Memorandum

To: Andrew Dankworth  
Pembroke Real Estate

Date: March 15, 2019

Project #: 13862.99

From: David Black

Re: Commonwealth Pier Revitalization  
PNF Trip Generation Analysis Methodology

This memorandum summarizes VHB’s methodology, **sources** and **assumptions** for the Trip Generation Estimate presented in Section 5.4 of the Project Notification Form (PNF) submitted to the Boston Planning & Development Agency (BPDA) on February 13, 2019. Referenced data/sources are attached to this memorandum.

**5.4.1 Development Program**

Trip generation analysis is based on the program land uses summarized in Table 1-1 in the PNF.

**Table 1-1 Proposed Building Development Program**

<b>Use/Element</b>	<b>Existing GFA</b>	<b>Proposed GFA</b>	<b>Change</b>
Office	501,900	635,920 <sup>1</sup>	+134,020
Retail	12,100	45,240 <sup>2</sup>	+33,140
Exhibition Hall	132,050	-0-	(-132,050)
Event/Ballrooms	59,650	56,400	(-3,250)
<i>Sub-Total Exhibit/Event</i>	<i>191,700</i>	<i>56,400</i>	<i>(-135,300)</i>
<b>Total GFA</b>	<b>705,700</b>	<b>737,560</b>	<b>+31,860</b>

GFA Gross Floor Area, as defined by the Boston Zoning Code.  
1 Includes lobby and amenity space, and approximately 11,240 square feet of Co-working space.  
2 Includes restaurant uses.

**5.4.2 Unadjusted ITE Vehicle Trips**

Sources for unadjusted trip rates (without adjustment for local mode share and vehicle occupancy characteristics) included the Institution of Transportation Engineers (ITE) Trip Generation Manual (9<sup>th</sup> Edition) and empirical data for Commonwealth Pier, as follows:

Office - **ITE Land Use Code (LUC) 710, General Office**

Retail - **ITE Land Use Code (LUC) 826, Specialty Retail**

Exhibition Hall - **Existing Exhibition Hall attendance data, 2015 – 2017**

Event Rooms/Ballrooms - **Existing event rooms/ballrooms attendance data, 2015 – 2017**

**Assumption:** Approximately 5 and 10 percent of Exhibition Hall trip generation occurs in the morning and evening peak hours, respectively, whereas 10 percent of Event/Ballroom activity occurs during both morning and evening peak hours.

99 High Street  
10<sup>th</sup> Floor  
Boston, MA 02119

Unadjusted Project trips for an average day (ADT) and for the weekday morning (AM) and evening (PM) peak hours are presented in Table 5-2 in the PNF.

**Table 5-2 Unadjusted ITE Project Vehicle Trips<sup>1</sup>**

	<b>Existing</b>	<b>Proposed</b>	<b>Net Increase</b>
<b>Daily</b>			
Office	4,474	5,355	881
Retail	536	2,005	1,469
Exhibition Hall <sup>2</sup>	1,762	0	-1,762
Event/Ballrooms <sup>2</sup>	<u>991</u>	<u>937</u>	<u>-54</u>
<b>Total</b>	<b>7,763</b>	<b>8,297</b>	<b>534</b>
<b>Morning Peak Hour</b>			
Office	696	841	145
Retail	45	167	122
Exhibition Hall <sup>2</sup>	88	0	-88
Event/Ballrooms <sup>2</sup>	<u>99</u>	<u>94</u>	<u>-5</u>
<b>Total</b>	<b>927</b>	<b>1,101</b>	<b>174</b>
<b>Evening Peak Hour</b>			
Office	641	791	150
Retail	33	123	90
Exhibit Hall <sup>2</sup>	176	0	-176
Ballrooms <sup>2</sup>	<u>99</u>	<u>94</u>	<u>-5</u>
<b>Total</b>	<b>949</b>	<b>1,007</b>	<b>58</b>

<sup>1</sup> Total trips, arrive, and depart

<sup>2</sup> Based on attendance data - not ITE trip rates

**Assumption:** Approximately 5 and 10 percent of Exhibition Hall trip generation occurs in the morning and evening peak hours, respectively, whereas 10 percent of Event/Ballroom activity occurs during both morning and evening peak hours.

Unadjusted ITE vehicle trips are converted to person trips by applying the national Average Vehicle Occupancy (AVO) of 1.13 from the **US Census National Household Survey**.

