4A. Regional Transportation Effects and Modeling

4A.1 OVERVIEW AND CONTEXT

This subchapter describes the reasonably expected effects of implementing the CBD Tolling Alternative on the regional transport system, including travel demand and mode choice. It provides a description of the Best Practice Model (BPM)—the travel demand forecasting model that the New York Metropolitan Transportation Council (NYMTC) developed and maintains—and explains how the model was used to forecast the reasonably expected effects of the Project. The model results show changes in the region's travel characteristics, and specifically how trips would be made to, from, through, and around the Manhattan CBD, including any changes in the total number of trips, routes, and mode choice. The analysis of traffic impacts and mitigation, effects on transit usage, parking, pedestrians, and bicycle usage are based on outputs from these BPM forecasts, and they are evaluated in detail in other subchapters of **Chapter 4, "Transportation."**

4A.2 METHODOLOGY

This analysis is based on a compilation of existing travel characteristics and forecasts of changes in travel demand using the BPM, which is the primary tool used to analyze the effects of large-scale regional transportation projects including, the New York metropolitan area's Federally recognized Regional Transportation Plan, PANYNJ Bus Terminal Redesign, and New NY Bridge Project. The model has been adopted by NYMTC's member agencies for use in regional transportation planning analyses, and it is the Federally recognized transportation forecasting tool for the region. Transportation findings from the BPM were augmented with information from academic studies and observed changes from similar cordon tolling programs in London, England, and Stockholm, Sweden.[1]

4A.2.1 Overview of Best Practice Model

The NYMTC version of the BPM used for this study was developed for NYMTC's 2017 Regional Transportation Plan and Federal air quality conformity determination. It includes the 28 counties that this EA uses for the study area (**Figure 4A-1**). NYMTC regularly updates and calibrates the BPM as part of its regional transportation planning responsibilities, including updating the model's demographic data, future employment and population projections, and changes in the underlying transportation network.

[1] London and Stockholm were chosen as comparative cities based on the scale and scope of their congestion charging programs. Congestion charging programs in these cities offer the most similarities to the proposed CBD Tolling Program. Additional cities in Europe and Asia (e.g., Milan [Italy] and Singapore) have congestion charging programs, but the programs in these cities differ in substantive ways from the proposed CBD Tolling Program. For example, the Milan program bans late-model high-pollution vehicles from the charging zone altogether. Social context is also important for comparative analysis where differing government and social norms may result in contrasting outcomes from a congestion charge.

Figure 4A-1. The Best Practice Model 28-County Region

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network
Note: The shades of purple, green, and pink reinforce the county boundaries for New York, New Jersey, and Connecticut, respectively.

The BPM includes roadway and transit networks and land use data (observed and forecast) for 2010,[2] 2017, 2020, and 2045. For the Project, NYMTC's 2020 BPM roadway and transit networks and land use data were used as the basis to forecast the effects of the CBD Tolling Alternative in the opening year (2023) because it provides the most recent pre-COVID-19-pandemic data, including but not limited to 2019 traffic counts. In addition, as described in **Chapter 1, "Introduction,"** pre-COVID-19-pandemic baseline conditions are considered the appropriate way to define near-term 2023 No Action Alternative conditions as the region rebounds and to forecast to 2045, a horizon year that reflects a long-term condition not biased by periodic disruptions.[3, 4] The roadway networks from NYMTC were updated to include projects that have been implemented or constructed but were not included in the original BPM roadway networks from NYMTC (e.g., two-way tolling on the Verrazzano-Narrows Bridge, reduced lane capacity on the Brooklyn-Queens Expressway near Brooklyn Heights, and bike lane projects like the Brooklyn Bridge bike lane) in the opening (2023) and horizon (2045) years.

The BPM is an activity-based model that simulates the number and types of journeys[5] made on an average weekday in the region by each resident. The BPM does not model or forecast weekend travel or other atypical days such as Gridlock Alert days.[6] This creates a realistic analysis that is based on the various decisions (e.g., mode, purpose, destination, frequency, location of intermediate stops, and time of day) made by travelers between these locations informed by employment and demographic data from NYMTC. The BPM generates over 28.8 million journeys per average weekday from the 28-county region's 8.2 million households.

For vehicular modes, the BPM roadway networks contain more than 61,000 links that include local streets, interstates, and freeways, and more than 4,600 Traffic Analysis Zones (TAZs).[7] For each roadway link, the BPM roadway networks contain information on the number of lanes, functional class,[8] speed, truck usage, and toll collection. The opening year and horizon year roadway and transit networks are used to estimate travel times and distances between all parts of the region—from each TAZ to every other TAZ. The roadway and transit networks are also used to assign travel demand flows to roadways and transit routes to produce roadway volumes, speeds, and transit boardings and alightings. Roadway volumes can be reported by the following vehicle classes:

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2 This version of the BPM is calibrated to 2010 conditions because the regional household travel survey upon which the BPM is based was conducted in 2010.

3 The 2023 and 2045 transportation networks for the No Action Alternative include the planned improvements documented in the Regional Transportation Plan, adopted in June 2017. Source: New York Metropolitan Transportation Council. June 2017. *Plan 2045: Maintaining the Vision for a Sustainable Region*.

4 The horizon year is typically defined as the year for which a transportation plan describes the envisioned transportation system. This is typically the last year of a metropolitan region's 20-year regional transportation plan. The last year analyzed in the New York Metropolitan Transportation Council's adopted 2017 Regional Transportation Plan is 2045.

5 A journey is defined as round-trip travel between principal locations like home and anchor locations such as work, school, retail, or entertainment. The BPM also estimates related trips linked to the anchor travel location (e.g., intermediate stops such as a day care center or gym).

6 Most regional travel demand models in the United States forecast only average weekday travel behavior. In the New York region, weekend travel is less than weekday travel. To derive annual estimates of travel and air quality metrics, annualization factors derived from observed data are used to extrapolate average weekday trends to average annual trends.

7 TAZs are approximately the size of U.S. Census Block Groups in the BPM. TAZs are used to aggregate travel origins and destinations to computationally manageable sizes for roadway and transit assignment procedures.

8 Functional classification describes roadway design, including its speed, capacity, and relationship to existing and future land use development.

- Single-occupancy vehicles[9, 10]
- High-occupancy vehicles (HOV) (of a minimum of two or more occupants)
- Taxis (including FHVs)[11]
- Medium trucks, heavy trucks, and commercial vans
- Buses[12]

For transit modes, the BPM contains all the routes, stations/stops, service frequencies, and fares for transit service throughout the metropolitan region, including the following:

- MTA subway, bus, and commuter rail
- NJ Transit Corporation (NJ TRANSIT) commuter rail, light rail, and bus
- Port Authority Trans-Hudson (PATH) rail service
- Ferries
- Other public buses such as the Westchester Bee-Line and Nassau Inter-County Express
- Private transit bus operators[13]

The model also generates an estimate of travel demand based on how people travel to their destination and from their origin (walk,[14] drive) or any transfers between routes for commuter rail, subway, light rail, bus, ferry, and tramway.

4A.2.2 Modeling of Toll Rates

Because the actual tolls will be determined through a process subsequent to the completion of this EA, the BPM modeling for this effort makes use of seven tolling scenarios within the CBD Tolling Alternative, each with a different set of variable toll rates and different exemptions, discounts, and/or crossing credits. Tolls are an explicit model input. Through this set of tolling scenarios, the modeling captures the full range of potential effects from the Project (see **Table 2-3 and Table 2-5** in **Chapter 2, "Project Alternatives,"** for a description of the tolling scenarios evaluated).[15] In addition, the BPM represents the cost sensitivity of

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9 Occupancy in this context refers to the number of people in the vehicle during the trip. It is not a reference to the occupant capacity of the vehicle.

10 In the BPM, motorcycles are considered personal vehicles, and they are included in the model's representation of single- and high-occupancy vehicles along with cars, trucks, sport-utility vehicles, and other personal vehicles. Motorcycles comprise less than 0.5 percent of overall traffic entering the Manhattan CBD at TBTA facilities.

11 FHVs provide pre-arranged transportation. There are four classes of FHV services: Community Cars (Liveries), Black Cars, Luxury Limousines, and High Volume For-Hire Services. Prominent examples of High Volume For-Hire Services include Lyft, Uber, and Via.

12 Bus volumes in the BPM reflect the estimated number of transit buses on a roadway link based on transit operating schedules.

13 The BPM includes private bus operators (not jitneys) that provide contracted transit services to a public transit agency, for example, Suburban Transit service on behalf of NJ TRANSIT in Middlesex County. The BPM also includes private, regular commuter services to Manhattan like commuter express services from New Jersey, Long Island, and the New York counties north of New York City (e.g., Academy, Lakeland, Coach USA).

14 Walk includes all nonmotorized access to the transit system including bicycles.

15 As described in **Chapter 2, "Project Alternatives,"** this Environmental Assessment (EA) evaluates multiple tolling scenarios to identify the range of potential effects that would occur from implementing the Project. These tolling scenarios have a range of different toll amounts and toll structures, such as crossing credits, discounts, and/or exemptions. Ultimately, the TBTA Board will determine the toll amounts and toll structure to be implemented.

various travelers in response to tolling. The assumptions that drive these sensitivities are described in **Appendix 4A.1, "Transportation: Section 4A.1-7. Value of Time."**

4A.3 EVALUATING THE PROJECT

Results from the BPM for the No Action Alternative and the seven tolling scenarios were used to evaluate the effects of the CBD Tolling Alternative. This subchapter focuses on key findings from the BPM analysis and regional changes in travel behavior across the 28 counties included in the BPM (see **Figure 4A-1**). More detailed results on local roads, highways, local intersections, transit, bicycles, pedestrians, and parking are described and discussed in **Subchapter 4B through Subchapter 4E** across the 28-county region.

A detailed summary of the BPM outputs for the No Action Alternative and CBD Tolling Alternative (including the tolling scenarios) is provided in **Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables,"**. In all tables presented here, unless noted, the term "vehicle" in this chapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs,[16] buses, and trucks.

Three metrics were used to summarize and compare the forecasts of the No Action Alternative and the CBD Tolling Alternative in this subchapter:

1. **Daily Vehicles Entering the Manhattan CBD:** This metric conveys the change in the number of vehicles that would cross into the Manhattan CBD as a result of the different tolling scenarios, and how those changes would vary geographically. **Table 4A-1**, **Table 4A-4**, **Table 4A-5**, **Table 4A-11**, and **Table 4A-12** report the number of vehicle crossings into the Manhattan CBD as described below:
   - New Jersey Crossings: Lincoln and Holland Tunnels
   - Brooklyn Crossings: Williamsburg, Manhattan, and Brooklyn Bridges and the Hugh L. Carey Tunnel
   - Queens Crossings: Ed Koch Queensboro Bridge[17] and Queens-Midtown Tunnel
   - 60th Street Crossings in Manhattan (divided into three groupings):
     - East Side avenues
     - West Side avenues
     - Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A (combined volumes)[18]

[16] Since the BPM does not distinguish between taxis and FHVs, taxi and FHV maximum CBD toll rates were blended to evaluate policy differences in tolling. **Appendix 4A.1, "Transportation: Implementation of Tolls in the Best Practice Model,"** provides a more detailed discussion of modeling taxi and FHV travel.

[17] The Manhattan-bound upper ramp of the Queensboro Bridge is considered part of the Queens-inbound crossing locations to the Manhattan CBD, and it is also reported in the 60th Street outbound crossing locations. Currently, all Manhattan-bound traffic enters the bridge via the northern upper-level lanes of the Ed Koch Queensboro Bridge and enters the Manhattan CBD but immediately exits the Manhattan CBD on the northbound ramp to 62nd Street (except for AM peak-period HOV lanes that use the southern lanes, typically reserved for outbound traffic, which enter the Manhattan CBD at 59th Street). The Queensboro Bridge entrances and exits are consistent with the NYMTC *Hub Bound Travel Data Report*. All traffic using the northern upper roadway of the Ed Koch Queensboro Bridge to access Manhattan north of 60th Street would not be subject to CBD tolling in the tolling scenarios modeled in this EA.

[18] Vehicles traveling south of 60th Street on the West Side Highway/Route 9A and the FDR Drive would not be charged a CBD toll if they remain on these roadways and do not enter the Manhattan CBD.

2. Daily VMT: The analysis conveys the change in the aggregate level of driving or traffic that would occur within the BPM's modeled area. Table 4A-2, Table 4A-6, Table 4A-7, Table 4A-13, and Table 4A-14 report the quantity of VMT (i.e., total miles traveled by vehicles) forecast in each reporting area. Changes in VMT are correlated with changes in level of service, air quality, and noise discussed in Subchapter 4B, "Highways and Local Intersections," Chapter 10, "Air Quality," and Chapter 12, "Noise."

   Figure 4A-2 displays the reporting subareas used within New York City (NYC Subareas 1, 2, and 3). The subareas are defined based on their proximity to the Manhattan CBD entry and exit locations. The Manhattan CBD comprises the surface streets within the CBD, referred to below as the CBD Core and the highways that circumnavigate the surface streets, referred to as the Peripheral Highways. The Peripheral Highways include:

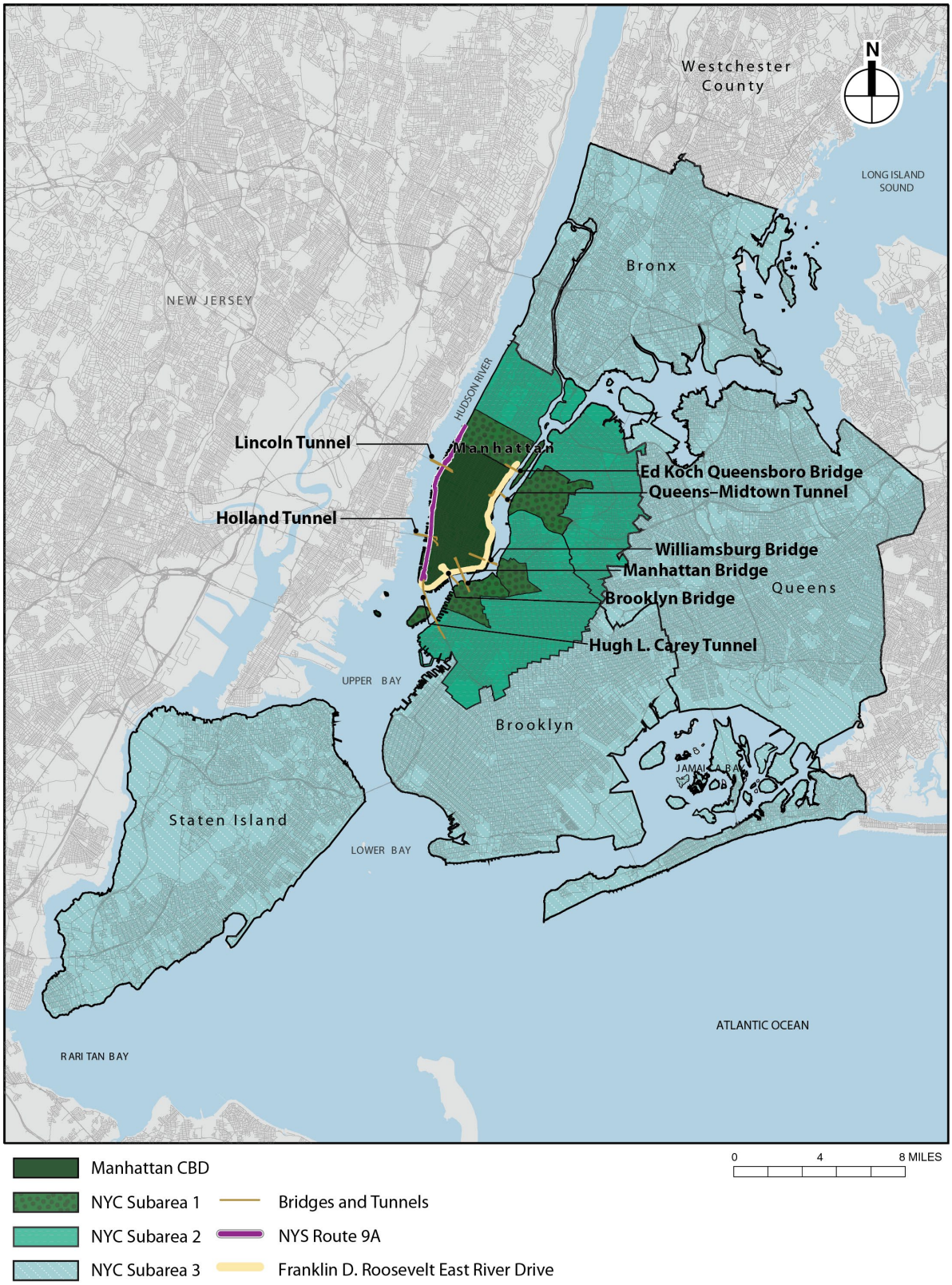
   – West Side Highway/Route 9A south of 60th Street
   – FDR Drive south of 60th Street, including the Battery Park Underpass
   – Lincoln, Holland, Hugh L. Carey, and Queens-Midtown Tunnels
   – Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridges

   Outside New York City, VMT is reported for the remaining seven New York counties that are inside the BPM boundary: Nassau County and Suffolk County on Long Island and five counties to the north of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester). In Connecticut, VMT is reported for Fairfield and New Haven Counties. In New Jersey, VMT is reported for the 14 northeastern counties. (See Figure 4A-1 for a map of the 28 counties in the BPM.)

3. Mode Shares for Manhattan CBD-Related Person-Journeys. The analysis conveys the share of journeys that would be made by transit, auto, and nonmotorized (walk and bike) travel modes related to the Manhattan CBD. Manhattan CBD-related journeys are those with one or both ends of the journey inside the Manhattan CBD. These metrics are reported in Table 4A-3, Table 4A-8, and Table 4A-15.

   Table 4A-8 and Table 4A-15 report changes in the percentage share of transit*[, auto, and nonmotorized]* journeys that would originate outside and travel into the Manhattan CBD; journeys that would originate inside and travel out of the Manhattan CBD; and journeys that would be completely internal to the Manhattan CBD. Transit share reported is the number of people who would make a transit journey—including via subway, commuter rail, buses, ferries, and trams—as a percentage of people who would travel by all motorized vehicles and nonmotorized modes such as walking and biking.

Figure 4A-2. Reporting Locations in New York City for Additional Vehicle-Miles Traveled



Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Roadway Network

4A.4 ENVIRONMENTAL CONSEQUENCES

4A.4.1 No Action Alternative

This section presents the predicted changes in regional travel patterns between the opening year (2023) and the horizon year (2045) for the No Action Alternative. The 2023 and 2045 transportation networks for the No Action Alternative include the planned improvements documented in the Regional Transportation Plan, adopted in June 2017.[19] Additional network updates (described in **Appendix 4A.1, "Transportation: Implementation of Tolls in the Best Practice Model," Table 4A.1-3**) were implemented to reflect existing conditions as of September 2021.[20] Land use, population, and employment assumptions come from the NYMTC Socioeconomic and Demographic Forecasts. NYMTC routinely develops these forecasts for the region, which include population, households, employment, and labor force projections.

With these assumptions, BPM-generated forecasts show a 4.8 percent increase (about 0.25 percent per year) in daily vehicles entering the Manhattan CBD (**Table 4A-1**) between 2023 and 2045. The largest absolute increase would occur on the 60th Street crossings, with an additional 12,410 vehicle trips.

Table 4A-1. Forecast Growth in Daily Vehicles Entering the Manhattan CBD: No Action Alternative

CROSSING LOCATIONS	OPENING YEAR (2023)	HORIZON YEAR (2045)	DIFFERENCE	PERCENTAGE CHANGE
60th Street	**276,466**	**288,876**	**12,410**	**4.5%**
FDR Drive and West Side Highway/Route 9A[1]	161,696	168,499	6,803	4.2%
West Side Avenues	28,026	31,920	3,894	13.9%
East Side Avenues[2]	86,744	88,457	1,713	2.0%
Queens	**142,596**	**154,348**	**11,752**	**8.2%**
Brooklyn	**187,486**	**192,604**	**5,118**	**2.7%**
New Jersey	**109,602**	**114,867**	**5,265**	**4.8%**
TOTAL	**716,150**	**750,695**	**34,545**	**4.8%**

[1] Vehicle volumes entering the Manhattan CBD reported in this table for the FDR Drive and the West Side Highway/Route 9A and are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the FDR Drive and the West Side Highway/Route 9A to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. The volumes here are reported in this manner to be consistent with counts published in the annual NYMTC *Hub Bound Travel Data Report*.

[2] The larger volumes in East Side avenues result from some Queensboro Bridge traffic being counted twice. The NYMTC *Hub Bound Travel Data Report* cordon includes the upper inbound roadway as a Manhattan CBD outbound tolling zone boundary. Any traffic that would then circle back into the Manhattan CBD via Second Avenue or York Avenue would be recounted as a Manhattan CBD inbound trip.

[19] New York Metropolitan Transportation Council. June 2017. *Plan 2045: Maintaining the Vision for a Sustainable Region*.

[20] Modeling of tolling scenarios commenced on September 2021; therefore, any road network changes since then are not included in this analysis.

Table 4A-2 summarizes the changes in forecast daily VMT for all vehicles under the No Action Alternative. In the No Action Alternative, VMT is forecast to grow by 8.8 percent regionwide between 2023 and 2045. In the Manhattan CBD, VMT is forecast to grow by 4.9 percent. The largest increases in VMT would be on Long Island and in the five New York counties north of New York City. For the New Jersey counties in the model area, VMT would increase by 10.6 percent (an increase of more than 10 million VMT on an average weekday). For the 12 New York State counties in the model area, VMT would increase by nearly 12 million VMT (9.8 percent). New York City's subareas are expected to see increases in daily VMT in the range of 5.3 percent to 7.2 percent.

In 2045, the No Action Alternative would have a 1.2 percent increase in Manhattan CBD-related transit mode share—from 61.7 percent to 62.9 percent transit share. This growth would be driven primarily by journeys that begin outside the Manhattan CBD (Table 4A-3).

4A.4.2 2023 CBD Tolling Alternative

Travel forecasts were prepared for the opening year (2023) and horizon year (2045) for the CBD Tolling Alternative for each of the seven tolling scenarios (see Chapter 2, "Project Alternatives," for more information on the tolling scenarios). The results of these forecasts were compared with the No Action Alternative to assess the effects of each tolling scenario. Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables," provides detailed statistics for each of the forecasts. This section summarizes key metrics for 2023.

Table 4A-4 and Table 4A-5 show the change in vehicles that would enter or pass through the Manhattan CBD. Absolute volumes and percentage change compared to the No Action Alternative are shown. The larger reductions on the East Side avenues compared to the West Side avenues are a result of changing volumes on the upper level of the Ed Koch Queensboro Bridge. Tolling Scenarios C through F all offer some form of crossing credits for the Queens-Midtown Tunnel. The crossing credits increase the attractiveness of the TBTA East River facilities compared to the Ed Koch Queensboro Bridge and divert crossings destined for the Manhattan CBD off the bridge and onto TBTA facilities. With fewer Manhattan CBD-bound vehicles using the upper level of the bridge, traffic would be reduced on the East Side avenues into the Manhattan CBD at greater levels than the West Side avenues.

Table 4A-2. Forecast Growth in All Vehicle Daily Vehicle-Miles Traveled: No Action Alternative

LOCATION	OPENING YEAR (2023)	HORIZON YEAR (2045)	GROWTH FROM 2023 TO 2045	PERCENTAGE CHANGE
New York Counties	**122,186,497**	**134,186,361**	**11,999,864**	**9.8%**
New York City	47,131,752	49,748,914	2,617,162	5.6%
Manhattan CBD	3,244,791	3,402,711	157,920	4.9%
CBD Core	1,217,727	1,262,019	44,292	3.6%
Peripheral Highways (south of 60th Street; excluded from the toll)	2,027,064	2,140,692	113,628	5.6%
West Side Highway/Route 9A	610,657	647,671	37,014	6.1%
FDR Drive	720,682	758,659	37,977	5.3%
Bridges and Tunnels*	695,725	734,362	38,637	5.6%
NYC Subarea 1 (see Figure 4A-2)	2,218,077	2,349,929	131,852	5.9%
NYC Subarea 2 (see Figure 4A-2)	6,660,953	7,142,863	481,910	7.2%
NYC Subarea 3 (see Figure 4A-2)	35,007,931	36,853,411	1,845,480	5.3%
Long Island Counties (2)	**41,585,545**	**46,813,526**	**5,227,981**	**12.6%**
New York Counties North of New York City (5)	**33,469,200**	**37,623,921**	**4,154,721**	**12.4%**
New Jersey Counties (14)	**97,578,100**	**107,907,842**	**10,329,742**	**10.6%**
Connecticut Counties (2)	**34,909,870**	**35,063,470**	**153,600**	**0.4%**
TOTAL	**254,674,467**	**277,157,673**	**22,483,206**	**8.8%**

Note: The number of counties are indicated within parentheses ( ).