Exhibit Hall and Event/Ballroom trips are based on an AVO of 1.52 from the **Notice of Project Change (NPC) for the Summer Street/BCEC Headquarters Hotel**.

### 5.4.3 Mode Share

Mode shares for the **office** component are based on actual mode shares for Fidelity employees currently working at Commonwealth Pier from the **Seaport Transportation Management Association (TMA) rideshare data for Fidelity**, as follows:

Vehicle:	44% Daily,	44% Peak Hour
Transit:	45% Daily,	47% Peak Hour
Walk/Bike/Other:	11% Daily,	9% Peak Hour

Mode shares for the **retail and restaurant** components are based on the **NPC for the Summer Street/BCEC Headquarters Hotel**, as follows:

Vehicle:	39% Daily,	39% Peak Hour
Transit:	34% Daily,	34%/38% (AM/PM) Peak Hour
Walk/Bike/Other:	27% Daily,	27%/23% (AM/PM) Peak Hour

Mode shares for the **event and ballroom** trips are also based on the **NPC for the Summer Street/BCEC Headquarters Hotel**, as follows:

Vehicle:	37% Daily,	37% Peak Hour
Transit:	22% Daily,	18% Peak Hour
Walk/Bike/Other:	41% Daily,	45% Peak Hour

### 5.4.4 Local Average Vehicle Occupancy

An AVO of 1.07 persons per vehicle for the office component vehicle trips is based on the **Seaport TMA rideshare data for Fidelity**.

AVOs for the retail/restaurant and event/ballroom trips are based on the **NPC for the Summer Street/BCEC Headquarters Hotel**, as follows:

Retail/Restaurant:	1.49
Event/Ballroom:	1.52

### 5.4.5 Adjusted Project Vehicle Trips

The net new Project trips (Proposed – Existing) are presented in Table 5-3.

**Table 5-3 Trip Generation Summary**

		Vehicle			Transit			Walk/Bike		
		Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
<b>Office</b>	Entering	205	60	12	244	68	14	55	13	3
	Exiting	205	8	58	244	9	66	55	2	13
	<b>Total</b>	<b>410</b>	<b>68</b>	<b>70</b>	<b>488</b>	<b>77</b>	<b>80</b>	<b>110</b>	<b>15</b>	<b>26</b>
<b>Retail</b>	Entering	202	17	12	282	23	17	224	18	10
	Exiting	202	19	15	282	24	22	224	19	13
	<b>Total</b>	<b>404</b>	<b>36</b>	<b>27</b>	<b>564</b>	<b>47</b>	<b>39</b>	<b>448</b>	<b>37</b>	<b>23</b>
<b>Exhibition Hall</b>	Entering	-326	-16	-33	-295	-12	-23	-549	-30	-61
	Exiting	-326	-16	-33	-295	-12	-23	-549	-30	-61
	<b>Total</b>	<b>-652</b>	<b>-32</b>	<b>-66</b>	<b>-590</b>	<b>-24</b>	<b>-46</b>	<b>-1098</b>	<b>-60</b>	<b>-122</b>
<b>Event/ Ballrooms</b>	Entering	-10	-1	-1	-9	-1	-1	-17	-2	-2
	Exiting	-10	-1	-1	-9	-1	-1	-17	-2	-2
	<b>Total</b>	<b>-20</b>	<b>-2</b>	<b>-2</b>	<b>-18</b>	<b>-2</b>	<b>-2</b>	<b>-34</b>	<b>-4</b>	<b>-4</b>
<b>Total</b>	Entering	71	60	-9	203	78	7	-287	-1	-50
	Exiting	71	10	39	20	21	64	-287	-11	-37
	<b>Total</b>	<b>142</b>	<b>70</b>	<b>30</b>	<b>406</b>	<b>99</b>	<b>71</b>	<b>-574</b>	<b>-12</b>	<b>-87</b>

# **Commonwealth Pier Revitalization**

## **PNF Trip Generation Analysis Methodology Memorandum**

**VHB, March 15, 2019**

**ATTACHMENTS**

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
 Existing General Office Building Trip Gen Spreadsheet

ITE TRIP GENERATION WORKSHEET  
 (9th Edition, Updated 2012)

LANDUSE: General Office Building  
 LANDUSE CODE: 710

Independent Variable --- 1,000 Sq. Feet Gross Floor Area

JOB NAME: Commonwealth Pier Revitalization FLOOR AREA (KSF): 501.9  
 JOB NUMBER: 13862.00

**WEEKDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	79	0.81	11.03	3.58	28.80	197	0	1,300	50%	50%
AM PEAK	218	0.83	1.56	0.60	5.98	222	0	2,500	88%	12%
PM PEAK	236	0.82	1.49	0.49	6.39	215	0	2,500	17%	83%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	5,536	2,768	2,768	4474	2237	2237
AM PEAK	783	689	94	696	612	83
PM PEAK	748	127	621	641	109	532

**SATURDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	18	0.64	2.46	0.59	14.67	75	0	190	50%	50%
PEAK OF GENERATOR	11		0.43	0.16	1.77	90	0	190	54%	46%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	1,235	617	617	1,051	525	525
PEAK OF GENERATOR	216	117	99			

**SUNDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	18		1.05	0.19	7.33	75	0	190	50%	50%
PEAK OF GENERATOR	11		0.16	0.06	1.37	90	0	190	58%	42%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	527	263	263			
PEAK OF GENERATOR	80	47	34			

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
 Proposed General Office Building Trip Gen Spreadsheet

ITE TRIP GENERATION WORKSHEET  
 (9th Edition, Updated 2012)

LANDUSE: General Office Building  
 LANDUSE CODE: 710

Independent Variable --- 1,000 Sq. Feet Gross Floor Area

JOB NAME: Commonwealth Pier Revitalization FLOOR AREA (KSF): 635.9  
 JOB NUMBER: 13862.00

**WEEKDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	79	0.81	11.03	3.58	28.80	197	0	1,300	50%	50%
AM PEAK	218	0.83	1.56	0.60	5.98	222	0	2,500	88%	12%
PM PEAK	236	0.82	1.49	0.49	6.39	215	0	2,500	17%	83%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	7,014	3,507	3,507	5355	2678	2678
AM PEAK	992	873	119	841	740	101
PM PEAK	948	161	786	791	134	656

**SATURDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	18	0.64	2.46	0.59	14.67	75	0	190	50%	50%
PEAK OF GENERATOR	11		0.43	0.16	1.77	90	0	190	54%	46%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	1,564	782	782	1,323	661	661
PEAK OF GENERATOR	273	148	126			

**SUNDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	18		1.05	0.19	7.33	75	0	190	50%	50%
PEAK OF GENERATOR	11		0.16	0.06	1.37	90	0	190	58%	42%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	668	334	334			
PEAK OF GENERATOR	102	59	43			

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
**Existing Specialty Retail Trip Gen Spreadsheet**

ITE TRIP GENERATION WORKSHEET  
 (9th Edition, Updated 2012)

LANDUSE: Specialty Retail Center  
 LANDUSE CODE: 826

Independent Variable --- 1,000 Sq. Feet Gross Floor Area

JOB NAME: Commonwealth Pier Revitalization FLOOR AREA (KSF): 12.1  
 JOB NUMBER: 13866.00

**WEEKDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	4	0.69	44.32	21.30	64.21	25	15	43	50%	50%
AM PEAK	4	0.90	3.69	5.33	14.80	60	10	150	48%	52%
PM PEAK (ADJACENT ST)	5	0.98	2.71	2.03	5.16	69	10	210	44%	56%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	536	268	268	555	278	278
AM PEAK (ADJACENT ST)	45	21	23	175	84	91
PM PEAK (ADJACENT ST)	33	14	18	51	22	28

**SATURDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	42.04	22.57	54.47	28	17	44	50%	50%
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	509	254	254	NA	NA	NA
PEAK OF GENERATOR	NA	NA	NA	NA	NA	NA

**SUNDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	20.43	6.96	32.82	28	17	43	50%	50%
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	247	124	124	NA	NA	NA
PEAK OF GENERATOR	NA	NA	NA	NA	NA	NA



Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
 Proposed Specialty Retail Trip Gen Spreadsheet

ITE TRIP GENERATION WORKSHEET  
 (9th Edition, Updated 2012)

LANDUSE: Specialty Retail Center  
 LANDUSE CODE: 826

Independent Variable --- 1,000 Sq. Feet Gross Floor Area

JOB NAME: Commonwealth Pier Revitalization FLOOR AREA (KSF): 45.2  
 JOB NUMBER: 13866.00

**WEEKDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	4	0.69	44.32	21.30	64.21	25	15	43	50%	50%
AM PEAK	4	0.90	3.69	5.33	14.80	60	10	150	48%	52%
PM PEAK (ADJACENT ST)	5	0.98	2.71	2.03	5.16	69	10	210	44%	56%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	2,005	1,002	1,002	1973	986	986
AM PEAK (ADJACENT ST)	167	80	87	338	162	176
PM PEAK (ADJACENT ST)	123	54	69	130	57	73

**SATURDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	42.04	22.57	54.47	28	17	44	50%	50%
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	1,902	951	951	NA	NA	NA
PEAK OF GENERATOR	NA	NA	NA	NA	NA	NA

**SUNDAY**

RATES:	# Studies	R <sup>2</sup>	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	20.43	6.96	32.82	28	17	43	50%	50%
PEAK OF GENERATOR	--	--	--	--	--	--	--	--	--	--

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	924	462	462	NA	NA	NA
PEAK OF GENERATOR	NA	NA	NA	NA	NA	NA

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
**Existing Exhibition Hall Trip Gen Spreadsheet**

Existing Exhibition Hall Calculations:

1,465,659 attendees (3 years)  
 488,553 attendees per year  
 1,339 attendees per day

2,678 person trips per day (attendees x 2)  
 1,762 un-adjusted ITE vehicle trips based on local AVO of 1.52

1,762 unadjusted daily vehicle trips EX  
 88 unadjusted AM vehicle trips EX  
 176 unadjusted PM vehicle trips EX

Trip Rates:

Existing	132.05 ksf
Daily	13.34223 person trips per ksf
AM Peak	0.667112 person trips per ksf
PM Peak	1.334223 person trips per ksf

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
**Proposed Exhibition Hall Trip Gen Spreadsheet**

Proposed Exhibition Hall Calculations:

1,465,659 attendees (3 years)  
 488,553 attendees per year  
 1,339 attendees per day

2,678 person trips per day (attendees x 2)  
 134 person trips during morning peak  
 268 person trips during evening peak

TRANSIT TRIPS (22% DAILY MODE SHARE / 18% PEAK HOUR MODE SHARE)

-295 Daily In	-12 AM In	-24 PM In
-295 Daily Out	-12 AM Out	-24 PM Out
-590 Total Daily	-24 Total AM	-48 Total PM

WALK/BIKE TRIPS (41% DAILY MODE SHARE / 45% PEAK HOUR MODE SHARE)

-549 Daily In	-30 AM In	-60 PM In
-549 Daily Out	-30 AM Out	-60 PM Out
-1098 Total Daily	-60 Total AM	-120 Total PM

VEHICLE TRIPS (37% DAILY MODE SHARE / 37% PEAK HOUR MODE SHARE)

-326 Daily In	-16 AM In	-33 PM In
-326 Daily Out	-16 AM Out	-33 PM Out
-652 Total Daily	-32 Total AM	-66 Total PM

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
**Existing Event/Ballroom Trip Gen Spreadsheet**

Existing Event/Ballrooms Calculations:

824,466 attendees (3 years)  
 274,822 attendees per year  
 753 attendees per day

1,506 person trips per day (attendees x 2)  
 991 un-adjusted ITE vehicle trips based on local AVO of 1.52

991 unadjusted daily vehicle trips EX  
 99 unadjusted AM vehicle trips EX  
 99 unadjusted PM vehicle trips EX

Trip Rates:

Existing	59.65 ksf
Daily	16.61005 person trips per ksf
AM Peak	1.661005 person trips per ksf
PM Peak	1.661005 person trips per ksf

TRANSIT TRIPS (22% DAILY MODE SHARE / 18% PEAK HOUR MODE SHARE)

-109 Daily In	-9 AM In	-9 PM In
-109 Daily Out	-9 AM Out	-9 PM Out
-218 Total Daily	-18 Total AM	-18 Total PM

WALK/BIKE TRIPS (41% DAILY MODE SHARE / 45% PEAK HOUR MODE SHARE)

-203 Daily In	-22 AM In	-22 PM In
-203 Daily Out	-22 AM Out	-22 PM Out
-406 Total Daily	-44 Total AM	-44 Total PM

VEHICLE TRIPS (37% DAILY MODE SHARE / 37% PEAK HOUR MODE SHARE)

-121 Daily In	-12 AM In	-12 PM In
-121 Daily Out	-12 AM Out	-12 PM Out
-122 Total Daily	-24 Total AM	-24 Total PM