* Bridge and tunnel traffic includes VMT from the portion of bridges and tunnels in New York County (Manhattan) entering the Manhattan CBD from Kings County (Brooklyn), Queens, and New Jersey.

Table 4A-3. Changes in Manhattan CBD Total Daily Mode Share: No Action Alternative

DIRECTION OF JOURNEY	OPENING YEAR (2023)	HORIZON YEAR (2045)	PERCENTAGE POINT CHANGE
Journeys Beginning Outside the Manhattan CBD	**1,920,016**	**2,056,665**	
Auto (including HOV, Taxi, FHV)	19.1%	17.7%	-1.4%
Transit	78.2%	79.7%	1.5%
Walk and Bike	2.7%	2.6%	-0.1%
Journeys Beginning Inside the Manhattan CBD	**159,183**	**173,345**	
Auto (including HOV, Taxi, FHV)	30.2%	29.7%	-0.5%
Transit	51.5%	52.1%	0.6%
Walk and Bike	18.3%	18.2%	-0.1%
Journeys Within the Manhattan CBD	**875,418**	**916,741**	
Auto (including HOV, Taxi, FHV)	7.1%	6.9%	-0.2%
Transit	27.5%	27.4%	-0.1%
Walk and Bike	65.4%	65.7%	0.3%
All Manhattan CBD-Related Journeys	**2,954,617**	**3,146,751**	
Auto (including HOV, Taxi, FHV)	16.2%	15.3%	-0.9%
Transit	61.7%	62.9%	1.2%
Walk and Bike	22.1%	21.8%	-0.3%

Note: Trucks are excluded from mode share calculations

Table 4A-4. Daily Vehicles[1] Entering the Manhattan CBD by Crossing Location: No Action Alternative and Tolling Scenarios (2023)

CROSSING LOCATION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**276,466**	**220,659**	**221,318**	**208,405**	**198,437**	**196,294**	**204,011**	**216,999**
FDR Drive and West Side Highway/Route 9A[2]	161,696	151,594	152,322	146,846	141,979	140,589	144,802	150,734
West Side Avenues	28,026	22,265	22,743	20,793	19,710	19,467	20,410	22,105
East Side Avenues	86,744	46,800	46,253	40,766	36,748	36,238	38,799	44,160
Queens	**142,596**	**125,030**	**124,315**	**130,029**	**136,799**	**136,652**	**137,229**	**123,298**
Brooklyn	**187,486**	**168,154**	**167,624**	**152,790**	**138,880**	**137,092**	**137,368**	**165,509**
New Jersey	**109,602**	**92,070**	**90,704**	**100,791**	**107,810**	**103,257**	**106,560**	**88,196**
TOTAL	**716,150**	**605,913**	**603,961**	**592,015**	**581,926**	**573,295**	**585,168**	**594,002**

1 Unless noted, the term "vehicles" in this subchapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

2 In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-5. Percentage Change (compared to No Action Alternative) in Daily Vehicles Entering the Manhattan CBD by Crossing Location and Tolling Scenario (2023)

CROSSING LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**-20.2%**	**-19.9%**	**-24.6%**	**-28.2%**	**-29.0%**	**-26.2%**	**-21.5%**
FDR Drive and West Side Highway/Route 9A*	-6.2%	-5.8%	-9.2%	-12.2%	-13.1%	-10.4%	-6.8%
West Side Avenues	-20.6%	-18.9%	-25.8%	-29.7%	-30.5%	-27.2%	-21.1%
East Side Avenues	-46.0%	-46.7%	-53.0%	-57.6%	-58.2%	-55.3%	-49.1%
Queens	**-12.3%**	**-12.8%**	**-8.8%**	**-4.1%**	**-4.2%**	**-3.8%**	**-13.5%**
Brooklyn	**-10.3%**	**-10.6%**	**-18.5%**	**-25.9%**	**-26.9%**	**-26.7%**	**-11.7%**
New Jersey	**-16.0%**	**-17.2%**	**-8.0%**	**-1.6%**	**-5.8%**	**-2.8%**	**-19.5%**
TOTAL	**-15.4%**	**-15.7%**	**-17.3%**	**-18.7%**	**-19.9%**	**-18.3%**	**-17.1%**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

While all the tolling scenarios within the CBD Tolling Alternative would reduce traffic entering the Manhattan CBD, the largest total reduction would occur with Tolling Scenario E. Tolling Scenario E would also result in the largest reduction of vehicle crossings into the Manhattan CBD from Upper Manhattan at 60th Street and Brooklyn, while Tolling Scenario G would result in the largest reduction of vehicles crossing into the Manhattan CBD from Queens and New Jersey.

Changes in daily VMT by tolling scenario are shown in Table 4A-6 (absolute values) and Table 4A-7 (percentage change compared to the No Action Alternative). Consistent with changes in vehicles entering the Manhattan CBD, the largest reduction in regional VMT and VMT in New York City would occur under Tolling Scenario E. The greatest reduction in VMT on a percentage basis would occur on the West Side Highway/Route 9A south of 60th Street, with a maximum reduction of 20.5 percent under Tolling Scenario D. New York City Subarea 3 would have an increase in VMT under Tolling Scenarios A, B, C, and G of less than 0.1 percent to 0.3 percent. VMT on the FDR Drive would increase south of 60th Street in Tolling Scenario A, B, F, and G because of travelers seeking a free path around the Manhattan CBD using the FDR Drive and untolled ramps to the Brooklyn Bridge. VMT would increase by less than 0.2 percent in New Jersey in all tolling scenarios, mostly in Bergen and Middlesex Counties, from increased diversions to and from the George Washington Bridge and Outerbridge Crossing for through-trips avoiding the Manhattan CBD toll.

Table 4A-8 shows how many journeys would shift from passenger vehicles to transit and walking and biking for Manhattan CBD-related journeys. Changes are shown separately for journeys that originate outside and travel into the Manhattan CBD, journeys that originate inside and travel out of the Manhattan CBD, and journeys that are completely internal to the Manhattan CBD.

In all tolling scenarios, some Manhattan CBD-related journeys would shift to transit. Tolling Scenarios D and E would have the largest shift to transit (an increase in transit journeys up to 2.3 percent) to and from the Manhattan CBD. Transit journeys entirely within the Manhattan CBD would change 1 percent or less for all tolling scenarios (see Table 4A-8). Walking and biking trips would also increase slightly (up to 0.14 percent).

Table 4A-9 breaks down the numbers of Manhattan CBD-related journeys for private vehicles (drive alone and HOVs), taxis, and FHVs. Table 4A-10 shows the shift in all Manhattan CBD-related transit journeys by tolling scenario.

Table 4A-6. Daily Vehicle-Miles Traveled: No Action Alternative and CBD Tolling Alternative, by Tolling Scenario (2023)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York Counties	**122,186,497**	**121,752,302**	**121,789,089**	**121,438,634**	**121,227,956**	**121,111,122**	**121,464,091**	**121,662,622**
New York City	47,131,752	46,743,670	46,784,237	46,572,720	46,461,121	46,404,913	46,578,412	46,713,541
Manhattan CBD	3,244,791	2,993,214	2,998,489	2,984,080	2,963,211	2,946,339	3,016,013	2,970,819
CBD Core	1,217,727	1,150,843	1,152,471	1,161,407	1,159,162	1,147,545	1,183,476	1,142,077
Peripheral Highways (south of 60th Street; excluded from the toll)	2,027,064	1,842,371	1,846,018	1,822,673	1,804,049	1,798,794	1,832,537	1,828,742
West Side Highway/Route 9A	610,657	510,785	513,887	493,396	485,167	486,404	501,603	508,951
FDR Drive	720,682	725,459	729,706	718,820	705,903	710,555	721,421	727,101
Bridges & Tunnels	695,725	606,127	602,425	610,457	612,979	601,835	609,513	592,690
NYC Subarea 1 (see Figure 4A-2)	2,218,077	2,049,561	2,049,528	2,004,366	1,955,714	1,944,168	1,962,310	2,031,243
NYC Subarea 2 (see Figure 4A-2)	6,660,953	6,626,001	6,630,016	6,588,313	6,578,676	6,568,162	6,596,549	6,615,308
NYC Subarea 3 (see Figure 4A-2)	35,007,931	35,074,894	35,106,204	34,995,961	34,963,520	34,946,244	35,003,540	35,096,171
Long Island Counties (2)	**41,585,545**	**41,609,407**	**41,595,736**	**41,546,248**	**41,503,705**	**41,497,676**	**41,598,789**	**41,573,420**
New York Counties North of New York City (5)	**33,469,200**	**33,399,225**	**33,409,116**	**33,319,666**	**33,263,130**	**33,208,533**	**33,286,890**	**33,375,661**
New Jersey Counties (14)	**97,578,100**	**97,594,939**	**97,590,826**	**97,748,567**	**97,733,034**	**97,665,181**	**97,768,338**	**97,642,310**
Connecticut Counties (2)	**34,909,870**	**34,878,673**	**34,856,848**	**34,830,279**	**34,846,493**	**34,842,671**	**34,893,239**	**34,844,682**
TOTAL	**254,674,467**	**254,225,914**	**254,236,763**	**254,017,480**	**253,807,483**	**253,618,974**	**254,125,668**	**254,149,614**

Notes:
1. The number of counties are indicated within parentheses ( ).
2. Unless noted, the terms "Vehicle-Miles Traveled" or "VMT" in this subchapter refer to miles traveled by all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

Table 4A-7. Percentage Change (compared to No Action Alternative) in Daily Vehicle-Miles Traveled by Tolling Scenario (2023)

LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York Counties	**-0.4%**	**-0.3%**	**-0.6%**	**-0.8%**	**-0.9%**	**-0.6%**	**-0.4%**
New York City	-0.8%	-0.7%	-1.2%	-1.4%	-1.5%	-1.2%	-0.9%
Manhattan CBD	-7.8%	-7.6%	-8.0%	-8.7%	-9.2%	-7.1%	-8.4%
CBD Core	-5.5%	-5.4%	-4.6%	-4.8%	-5.8%	-2.8%	-6.2%
Peripheral Highways (south of 60th Street; excluded from the toll)	-9.1%	-8.9%	-10.1%	-11.0%	-11.3%	-9.6%	-9.8%
West Side Highway/Route 9A	-16.4%	-15.8%	-19.2%	-20.5%	-20.3%	-17.9%	-16.7%
FDR Drive	0.7%	1.3%	-0.3%	-2.1%	-1.4%	0.1%	0.9%
Bridges & Tunnels	-12.9%	-13.4%	-12.3%	-11.9%	-13.5%	-12.4%	-14.8%
NYC Subarea 1 (see Figure 4A-2)	-7.6%	-7.6%	-9.6%	-11.8%	-12.3%	-11.5%	-8.4%
NYC Subarea 2 (see Figure 4A-2)	-0.5%	-0.5%	-1.1%	-1.2%	-1.4%	-1.0%	-0.7%
NYC Subarea 3 (see Figure 4A-2)	0.2%	0.3%	0.0%	-0.1%	-0.2%	0.0%	0.3%
Long Island Counties (2)	**0.1%**	**0.0%**	**-0.1%**	**-0.2%**	**-0.2%**	**0.0%**	**0.0%**
New York Counties North of New York City (5)	**-0.2%**	**-0.2%**	**-0.4%**	**-0.6%**	**-0.8%**	**-0.5%**	**-0.3%**
New Jersey Counties (14)	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.1%**
Connecticut Counties (2)	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**0.0%**	**-0.2%**
TOTAL	**-0.2%**	**-0.2%**	**-0.3%**	**-0.3%**	**-0.4%**	**-0.2%**	**-0.2%**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-8. Daily Manhattan CBD Journey Mode Share (compared to No Action Alternative) by Tolling Scenario (2023)