Commonwealth Pier Revitalization  
 PNF Trip Generation Analysis Methodology - Appendix  
**Proposed Event/Ballroom Trip Gen Spreadsheet**

Proposed Event/Ballrooms Calculations: 56.41 KSF

Trip Rates (from existing data):

Daily	16.61005 person trips per ksf
AM Peak	1.661005 person trips per ksf
PM Peak	1.661005 person trips per ksf

937 person trips per day (attendees x 2)  
 94 person trips during morning peak  
 94 person trips during evening peak

TRANSIT TRIPS (22% DAILY MODE SHARE / 18% PEAK HOUR MODE SHARE)

103 Daily In	8 AM In	8 PM In
103 Daily Out	8 AM Out	8 PM Out
106 Total Daily	16 Total AM	16 Total PM

WALK/BIKE TRIPS (41% DAILY MODE SHARE / 45% PEAK HOUR MODE SHARE)

192 Daily In	21 AM In	21 PM In
192 Daily Out	21 AM Out	21 PM Out
384 Total Daily	42 Total AM	42 Total PM

VEHICLE TRIPS (37% DAILY MODE SHARE / 37% PEAK HOUR MODE SHARE)

114 Daily In	11 AM In	11 PM In
114 Daily Out	11 AM Out	11 PM Out
228 Total Daily	22 Total AM	22 Total PM

**Commonwealth Pier Revitalization  
PNF Trip Generation Analysis Methodology - Appendix  
Fidelity data from 2016 TMA Survey**

Primary Mode of Transportation During a Typical Work Day	Number	Percent
MBTA Commuter Rail	145	21%
MBTA Subway	110	16%
MBTA Bus	34	5%
MBTA Commuter Ferry	22	3%
Car (drive alone)	274	39%
Carpool (2 or more people in the vehicle)	30	4%
Vanpool (5 or more people in the vehicle)	8	1%
Walk	54	8%
Bike/Hubway	14	2%
Telecommute	5	1%
Motorcycle/Scooter	1	0%
<b>TOTAL</b>	<b>697</b>	

Distribution of Subway Riders	Number of Trips Using Said Line	Percent of Riders Using Said Line
Orange Line	25	13%
Red Line	81	41%
Green Line	22	11%
Blue Line	10	5%
Silver Line	60	30%
<b>Total Legs</b>	<b>198</b>	
<b>Total Trips</b>	<b>110</b>	

Peak Hour	Number of Trips	Hour	Peak?
Before 6:30	18	6:00 - 7:00	81
6:30 - 7:00	63	6:30 - 7:30	135
7:00 - 7:30	72	7:00 - 8:00	72
8:00 - 8:30	222	7:30 - 8:30	336
8:30	114	8:00 - 9:00	490
8:30 - 9:00	154	8:30 - 9:30	268
After 9:30	10	9:00 - 10:00	10
11:30	44		
<b>TOTAL</b>	<b>697</b>		

\* Peak Hour is 8:00 - 9:00

Primary Mode of Transportation During Peak Arrival Hour of a Typical Work Day	Number	Percent
MBTA Commuter Rail	106	22%
MBTA Subway	74	15%
MBTA Bus	27	6%
MBTA Commuter Ferry	18	4%
Car (drive alone)	197	40%
Carpool (2 or more people in the vehicle)	20	4%
Vanpool (5 or more people in the vehicle)	6	1%
Walk	28	6%
Bike/Hubway	10	2%
Telecommute (work from a remote location not in the South Boston Waterfront)	4	1%
Motorcycle/Scooter	0	0%
<b>TOTAL</b>	<b>490</b>	

Distribution of Subway Riders	Number of Trips Using Said Line	Percent of Riders Using Said Line
Orange Line	15	11%
Red Line	57	43%
Green Line	16	12%
Blue Line	7	5%
Silver Line	39	29%
<b>Total Legs</b>	<b>134</b>	
<b>Total Trips</b>	<b>74</b>	

For projects located in Area 8, this analysis uses BTB mode shares for Area 8 with the exception of the 100 Acres parcels, for which the analysis uses the mode shares developed by others as part of the 100 Acres master planning effort.