DIRECTION OF JOURNEY	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Beginning Outside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	19.1%	18.0%	18.1%	17.7%	17.0%	16.8%	17.3%	17.7%
Transit	78.2%	79.3%	79.2%	79.6%	80.3%	80.5%	80.0%	79.6%
Walk and Bike	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Change in Transit Share		1.1%	1.0%	1.4%	2.1%	2.3%	1.8%	1.4%
Beginning Inside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	30.2%	28.9%	29.0%	28.5%	27.6%	27.6%	28.2%	27.9%
Transit	51.5%	52.4%	52.3%	52.6%	53.4%	53.4%	52.9%	53.6%
Walk and Bike	18.3%	18.7%	18.7%	18.9%	19.0%	19.0%	18.9%	18.5%
Change in Transit Share		0.9%	0.8%	1.1%	1.9%	1.9%	1.4%	2.1%
Beginning and Ending Within the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	7.1%	7.1%	7.2%	7.2%	7.2%	7.1%	7.1%	7.3%
Transit	27.5%	27.5%	27.3%	27.5%	27.6%	27.6%	27.5%	27.7%
Walk and Bike	65.4%	65.4%	65.5%	65.3%	65.2%	65.3%	65.4%	65.0%
Change in Transit Share		0.0%	-0.2%	0.0%	0.1%	0.1%	0.0%	0.2%
All Manhattan CBD-Related Journeys								
Auto (including HOV, Taxi, FHV)	16.2%	15.3%	15.5%	15.1%	14.6%	14.5%	14.9%	15.1%
Transit	61.7%	62.5%	62.4%	62.7%	63.2%	63.3%	63.0%	62.8%
Walk and Bike	22.1%	22.2%	22.1%	22.2%	22.2%	22.2%	22.1%	22.1%
Change in Transit Share		0.8%	0.7%	1.0%	1.5%	1.6%	1.3%	1.1%

Note: Table includes only journeys made by single-occupancy vehicles, HOVs, taxis, FHVs, motorcycles, public transit, bicycle, and walking, but does not include commercial trucks.

Table 4A-9. Daily Manhattan CBD-Related Auto-Based Vehicle Person-Journeys (compared to No Action Alternative) by Tolling Scenario (2023)

MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Private Vehicles (drive alone and HOVs)	412,721	397,185	393,224	387,136	380,656	370,785	374,743	393,570
	Difference	-15,536	-19,497	-25,585	-32,065	-41,936	-37,978	-19,151
	Percentage	-3.8%	-4.7%	-6.2%	-7.8%	-10.2%	-9.2%	-4.6%
Taxi/FHV	64,695	56,165	64,314	59,995	50,713	57,081	63,737	55,450
	Difference	-8,530	-381	-4,700	-13,982	-7,614	-958	-9,245
	Percentage	-13.2%	-0.6%	-7.3%	-21.6%	-11.8%	-1.5%	-14.3%
TOTAL	**477,416**	**453,350**	**457,538**	**447,131**	**431,369**	**427,866**	**438,480**	**449,020**
	Difference	**-24,066**	**-19,878**	**-30,285**	**-46,047**	**-49,550**	**-38,936**	**-28,396**
	Percentage	**-5.0%**	**-4.2%**	**-6.3%**	**-9.6%**	**-10.4%**	**-8.2%**	**-5.9%**

Table 4A-10. Daily Manhattan CBD-Related Transit Journeys (compared to No Action Alternative) by Tolling Scenario (2023)

NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
1,833,770	1,856,016	1,856,487	1,864,633	1,874,509	1,878,700	1,872,355	1,860,737
Difference	22,246	22,717	30,863	40,739	44,930	38,585	26,967
Percentage	1.2%	1.2%	1.7%	2.2%	2.5%	2.1%	1.5%

4A.4.3 2045 CBD Tolling Alternative

This section compares key measures for the horizon year (2045) forecasts with and without the Project. Manhattan CBD tolls in 2045 are assumed to grow consistent with inflation between 2023 and 2045. Socioeconomic conditions from 2045 are provided by NYMTC and are consistent with the NYMTC 2017 Regional Transportation Plan.

Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables," provides detailed statistics for each of the forecasts.

Table 4A-11 and Table 4A-12 show the daily vehicles[21] entering or passing through the Manhattan CBD by tolling scenario for 2045. (Absolute number and percentage change compared to the No Action Alternative are shown.) The horizon year (2045) analysis shows results similar to the opening year (2023). The largest total reduction in vehicles entering the Manhattan CBD would occur with Tolling Scenario E. Tolling Scenario E would also result in the largest reduction of vehicle crossings into the Manhattan CBD from Upper Manhattan at 60th Street and Brooklyn, while Tolling Scenario G would result in the largest reduction of vehicles crossing into the Manhattan CBD from Queens and New Jersey.

Table 4A-13 shows the regional VMT by tolling scenario, and Table 4A-14 shows the percentage change from the No Action Alternative for 2045. Tolling Scenario E would reduce VMT the most at the regional level, across the New York City subareas, and in the Manhattan CBD, the last of which would experience an 8.7 percent reduction in VMT. Localized increases in VMT would be experienced on the FDR Drive south of 60th Street under Tolling Scenarios A, B, and G because travelers would seek a free path around the Manhattan CBD using the FDR Drive and untolled ramps to the Brooklyn Bridge.

Table 4A-15 shows changes in the share of travelers driving, using transit, and walking and biking compared to the No Action Alternative for 2045. For all Manhattan CBD-related journeys, the change in the number of journeys by transit would be between 0.6 percent and 1.5 percent, which represents an increase of 20,000 to 50,000 transit passengers. Journeys on transit that begin outside the Manhattan CBD would increase up to 2.2 percent for Tolling Scenario E. Table 4A-16 breaks down the numbers of Manhattan CBD-related journeys for people in vehicles (drive alone and HOVs) and people in taxis and FHVs. Table 4A-17 shows the shift in all Manhattan CBD-related transit journeys compared to the No Action Alternative by tolling scenario for 2045.

[21] Unless noted, the term "vehicles" in this subchapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

Table 4A-11. Daily Vehicles Entering the Manhattan CBD by Crossing Locations: No Action Alternative and Tolling Scenarios (2045)

CROSSING LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**288,876**	**236,408**	**239,250**	**226,243**	**212,735**	**211,409**	**216,884**	**233,737**
FDR Drive and West Side Highway/Route 9A*	168,499	159,420	161,258	155,262	149,310	148,025	151,119	158,853
West Side Avenues	31,920	25,300	25,946	24,035	21,961	22,067	22,849	25,529
East Side Avenues	88,457	51,688	52,046	46,946	41,464	41,317	42,916	49,355
Queens	**154,348**	**138,824**	**138,730**	**142,997**	**147,894**	**147,558**	**148,430**	**136,884**
Brooklyn	**192,604**	**172,530**	**173,247**	**159,307**	**143,498**	**141,693**	**143,711**	**169,120**
New Jersey	**114,867**	**100,060**	**99,252**	**107,304**	**113,390**	**109,619**	**112,875**	**96,443**
TOTAL	**750,695**	**647,822**	**650,479**	**635,851**	**617,517**	**610,279**	**621,900**	**636,184**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-12. Percentage Change (compared to No Action Alternative) in Daily Vehicles Entering the Manhattan CBD by Crossing Locations and Tolling Scenario (2045)

CROSSING LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**-18.2%**	**-17.2%**	**-21.7%**	**-26.4%**	**-26.8%**	**-24.9%**	**-19.1%**
FDR Drive &and West Side Highway/Route 9A*	-5.4%	-4.3%	-7.9%	-11.4%	-12.2%	-10.3%	-5.7%
West Side Avenues	-20.7%	-18.7%	-24.7%	-31.2%	-30.9%	-28.4%	-20.0%
East Side Avenues	-41.6%	-41.2%	-46.9%	-53.1%	-53.3%	-51.5%	-44.2%
Queens	**-10.1%**	**-10.1%**	**-7.4%**	**-4.2%**	**-4.4%**	**-3.8%**	**-11.3%**
Brooklyn	**-10.4%**	**-10.1%**	**-17.3%**	**-25.5%**	**-26.4%**	**-25.4%**	**-12.2%**
New Jersey	**-12.9%**	**-13.6%**	**-6.6%**	**-1.3%**	**-4.6%**	**-1.7%**	**-16.0%**
TOTAL	**-13.7%**	**-13.3%**	**-15.3%**	**-17.7%**	**-18.7%**	**-17.2%**	**-15.3%**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-13. Daily Vehicle-Miles Traveled: No Action Alternative and Tolling Scenarios (2045)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**134,186,361**	**133,549,102**	**133,603,123**	**133,407,441**	**133,011,541**	**132,941,187**	**133,056,675**	**133,576,575**
New York City	49,748,914	49,306,506	49,361,708	49,206,260	48,917,855	48,908,967	49,014,661	49,271,140
Manhattan CBD	3,402,711	3,173,972	3,199,881	3,156,249	3,117,142	3,106,570	3,147,541	3,144,017
CBD Core	1,262,019	1,211,069	1,219,101	1,222,077	1,236,236	1,230,340	1,246,015	1,197,152
Peripheral Highways (south of 60th Street; excluded from the toll)	2,140,692	1,962,903	1,980,780	1,934,172	1,880,906	1,876,230	1,901,526	1,946,865
West Side Highway/Route 9A	647,671	554,316	562,018	528,271	500,214	499,855	509,900	550,459
FDR Drive	758,659	760,056	770,395	754,497	733,879	739,383	743,921	763,263
Bridges & Tunnels	734,362	648,531	648,367	651,404	646,813	636,992	647,705	633,143
NYC Subarea 1 (see Figure 4A-2)	2,349,929	2,195,311	2,199,825	2,155,278	2,113,309	2,104,806	2,123,309	2,173,895
NYC Subarea 2 (see Figure 4A-2)	7,142,863	7,086,769	7,098,540	7,060,838	7,013,071	7,012,113	7,032,663	7,083,658
NYC Subarea 3 (see Figure 4A-2)	36,853,411	36,850,454	36,863,462	36,833,895	36,674,333	36,685,478	36,711,148	36,869,570
Long Island Counties (2)	**46,813,526**	**46,752,292**	**46,709,696**	**46,716,462**	**46,732,209**	**46,699,238**	**46,688,529**	**46,757,385**
New York Counties North of New York City (5)	**37,623,921**	**37,490,304**	**37,531,719**	**37,484,719**	**37,361,477**	**37,332,982**	**37,353,485**	**37,548,050**
New Jersey Counties (14)	**107,907,842**	**107,914,688**	**107,948,940**	**108,040,676**	**107,970,946**	**107,950,075**	**108,024,196**	**107,882,082**
Connecticut Counties (2)	**35,063,470**	**35,045,234**	**35,006,855**	**35,042,347**	**35,004,182**	**35,002,445**	**34,998,648**	**35,059,459**
TOTAL	**277,157,673**	**276,509,024**	**276,558,918**	**276,490,464**	**275,986,669**	**275,893,707**	**276,079,519**	**276,518,116**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-14. Percentage Change (compared to No Action Alternative) in Daily Vehicle-Miles Traveled by Tolling Scenario (2045)

LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**-0.5%**	**-0.4%**	**-0.6%**	**-0.9%**	**-0.9%**	**-0.8%**	**-0.5%**
New York City	-0.9%	-0.8%	-1.1%	-1.7%	-1.7%	-1.5%	-1.0%
Manhattan CBD	-6.7%	-6.0%	-7.2%	-8.4%	-8.7%	-7.5%	-7.6%
CBD Core	-4.0%	-3.4%	-3.2%	-2.0%	-2.5%	-1.3%	-5.1%
Peripheral Highways (south of 60th Street; excluded from the toll)	-8.3%	-7.5%	-9.6%	-12.1%	-12.4%	-11.2%	-9.1%
West Side Highway/Route 9A	-14.4%	-13.2%	-18.4%	-22.8%	-22.8%	-21.3%	-15.0%
FDR Drive	0.2%	1.5%	-0.5%	-3.3%	-2.5%	-1.9%	0.6%
Bridges & Tunnels	-11.7%	-11.7%	-11.3%	-11.9%	-13.3%	-11.8%	-13.8%
NYC Subarea 1 (see Figure 4A-2)	-6.6%	-6.4%	-8.3%	-10.1%	-10.4%	-9.6%	-7.5%
NYC Subarea 2 (see Figure 4A-2)	-0.8%	-0.6%	-1.1%	-1.8%	-1.8%	-1.5%	-0.8%
NYC Subarea 3 (see Figure 4A-2)	0.0%	0.0%	-0.1%	-0.5%	-0.5%	-0.4%	0.0%
Long Island Counties (2)	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.1%**
New York Counties North of New York City (5)	**-0.4%**	**-0.2%**	**-0.4%**	**-0.7%**	**-0.8%**	**-0.7%**	**-0.2%**
New Jersey Counties (14)	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**0.0%**	**0.1%**	**0.0%**
Connecticut Counties (2)	**-0.1%**	**-0.2%**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**0.0%**
TOTAL	**-0.2%**	**-0.2%**	**-0.2%**	**-0.4%**	**-0.5%**	**-0.4%**	**-0.2%**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-15. Daily Manhattan CBD Journey Mode Share: No Action Alternative and Tolling Scenarios (2045)

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Beginning Outside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	17.7%	16.6%	16.9%	16.4%	15.7%	15.5%	15.9%	16.4%
Transit	79.7%	80.8%	80.5%	81.0%	81.7%	81.9%	81.5%	81.0%
Walk and Bike	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
Change in Transit Share	—	1.1%	0.8%	1.3%	2.0%	2.2%	1.8%	1.3%
Beginning Inside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	29.7%	28.3%	28.7%	28.1%	27.2%	27.1%	27.7%	27.6%
Transit	52.1%	53.0%	52.7%	53.1%	53.9%	53.8%	53.4%	54.0%
Walk and Bike	18.2%	18.7%	18.6%	18.8%	18.9%	19.1%	18.9%	18.4%
Change in Transit Share	—	0.9%	0.6%	1.0%	1.8%	1.7%	1.3%	1.9%
Within the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	6.9%	7.0%	7.1%	7.0%	7.0%	7.0%	6.9%	6.9%
Transit	27.4%	27.4%	27.3%	27.4%	27.5%	27.5%	27.5%	27.8%
Walk and Bike	65.7%	65.6%	65.6%	65.6%	65.5%	65.5%	65.6%	65.2%
Change in Transit Share	—	0.0%	-0.1%	0.0%	0.1%	0.1%	0.1%	0.4%
All Manhattan CBD-Related Journeys								
Auto (including HOV, Taxi, FHV)	15.3%	14.5%	14.7%	14.3%	13.8%	13.7%	13.9%	14.3%
Transit	62.9%	63.7%	63.5%	63.8%	64.3%	64.4%	64.2%	64.0%
Walk and Bike	21.8%	21.8%	21.8%	21.9%	21.9%	21.9%	21.9%	21.8%
Change in Transit Share	—	0.8%	0.6%	0.9%	1.4%	1.5%	1.3%	1.1%

Table 4A-16. Daily Manhattan CBD-Related Auto-Based Vehicle Person-Journeys: No Action Alternative and Tolling Scenarios (2045)

MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Private Vehicles (drive alone and HOVs)	413,933	397,688	397,043	388,905	380,950	371,699	374,270	393,717
	Difference	-16,245	-16,890	-25,028	-32,983	-42,234	-39,663	-20,216
	Percentage	-3.9%	-4.1%	-6.0%	-8.0%	-10.2%	-9.6%	-4.9%
Taxi/FHV	65,930	57,711	65,695	61,423	51,777	57,977	64,241	56,056
	Difference	-8,219	-235	-4,507	-14,153	-7,953	-1,689	-9,874
	Percentage	-12.5%	-0.4%	-6.8%	-21.5%	-12.1%	-2.6%	-15.0%
TOTAL	**479,863**	**455,399**	**462,738**	**450,328**	**432,727**	**429,676**	**438,511**	449,773
	Difference	**-24,464**	**-17,125**	**-29,535**	**-47,136**	**-50,187**	**-41,352**	-30,090
	Percentage	**-5.1%**	**-3.6%**	**-6.2%**	**-9.8%**	**-10.5%**	**-8.6%**	-6.3%

Note: Table includes only motorized journeys.

Table 4A-17. Daily Manhattan CBD-Related Transit Journeys: No Action Alternative and Tolling Scenarios (2045)

NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
1,990,024	2,014,453	2,011,180	2,021,324	2,033,609	2,038,364	2,033,022	2,018,632
Difference	24,429	21,156	31,300	43,585	48,340	42,998	28,608
Percentage	1.2%	1.1%	1.6%	2.2%	2.4%	2.2%	1.4%

4A.4.4 CBD Tolling Alternative Tolling Scenario Summaries

All tolling scenarios within the CBD Tolling Alternative would result in travel pattern changes that would support congestion relief: reduced automobile and truck trips to the Manhattan CBD, reduced VMT to and within the Manhattan CBD and regionally, and a shift from auto trips to transit.[22] Percentage reductions in 2023 vehicle trips entering the Manhattan CBD range from 15.4 percent (Tolling Scenario A) to 19.9 percent (Tolling Scenario E; see **Table 4A-5**). As summarized in **Chapter 2, "Project Alternatives,"** the primary differences revolve around the magnitude and the distribution of the reductions resulting from the toll rates and potential crossing credits, which vary by tolling scenario. **Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables,"** describes the opening year (2023) travel pattern changes for each tolling scenario followed by horizon year (2045) travel pattern changes for each tolling scenario compared to the No Action Alternative, and also provides details for both the 2023 and 2045 results. While the results of the 2045 model runs are different in terms of actual numbers (because they reflect the longer-term background growth in the model's forecast), the patterns from tolling scenario to tolling scenario are consistent between 2023 and 2045.

4A.4.5 Key Findings

The BPM assessment of regional travel demand and trip characteristics shows that implementing the CBD Tolling Alternative would reduce vehicular traffic within the Manhattan CBD compared to the No Action Alternative in all tolling scenarios analyzed. Based on the BPM, which looks at the time and cost associated with a trip-making decision, the imposition of a Manhattan CBD toll would reduce the number of vehicles entering the Manhattan CBD compared to the No Action Alternative for both the 2023 and the longer-term 2045 analysis years.

With the CBD Tolling Alternative, total regional VMT and vehicle-hours traveled would be reduced. The largest changes would occur in the Manhattan CBD and would diminish farther away from the Manhattan CBD. Roughly three-quarters of the auto-trip reductions into and through the Manhattan CBD would result from travelers avoiding the Manhattan CBD for through-trips (e.g., Jersey City to Brooklyn). These trips either would switch modes or, more often, would find alternative paths around the Manhattan CBD. Other auto-trip reductions would result from people switching modes for trips into the Manhattan CBD. Modeling of the CBD Tolling Alternative indicates that drivers would have three basic ways to avoid paying the Manhattan CBD toll:

- Switch to another mode such as transit.
- Choose a new and different path to avoid the Manhattan CBD for vehicular through-trips.
- Choose not to make the trip to the Manhattan CBD.

[22] Buses on the roadways are included in the calculation of volumes and VMT. However, the number of buses reflects the No Action Alternative and does not vary between the No Action Alternative and CBD Tolling Alternative. This is because the model does not include additional buses that may be needed to serve increased transit demand. **Subchapter 4C, "Transportation: Transit"** provides an analysis of transit demand.

AUTO TRIPS

Across all the tolling scenarios, non-taxi, Manhattan CBD-related auto-based person-journeys would decline between 4 percent and 10 percent in the 2023 analysis year, representing 16,000 to 42,000 fewer people accessing the Manhattan CBD in a private automobile[23] on an average weekday (see Table 4A-9). Among drivers who would continue to drive to the Manhattan CBD, some would choose different routings under tolling scenarios that introduce crossing credits.

For Tolling Scenarios A and D, taxis and FHVs would have a higher sensitivity to the Manhattan CBD toll because they would be charged each time they enter the Manhattan CBD, while private automobiles would be charged just once per day. Overall, the total decline in auto-based person-journeys to the Manhattan CBD would be between 24,000 and 46,000 person-journeys for Tolling Scenario A and Tolling Scenario D.

Subchapter 4B, "Transportation: Highways and Local Intersections," examines the potential impacts on highways and local intersections from changes in traffic volumes projected under the CBD Tolling Alternative.

TIME-OF-DAY SHIFTING

Because the traffic in the Manhattan CBD builds throughout the day, extending well into the evening, six of the seven tolling scenarios considered in this analysis (Tolling Scenarios A through E, plus Tolling Scenario G), have extended peak periods from 6:00 a.m. to 8:00 p.m. Tolling Scenario F has peak periods more consistent with those on the surrounding bridges and tunnels, from 6:00 a.m. to 10 a.m. and 4:00 p.m. to 8:00 p.m.

While arguably less important for this Project, which aims to move people from their vehicles to transit, time of day still has a role to play and is helpful to consider briefly.

In 2005, PANYNJ studied the impact of peak-period tolling on trip diversions to the off-peak period.[24] The study evaluated whether travelers shifted to the off-peak period after the PANYNJ implemented a $1 discount (20 percent lower than the peak period) for off-peak travel in 2001 on its roadway facilities entering New York City. The key findings relevant to this study indicated the following:

- Some people switched travel to the preceding hour in the AM peak.
- Trucks did not change their time-of-day choice in response to the 20 percent price difference, in part because their delivery times are dependent upon receivers and shippers.[25]

The study indicated about 10 percent of travelers were willing to shift their travel times based on time-of-day tolling, with many travelers indicating they do not have flexibility to change their travel times. The

[23] Person-journey reductions in private automobile includes drive-alone person-journeys and HOV or carpool person-journeys. Carpool person-journeys result in fewer vehicular trips than person-journeys due to higher auto occupancy.

[24] Holguín-Veras, J., K. Ozbay, and A. C. de Cerreño. (2005). *Evaluation Study of Port Authority of New York and New Jersey's Time of Day Pricing Initiative*.

[25] The CBD tolling scenarios would offer a deeper reduction in the overnight (50 ***to 60*** percent lower than peak-travel), which would encourage some travelers and some trucks to shift.

average amount of time travelers were willing to arrive early was 20 minutes, and the average amount of time travelers were willing or able to be late was 12 minutes.

AUTO AND TRUCK TRAVEL-TIME SAVINGS

The Project would alter the driving paths people choose to access the Manhattan CBD. Tolling Scenario A does not include any crossing credits and would result in a general reduction of auto travel to the Manhattan CBD from across the region. Due to reduced congestion, auto travel times to the Manhattan CBD would be faster in each tolling scenario from most areas of the region compared to the No Action Alternative. Some trips would experience longer auto travel times to the Manhattan CBD due to increased diversionary trips avoiding the Manhattan CBD via highways in the Bronx and Staten Island. For example, auto and truck trips from Connecticut would be slower to the Manhattan CBD due to increased diversionary traffic on the Cross Bronx Expressway and Bruckner Expressway. Longer auto and truck travel times from Central New Jersey and Staten Island would result from increased traffic on the Staten Island Expressway.

Crossing credits would make the Hugh L. Carey and Queens-Midtown Tunnels relatively more attractive to the Brooklyn, Manhattan, and Williamsburg Bridges compared to Tolling Scenario A because the net toll paid by a driver using a tolled tunnel would be closer to the cost of using one of the untolled bridges. This leveling of net tolls across the East River would increase traffic in the East River tunnels and decrease traffic on the East River bridges. As a result of this increased tunnel traffic, in tolling scenarios with crossing credits, some auto and truck travel times from Long Island to the Manhattan CBD would increase due to additional congestion in the Queens-Midtown Tunnel.

Similar diversions would also occur in Northern New Jersey and Southern Orange and Rockland Counties because traffic would move to the Lincoln and Holland Tunnels from the George Washington Bridge to take advantage of the tunnel crossing credits in Tolling Scenarios C, D, and E. However, traffic volumes at the Lincoln and Holland Tunnels still decrease in all scenarios.