For Area 13, mode shares for the South Boston waterfront sub-area were developed to accurately reflect transit options of the future and to maintain consistency with previous studies. These mode shares, which both BTB and the BRA have reviewed and deemed appropriate, have been applied to the trip generation for all Mid-term No-Build projects located in the South Boston waterfront sub-area. For comparison, BTB Area 13 mode shares are also included in Table 3-11.

**Table 3-11 Mode Shares by Time of Day**

		South Boston Waterfront Area			BTB Area 13		
		Walk/Bike Share	Transit Share	Vehicle Share	Walk/Bike Share	Transit Share	Vehicle Share
<i>Daily</i>							
Residential	In	39%	35%	26%	34%	19%	47%
	Out	39%	35%	26%	34%	19%	47%
Hotel	In	41%	22%	37%	43%	5%	52%
	Out	41%	22%	37%	43%	5%	52%
Cultural	In	28%	42%	30%	43%	5%	52%
	Out	28%	42%	30%	43%	5%	52%
School	In	28%	42%	30%	43%	5%	52%
	Out	28%	42%	30%	43%	5%	52%
Office	In	20%	49%	31%	22%	21%	57%
	Out	20%	49%	31%	22%	21%	57%
Retail/Restaurant	In	27%	34%	39%	43%	5%	52%
	Out	27%	34%	39%	43%	5%	52%
<i>a.m. Peak Hour</i>							
Residential	In	39%	35%	26%	36%	16%	49%
	Out	39%	35%	26%	42%	24%	34%
Hotel	In	43%	20%	37%	43%	4%	53%
	Out	48%	15%	37%	54%	6%	40%
Cultural	In	0%	62%	38%	43%	4%	53%
	Out	0%	62%	38%	54%	6%	40%
School	In	29%	41%	30%	43%	4%	53%
	Out	31%	40%	29%	54%	6%	40%
Office	In	12%	55%	33%	23%	17%	60%
	Out	48%	25%	27%	29%	27%	44%
Retail/Restaurant	In	0%	62%	38%	43%	4%	53%
	Out	15%	46%	39%	54%	6%	40%
<i>p.m. Peak Hour</i>							
Residential	In	39%	35%	26%	42%	24%	34%
	Out	39%	35%	26%	36%	16%	49%
Hotel	In	48%	15%	37%	54%	6%	40%
	Out	44%	19%	37%	43%	4%	53%

**Table 3-11 Mode Shares by Time of Day (Continued)**

		South Boston Waterfront Area			BTD Area 13		
		Walk/Bike Share	Transit Share	Vehicle Share	Walk/Bike Share	Transit Share	Vehicle Share
<i>p.m. Peak Hour</i>							
Cultural	In	25%	44%	31%	54%	6%	40%
	Out	28%	42%	30%	43%	4%	53%
School	In	31%	40%	29%	54%	6%	40%
	Out	28%	42%	30%	43%	4%	53%
Office	In	34%	37%	29%	29%	27%	44%
	Out	11%	56%	33%	23%	17%	60%
Retail/Restaurant	In	23%	38%	39%	54%	6%	40%
	Out	23%	38%	39%	43%	4%	53%

**3.3.1.5 Trip Generation**

The study team estimated trip generation for each of the six key development projects using the building program information obtained from the City, as previously shown in Table 3-11. The trip generation was based on rates derived from ITE’s *Trip Generation* (7th edition, 2003) fitted curve equations and/or average trip rates, as appropriate, using the following ITE land use codes (LUCs):

**LUC 110 — General Light Industrial.** Light industrial facilities emphasize activities other than manufacturing and typically have minimal office space. Calculations of the number of trips use ITE’s average rate per 1,000 square feet.

**LUC 220 — Residential Apartment.** Apartments are defined as rental dwelling units in the same building as at least three other such units. Calculations of the number of trips use ITE’s average rate per number of dwelling units.

**LUC 230 — Residential Condominium/Townhouse.** This land use code refers to units with single-family ownership that have at least one other single-family-owned unit within the same building structure. Calculation of the number of vehicle trips uses ITE’s average rate per dwelling unit.

**LUC 310 — Hotel.** The hotel land use code is defined as a place of lodging that provides sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention centers, limited recreational facilities (e.g., pool, fitness room), and/or other retail services or shops. Calculation of the number of vehicle trips uses ITE’s average rate per room.

**LUC 710 — General Office.** General office is defined as an office building containing multiple tenants. An office building typically contains a mixture of professional services. Calculations of the number of vehicle trips use ITE’s average rate per 1,000 square feet.