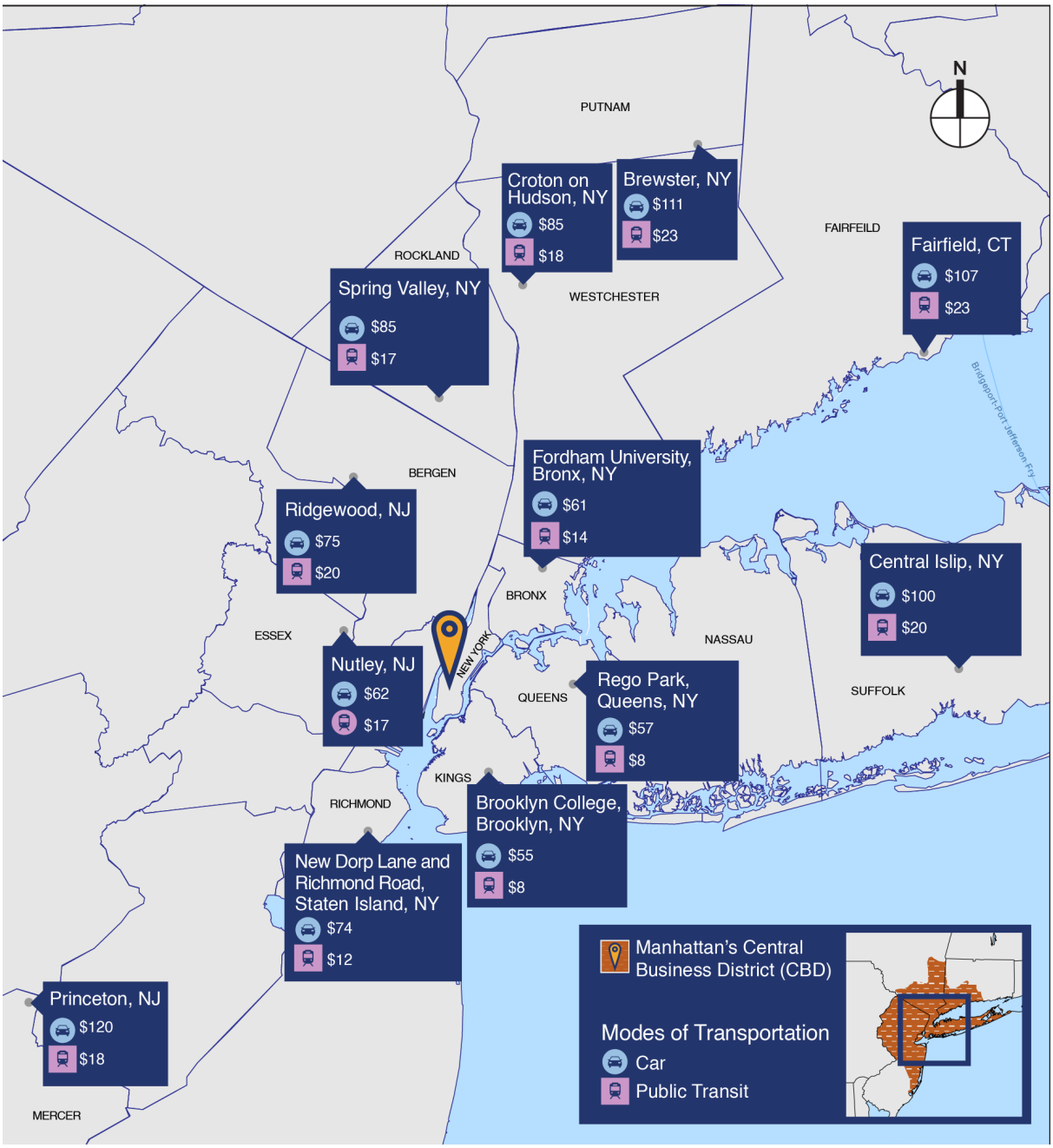
AUTO AND TRANSIT COMMUTE COSTS

The monetary cost of accessing the Manhattan CBD by auto versus transit is also important to take note of. The Manhattan CBD is the anchor of the regional economy and a destination for millions of daily trips. As discussed in many chapters of this EA, the vast majority of these trips are made via public transportation, but there are also tens of thousands of trips made by auto commuters. There are likely many reasons why a person may prefer to drive to Manhattan, but choosing to drive is an expensive undertaking for many reasons—notably extra vehicle operating costs due to congestion, existing tolls on various facilities, and limited and expensive parking.

To establish perspective, a representational typical commute from throughout the region has been evaluated to estimate the daily average cost of that trip either by auto or by transit. As shown in Figure 4A-3, this includes locations in New York City (Bronx, Queens, Brooklyn, and Staten Island), on Long Island (Central Islip), in New York communities to the north of New York City (Spring Valley, Croton-on-Hudson, Brewster), in New Jersey (Ridgewood to the north, Nutley in the central area, and Princeton to the south), and in Connecticut (Fairfield County). The average cost of each representative trip was developed using trip destinations to both a lower (World Trade Center) and upper (42nd Street, Bryant Park) Manhattan CBD location, which reflect different costs due to different routing and transit options. For these trips, when the cost of mileage, parking, and tolls are factored in, it is less expensive to take transit to the Manhattan CBD than to use a car.

For those who continue to use a car to travel to the Manhattan CBD, the overall trip cost would increase with the CBD Tolling Alternative because the CBD toll would be applied. During early public outreach, concern was raised by drivers who already pay tolls on tunnels and bridges before they enter the Manhattan CBD. To better understand the cost implications for drivers currently paying tolls to access the Manhattan CBD, Table 4A-18 provides information on the percentage increase in the cost of travel by auto that drivers could expect under the CBD Tolling Alternative for each tolling scenario for a representative trip to the World Trade Center. Table 4A-19 further provides sample toll costs for those same trips when using different crossing facilities.

[Figure 4A-3. Representative Commuting Costs in the Regional Study Area]



Source: WSP, Best Practice Model, Google Maps

Notes: See **Appendix 4A.3, "Transportation: Representative Commuting Costs by Auto and Transit"** for more detail on costs shown here.

1. Cost based on auto distance as measured by the BPM travel demand model and averaged for two destinations within the CBD (World Trade Center and 42nd Street, Bryant Park).
2. A typical driving route and transit route were obtained by reviewing recommended directions from Google Maps for an approximately 7:30 a.m. commute trip (and were compared for consistency with the BPM results).
3. Costs include the daily round-trip mileage expense using IRS Q1 2022 auto operating rate of 58.5 cents per mile, all applicable tolls, and parking.
4. For transit, the costs include the single or combination of fares and an added level of origin parking and destination travel cost.

Table 4A-18. Percentage Change in Round-Trip Driving Costs for Representative Route by Auto to the World Trade Center Using E-ZPass at 7:30 a.m.

				CBD TOLLING ALTERNATIVE - % INCREASE IN TRAVEL COST BY TOLLING SCENARIO (CBD TOLL FOR E-ZPASS PEAK AUTO)						
				SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
COUNTY	ORIGIN	CROSSING USED FOR ROUNDTRIP	NO ACTION ALTERNATIVE TRAVEL COST	Base Plan ($9)	Base Plan with Caps and Exemptions ($10)	Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($14)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD ($19)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	Base Plan with Same Tolls for All Vehicle Classes ($12)
The Bronx	Fordham University	RFK	$62	14.9%	16.4%	22.6%	30.7%	37.2%	16.0%	18.7%
Brooklyn	Brooklyn College	HCT	$54	17.1%	18.9%	13.9%	11.0%	18.4%	18.4%	21.6%
Queens	Rego Park	QMT	$59	15.6%	17.2%	12.6%	10.0%	16.8%	16.8%	19.7%
Staten Island	New Dorp	HCT	***[$67]***	***[13.7%]***	***[15.1%]***	***[11.1%]***	***[8.8%]***	***[14.7%]***	***[14.7%]***	***[17.3%]***
Suffolk	Central Islip	QMT	$102	9.0%	9.9%	7.3%	5.8%	9.7%	9.7%	11.4%
Rockland	Spring Valley	GWB	$86	10.7%	11.8%	16.3%	22.1%	26.8%	11.5%	13.5%
Westchester	Croton-on-Hudson	HHB	$86	10.6%	11.7%	16.2%	22.0%	26.6%	19.7%	13.4%
Putnam	Brewster	RFK	$116	7.9%	8.8%	12.1%	16.4%	19.9%	8.6%	10.0%
Bergen	Ridgewood	HT	$76	12.1%	13.3%	9.8%	7.8%	13.0%	13.0%	15.2%
Essex	Nutley	HT	$64	14.4%	15.8%	11.6%	9.2%	15.4%	15.4%	18.1%
Mercer	Princeton	HT	$116	7.9%	8.7%	6.4%	5.1%	8.5%	8.5%	10.0%
Fairfield	Fairfield	RFK	$113	8.1%	9.0%	12.4%	16.8%	20.3%	8.8%	10.3%

Source: WSP, BPM, Google Maps

Notes: See **Appendix 4A.3, "Transportation: Representative Commuting Costs by Auto and Transit"** for more detail on the No Action Alternative costs in this table.

1. Auto costs based on the auto route distance as measured by the BPM travel demand model.
2. A typical driving route was obtained by reviewing recommended directions from Google Maps for an approximately 7:30 a.m. commute trip (and were compared for consistency with the BPM results).
3. Costs include the daily round-trip mileage expense using IRS Q1 2022 auto operating rate of 58.5cents per mile, all applicable tolls and parking.
4. GWB–George Washington Bridge; HCT–Hugh L. Carey Tunnel; HHB–Henry Hudson Bridge; HT–Holland Tunnel; QMT–Queens Midtown Tunnel; RFK–Robert F. Kennedy Bridge.

[5. Driving cost from Staten Island assumes Verrazzano-Narrows Bridge tolls are $2.75 each way, which is consistent with the effective toll rate in MTA's Staten Island Resident Rebate Program.]

Table 4A-19. Total Tolls, Round-Trip, for Representative Routes by Auto to the World Trade Center Using E-ZPass at 7:30 a.m.

COUNTY	ORIGIN	CROSSING USED FOR ROUNDTRIP[1]	NO ACTION ALTERNATIVE TOLL COST, ROUND-TRIP[2]	CBD TOLLING ALTERNATIVE – TOTAL TOLLS BY TOLLING SCENARIO(CBD TOLL FOR E-ZPASS PEAK AUTO)						
				SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
				Base Plan ($9)	Base Plan with Caps and Exemptions ($10)	Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($14)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD ($19)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	Base Plan with Same Tolls for All Vehicle Classes ($12)
The Bronx	Fordham University	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Brooklyn	Brooklyn College	Hugh L. Carey Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Queens	Rego Park	Queens Midtown Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Staten Island	New Dorp[3]	VNB + Hugh L. Carey Tunnel	***[$18.60]***	***[$27.60]***	***[$28.60]***	***[$26.05]***	***[$24.50]***	***[$28.50]***	***[$28.50]***	***[$30.60]***
		VNB + Brooklyn Bridge	***[$5.50]***	***[$14.50]***	***[$15.50]***	***[$19.50]***	***[$24.50]***	***[$28.50]***	***[$28.50]***	***[$17.50]***
Suffolk	Central Islip	Queens Midtown Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Rockland	Spring Valley	George Washington Bridge	$13.75	$22.75	$23.75	$27.75	$32.75	$36.75	$23.65	$25.75
		MCB[4] + Willis Ave Bridge	$3.45	$12.45	$13.45	$17.45	$22.45	$26.45	$26.45	$15.45
Westchester	Croton-on-Hudson	Henry Hudson Bridge	$6.00	$15.00	$16.00	$20.00	$25.00	$29.00	$23.00	$18.00
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Putnam	Brewster	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Bergen	Ridgewood	George Washington Bridge	$13.75	$22.75	$23.75	$27.75	$32.75	$36.75	$23.65	$25.75
		Lincoln or Holland Tunnel	$13.75	$22.75	$23.75	$21.20	$19.65	$23.65	$23.65	$25.75
Essex	Nutley	Lincoln or Holland Tunnel	$13.75	$22.75	$23.75	$21.20	$19.65	$23.65	$23.65	$25.75
Mercer	Princeton	OBX + VNB + HCT[5]	$39.95	$48.95	$49.95	$47.40	$45.85	$49.85	$49.85	$51.95
		NJ Turnpike + Holland Tunnel	$23.08	$32.08	$33.08	$30.53	$28.98	$32.98	$32.98	$35.08
Fairfield	Fairfield	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00

Sources: TBTA, PANYNJ, NYSTA, Google Maps

1 A typical driving route was obtained by reviewing recommended directions from Google Maps for both toll and non-toll choices, where available.

2 Toll rates as of July 2022.

3 ***[Driving cost from Staten Island assumes Verrazzano-Narrows Bridge tolls are $2.75 each way, which is consistent with the effective toll rate in MTA's Staten Island Resident Rebate Program.]***

[4] MCB–Mario Cuomo Bridge. At the Mario Cuomo Bridge, the commuter E-ZPass cost of $3.45 is used here. The resident cost is $4.75; standard E-ZPass is $5.75; and out of state E-ZPass pays $6.61.

[5] OBX-Outerbridge Crossing; VNB–Verrazzano Narrows Bridge; HCT–Hugh L. Carey Tunnel.

BROOKLYN BRIDGE AND HUGH L. CAREY TUNNEL

The Brooklyn Bridge and Hugh L. Carey Tunnel would provide access across the East River to and from the FDR Drive and the West Side Highway/Route 9A that would not be subject to the Manhattan CBD toll. The Battery Park Underpass is not tolled and would not be tolled in the future, and therefore offers an untolled connection between the FDR Drive and the West Side Highway/Route 9A around the southern edge of Manhattan.

These Manhattan CBD toll exemptions for the Hugh L. Carey Tunnel ramps to the West Side Highway/Route 9A and Brooklyn Bridge ramps to the FDR Drive would provide a toll-free route around the Manhattan CBD to and from Brooklyn. Traffic from the Hugh L. Carey Tunnel and Brooklyn Bridge directly accessing Manhattan CBD streets would pay the Manhattan CBD toll. For all tolling scenarios, the total number of vehicles using the Brooklyn Bridge toward Manhattan would decrease, but volumes on the ramp connecting Manhattan-bound bridge traffic to the FDR Drive would increase (Table 4A-20). Tolling scenarios that provide crossing credits on TBTA facilities into the Manhattan CBD would subdue these increases, because crossing credits would increase the relative attractiveness of using TBTA tunnels.

Table 4A-20. Brooklyn Bridge Average Weekday Vehicle Volumes (Manhattan-Bound): No Action Alternative and Tolling Scenarios

DIRECTION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Manhattan-Bound								
Main Span	58,976	55,180	54,883	50,181	45,361	44,995	44,691	55,096
Ramp to FDR Drive	39,415	44,690	44,718	44,293	42,337	42,155	41,830	45,270
Ramps to Manhattan CBD	19,164	10,091	9,767	5,491	2,626	2,442	2,463	9,428
Manhattan-Bound (Difference from No Action Alternative)								
Main Span	—	-3,796	-4,093	-8,795	-13,615	-13,981	-14,285	-3,880
Ramp to FDR Drive	—	5,275	5,303	4,878	2,922	2,740	2,415	5,855
Ramps to Manhattan CBD	—	-9,073	-9,397	-13,673	-16,538	-16,722	-16,701	-9,736

Note: Volumes in this table are results directly from the BPM. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** includes more detailed traffic engineering analysis with additional bridge capacity and operational restrictions, which are beyond the scope of regional analysis considered by the BPM.

Manhattan-bound volumes in the Hugh L. Carey Tunnel would increase for all tolling scenarios. For Tolling Scenario A and Tolling Scenario B, volume increases would result from increased demand to West Street and the FDR Drive via the Battery Park Underpass (Table 4A-21). This connection would not be subject to the Manhattan CBD toll in any of the tolling scenarios. For Tolling Scenarios C, D, E and F, use of the tunnel would also increase in response to the crossing credits for the TBTA tunnel toll. In these tolling scenarios, the increase in traffic would be derived from travelers diverted by the advantage of Manhattan CBD crossing credits offered by using the Hugh L. Carey Tunnel to access the Manhattan CBD.

Table 4A-21. Hugh L. Carey Tunnel Average Weekday Vehicle Volumes (Manhattan-Bound): No Action Alternative and Tolling Scenarios

DIRECTION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Manhattan-Bound								
Volume	31,063	31,785	32,061	41,122	51,087	51,369	50,962	31,580
Manhattan-Bound (Difference from No Action Alternative)								
Volume	—	722	998	10,059	20,025	20,306	19,900	517

Note: Volumes in this table are results directly from the BPM. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** includes more detailed traffic engineering analysis with additional tunnel capacity and operational restrictions, which are beyond the scope of regional analysis considered by the BPM.

TRUCK TRIPS

BPM analysis of truck trips assumed that deliveries would still be made to restaurants, businesses, and residents regardless of Project implementation. The BPM assumed that trip origins and destinations of trucks and other commercial vehicles would remain consistent across all the tolling scenarios. As a result, all modeled reductions in trucks into the Manhattan CBD would result from through-trips diverting around the Manhattan CBD, balancing increased cost to access the Manhattan CBD and increased travel times to avoid the Manhattan CBD. The BPM analysis also assumed that trucks would use only valid truck routes.

The model estimates a reduction in trucks through the Manhattan CBD ranging from approximately 1,700 trucks in Tolling Scenario G to nearly 6,800 trucks in Tolling Scenario F compared to the No Action Alternative (Table 4A-22). Tolling Scenario F would have the highest tolls for trucks entering the Manhattan CBD.

Table 4A-22. Average Daily Truck Trips through the Manhattan CBD: No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Truck Trips Through Manhattan CBD	8,392	3,746	3,424	3,139	2,705	1,788	1,607	6,657
Difference	—	-4,645	-4,967	-5,253	-5,687	-6,604	-6,784	-1,734

In addition to the BPM analysis, an assessment of truck travel changes from the congestion pricing programs in London and Stockholm were reviewed, along with findings from academic research on the propensity of shippers to switch toward overnight (or lower-toll period) deliveries once the Project is under way. Most importantly, the London and Stockholm post-implementation studies suggest that truck delivery companies continue to deliver their goods regardless of a congestion pricing program. Commercial stores still need their goods delivered. In some instances when reduced congestion in the core could improve travel times, some truck companies switched their deliveries into the peak period to deliver their goods.

For example, the congestion pricing program trial in Stockholm resulted in more truck deliveries in the middle of the day between commuting peak hours. Stockholm truck distribution companies were surveyed,

and feedback showed that companies felt positively about the program regarding reduced congestion and more efficient deliveries.[26]

Transport for London reported that approximately 10 percent of business sectors changed their policies on the timing of deliveries in response to the congestion pricing program. Like Stockholm, these temporal changes have resulted in truck companies either taking advantage of reduced congestion or avoiding congestion charges altogether.[27]

A report published in 2011[28] concludes that *[many]* truck delivery carriers are limited in their ability to change delivery times because receivers need to agree to overnight deliveries. Receivers *[may prefer regular-hour deliveries because they typically have more staff on hand, as opposed to off-hour deliveries that could require additional staff, security, lighting, and other costs]*. Chapter 6, "Economic Conditions," *[Section 6.3.3.2,]* provides an analysis of the economic effects of the CBD Tolling Alternative on truck delivery companies and the receivers of their deliveries.

[For the Final EA, the Project Sponsors have added two new mitigation commitments to incentivize off-peak truck deliveries and reduce the number of trucks that divert around the Manhattan CBD: 1) a commitment to further reduce overnight toll rates; and 2) a commitment to expand NYCDOT's Off-Hours Delivery Program, a pilot program that provides support for businesses that shift their deliveries to off-peak periods.]

VEHICLE-MILES TRAVELED

Under all tolling scenarios, daily VMT would decline across the 28-county region, with the greatest declines occurring within the Manhattan CBD (see Table 4A-7). For the tolling scenarios analyzed, higher toll rates lead to more daily VMT reductions. Tolling scenarios with crossing credits temper daily VMT reductions in the Manhattan CBD, while leading to greater reductions outside of the Manhattan CBD. Within the Manhattan CBD Core, daily VMT would decline from 1.22 million in the No Action Alternative to between 1.14 million and 1.18 million (a decrease of between 2.8 percent and 6.2 percent). For the entire Manhattan CBD, daily VMT would decline from 3.24million in the No Action Alternative to between 2.95 million and 3.02 million (a decrease of between 9.2 percent and 7.1 percent). In 2023 for all tolling scenarios, the regional daily VMT would decline from 254.7 million to between 253.6 million and 254.2 million daily VMT (a decrease of between 0.4 percent and 0.2 percent).

Due to traffic diverting around Manhattan to avoid the Manhattan CBD toll, VMT would increase on Staten Island for all tolling scenarios and in the Bronx for Tolling Scenarios A, B, C, F, and G. Table 4A-25 and Table 4A-27 present the quantity of these changes. Through the early outreach for the Project, the Project Sponsors heard from environmental justice communities that they would like a better understanding of the composition of vehicles that would be responsible for these VMT increases. Thus, Table 4A-26 and

[26] Congestion Charge Secretariat, City of Stockholm. Facts and results from the Stockholm Trials. December 2006. http://www.planetizen.com/files/Final%20Report_The%20Stockholm%20Trial.pdf.

[27] Transport for London. Impacts monitoring: Second Annual Report. April 2004. http://content.tfl.gov.uk/impacts-monitoring-report-2.pdf.

[28] Holguín-Veras, José. (2011). Urban delivery industry response to cordon pricing, time-distance pricing, and carrier-receiver policies in competitive markets. Transportation Research Part A: Policy and Practice. Volume 45, Issue 8, 2011, pp. 802-824, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2011.06.008.

Table 4A-28 provide the vehicle types related to these changes for Staten Island and the Bronx, respectively.

Some increases in VMT would occur within or near environmental justice communities. Chapter 17, "Environmental Justice," discusses a broader description of these increases. However, VMT changes were tabulated for environmental justice and non-environmental justice communities and are presented in Table 4A-23 and Table 4A-24 for the various subareas of the region. A comparison of the two tables reveals the following:

- Within New York City, non-environmental justice areas would have slightly higher reductions in VMT in all but tolling scenario F compared to environmental justice areas.
- Within the Manhattan CBD core, environmental justice areas would have higher reductions in VMT for all tolling scenarios compared to non-environmental justice areas.
- Within NYC Subarea 1, environmental justice areas would have slightly lower reductions in VMT compared to non-environmental justice areas for Tolling Scenarios A, B, and G (tolling scenarios without crossing credits) and slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F (tolling scenarios with crossing credits).
- Within NYC Subarea 2, environmental justice areas would experience similar but slightly lower reductions in VMT compared to non-environmental justice areas, in all but Tolling Scenario F.
- Within NYC Subarea 3, environmental justice areas would experience slight reductions in VMT in Tolling Scenarios C, D, E, and F, while non-environmental justice areas would experience increases in VMT.
- For all New York counties, environmental justice areas would experience slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F.

For all Long Island counties, environmental justice areas would experience similar or slightly higher reductions in VMT compared to non-environmental justice areas for all tolling scenarios. For all New Jersey and Connecticut counties, environmental justice areas would experience similar changes in VMT compared to non-environmental justice areas for all tolling scenarios.

MODE SHIFT TO TRANSIT

Some of the decline in auto access to the Manhattan CBD would translate to increases in transit trips. Transit trips (e.g., commuter rail, subway, bus, tram, and ferry) to the Manhattan CBD from outside the Manhattan CBD would increase between 1 percent and 2 percent, depending on the tolling scenario (see Table 4A-8). These transit trips represent an AM peak period (6:00 a.m. to 10:00 a.m.) increase of between 22,000 and 45,000 people each weekday. See Subchapter 4C, "Transportation: Transit," for a more complete description of the changes in transit use.

Table 4A-23. Vehicle-Miles Traveled Percentage Changes by Tolling Scenario in Environmental Justice Census Tracts by Subarea (2023)

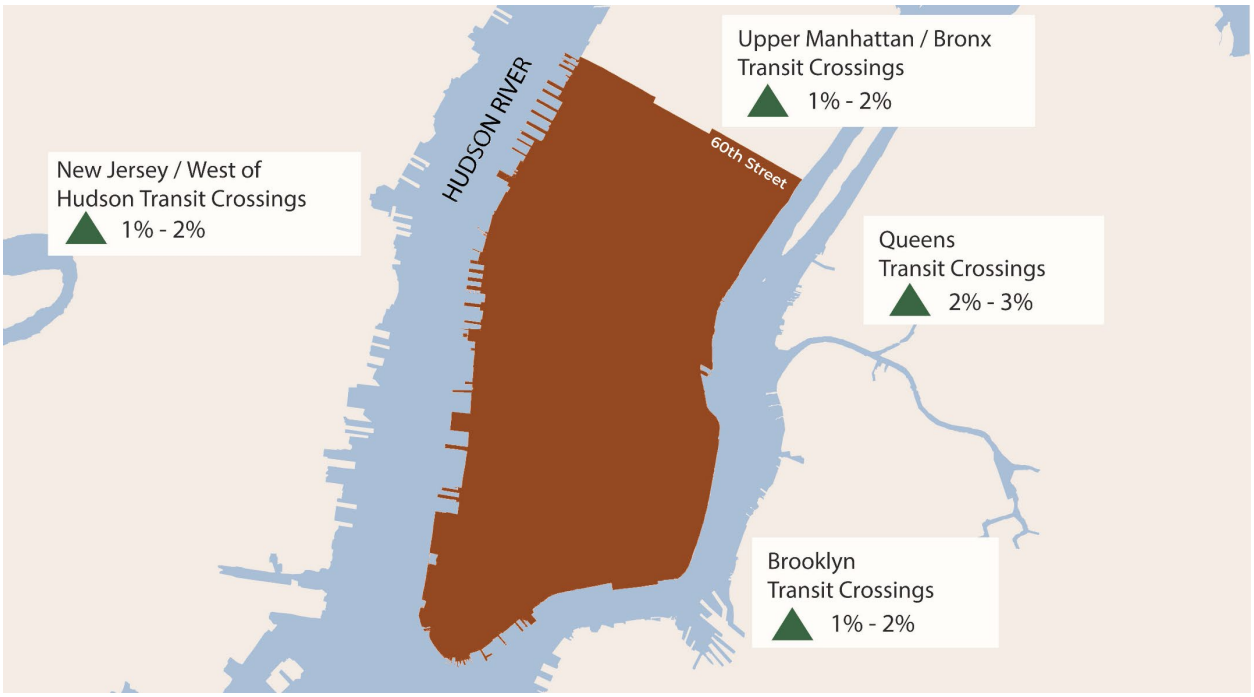
LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**54,496,693**	**-0.3%**	**-0.3%**	**-0.7%**	**-1.0%**	**-1.1%**	**-0.8%**	**-0.4%**
New York City	30,852,557	-0.5%	-0.4%	-1.0%	-1.4%	-1.5%	-1.2%	-0.5%
Manhattan CBD	1,048,542	-8.0%	-7.8%	-11.1%	-15.6%	-16.2%	-14.4%	-8.7%
CBD Core	338,339	-10.3%	-10.1%	-12.3%	-15.5%	-16.7%	-14.3%	-11.4%
Peripheral Highways (south of 60th Street; excluded from the toll)	710,203	-6.9%	-6.7%	-10.6%	-15.6%	-15.9%	-14.4%	-7.4%
West Side Highway/Route 9A	181,790	-12.8%	-12.4%	-15.0%	-18.3%	-19.0%	-16.2%	-13.6%
FDR Drive	338,626	1.6%	2.2%	0.8%	-0.8%	-0.1%	1.1%	2.0%
Bridges & Tunnels	189,787	-16.6%	-17.2%	-26.5%	-39.5%	-41.3%	-40.4%	-18.4%
NYC Subarea 1 (see Figure 4A-2)	871,420	-7.3%	-7.6%	-10.7%	-14.5%	-14.9%	-14.4%	-8.3%
NYC Subarea 2 (see Figure 4A-2)	3,992,349	-0.1%	0.0%	-0.7%	-1.5%	-1.6%	-1.2%	-0.2%
NYC Subarea 3 (see Figure 4A-2)	24,940,246	0.0%	0.1%	-0.3%	-0.3%	-0.4%	-0.2%	0.0%
Long Island Counties (2)	14,052,534	-0.1%	0.0%	-0.2%	-0.3%	-0.3%	-0.1%	-0.1%
New York Counties North of New York City (5)	9,591,602	-0.1%	-0.2%	-0.4%	-0.7%	-0.8%	-0.6%	-0.2%
New Jersey Counties (14)	**42,703,264**	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.0%**
Connecticut Counties (2)	**8,274,823**	**-0.1%**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.1%**	**0.0%**	**-0.2%**
TOTAL	**105,474,780**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.5%**	**-0.5%**	**-0.3%**	**-0.2%**

Table 4A-24. Vehicle-Miles Traveled Percentage Changes by Tolling Scenario in Non-Environmental Justice Census Tracts by Subarea (2023)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**67,689,790**	**-0.4%**	**-0.4%**	**-0.6%**	**-0.6%**	**-0.7%**	**-0.4%**	**-0.5%**
New York City	16,279,182	-1.5%	-1.3%	-1.6%	-1.5%	-1.6%	-1.0%	-1.6%
Manhattan CBD	2,196,245	-7.6%	-7.5%	-6.6%	-5.4%	-5.9%	-3.6%	-8.3%
CBD Core	879,387	-3.6%	-3.5%	-1.7%	-0.7%	-1.5%	1.6%	-4.2%
Peripheral Highways (south of 60th Street; excluded from the toll)	1,316,858	-10.3%	-10.1%	-9.8%	-8.5%	-8.7%	-7.0%	-11.0%
West Side Highway/Route 9A	428,866	-17.8%	-17.3%	-21.0%	-21.5%	-20.9%	-18.6%	-17.9%
FDR Drive	382,055	-0.2%	0.4%	-1.2%	-3.2%	-2.6%	-0.8%	-0.1%
Bridges & Tunnels	505,937	-11.5%	-12.0%	-6.9%	-1.5%	-3.1%	-1.9%	-13.4%
NYC Subarea 1 (see Figure 4A-2)	1,346,653	-7.8%	-7.6%	-9.0%	-10.1%	-10.7%	-9.7%	-8.5%
NYC Subarea 2 (see Figure 4A-2)	2,668,602	-1.2%	-1.1%	-1.7%	-0.9%	-1.1%	-0.6%	-1.4%
NYC Subarea 3 (see Figure 4A-2)	10,067,682	0.7%	0.8%	0.6%	0.4%	0.4%	0.5%	0.8%
Long Island Counties (2)	27,533,010	0.1%	0.0%	0.0%	-0.2%	-0.2%	0.1%	0.0%
New York Counties North of New York City (5)	23,877,598	-0.2%	-0.2%	-0.5%	-0.6%	-0.8%	-0.5%	-0.3%
New Jersey Counties (14)	**54,874,836**	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.1%**
Connecticut Counties (2)	**26,635,047**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.1%**	**-0.2%**
TOTAL	**149,199,673**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.3%**	**-0.1%**	**-0.2%**

While **Table 4A-8** shows a more aggregate change in transit activity, **Figure 4A-4** shows a more detailed picture of the changes in transit trips (crossings) into the Manhattan CBD from different locations outside of the Manhattan CBD. All tolling scenarios would lead to an increase in transit trips from each location shown in the map.

Figure 4A-4. Change in Transit Crossings into the Manhattan CBD



Source: BPM, range of results across all tolling scenarios

DIVERSIONS TO OTHER ROUTES

With the CBD Tolling Alternative, some people who previously traveled through the Manhattan CBD in vehicle or truck would choose a different path to avoid the Manhattan CBD altogether. For example, a person traveling by car from Caldwell, New Jersey, to Lincoln Center in Manhattan typically uses the Lincoln Tunnel between New Jersey and New York. Under some of the tolling scenarios, that same person would likely choose to reroute across the George Washington Bridge to avoid the Manhattan CBD toll. Between 72 percent and 82 percent of the total traffic reductions in the Manhattan CBD would be from through-trips finding other paths that do not include the Manhattan CBD.

In addition, some drivers who would continue to drive to the Manhattan CBD would choose a different route based on the introduction of Manhattan CBD crossing credits. In tolling scenarios with crossing credits, some drivers would choose more direct paths using free or reduced crossing credits when the cost of the toll is crossing-credited against their CBD toll, thereby minimizing the cost differential of traffic on East River crossings. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** examines these specific highway- and intersection-based consequences and potential impacts of the CBD Tolling Alternative.

DIVERSION EFFECTS ON STATEN ISLAND

As a result of diversions, average daily traffic and congestion would increase in certain corridors outside of the Manhattan CBD. VMT, average daily traffic, and congestion in Staten Island would increase as a result of the CBD Tolling Alternative. This increase would be limited mostly to highways, with a minimum of change on local streets. In Staten Island, 92 percent of the total increase in VMT in Tolling Scenario A would be on highways (Table 4A-25). For tolling scenarios with crossing credits, the share of additional VMT on the highways in Staten Island would decline to 84 percent of the total increase.

On Staten Island highways, more than 90 percent of the increase in VMT would be caused by increased personal vehicle traffic, with the remaining percentage from commercial trucks in all tolling scenarios (Table 4A-26).

DIVERSION EFFECTS IN THE BRONX

As a result of diversions, average daily traffic and congestion would increase in certain corridors outside of the Manhattan CBD. In the Bronx, VMT would increase across Tolling Scenarios A, B, C, F, and G, with all the increase in VMT in the tolling scenarios occurring on highways (in each direction of travel) and ramps while local streets would have less VMT (Table 4A-27). In Tolling Scenarios A, B, C, F, and G, VMT in the Bronx would increase for personal vehicles, while VMT for commercial trucks would increase in all tolling scenarios except G (Table 4A-28).

During the public outreach phase of the Project, several commenters raised questions about the type and location of diversions in the Bronx, and particularly on the Cross Bronx Expressway, the Bruckner Expressway, and the Major Deegan Expressway. Additional analysis was conducted to address these questions, and it is presented here.

Increases in VMT in the Bronx would be driven largely by increases in VMT on the Cross Bronx Expressway between the Alexander Hamilton Bridge and the two Long Island Sound crossings (Whitestone and Throgs Neck Bridges). Personal vehicle VMT would comprise most of the VMT increases on the Cross Bronx Expressway, with commercial truck VMT contributing roughly 25 percent of the overall VMT increase in all tolling scenarios (Table 4A-29).

On Bronx highways other than the Cross Bronx Expressway, VMT would increase in Tolling Scenarios A, B, F, and G. All tolling scenarios with crossing credits would have lower VMT changes than Tolling Scenarios A and B, and Tolling Scenarios C, D, and E would have a decrease in VMT on other Bronx highways. (Table 4A-31).

Table 4A-25. Staten Island Daily Vehicle-Miles Traveled by Roadway Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Staten Island Vehicle-Miles Traveled								
All Roads	3,986,457	4,071,056	4,078,180	4,078,984	4,076,004	4,085,745	4,080,603	4,098,571
Highways	1,954,370	2,032,359	2,037,322	2,038,405	2,031,673	2,040,204	2,033,669	2,052,174
Local Streets	1,848,897	1,851,808	1,853,295	1,853,460	1,856,424	1,857,188	1,859,385	1,858,658
Ramps	183,191	186,890	187,563	187,119	187,907	188,354	187,549	187,739
Staten Island Vehicle-Miles Traveled (Difference from No Action Alternative)								
All Roads	—	84,598	91,723	92,526	89,547	99,288	94,145	112,113
Highways	—	77,988	82,952	84,035	77,303	85,834	79,299	97,804
Local Streets	—	2,911	4,398	4,563	7,527	8,291	10,488	9,762
Ramps	—	3,699	4,372	3,928	4,716	5,163	4,358	4,548

Table 4A-26. Staten Island Daily Vehicle-Miles Traveled on Highways by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Staten Island Highway Vehicle-Miles Traveled								
Personal Vehicle	1,784,013	1,863,248	1,866,725	1,867,229	1,859,509	1,867,296	1,862,611	1,885,233
Taxi/FHV/ Commercial Van	54,327	49,048	49,105	49,358	50,283	48,622	49,341	49,767
Commercial Truck	110,041	114,074	115,505	115,830	115,893	118,298	115,729	111,186
Bus	5,988	5,988	5,988	5,988	5,988	5,988	5,988	5,988
Staten Island Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	79,235	82,711	83,216	75,496	83,283	78,598	101,220
Taxi/FHV/ Commercial Van	—	-5,279	-5,223	-4,969	-4,044	-5,705	-4,986	-4,560
Commercial Truck	—	4,033	5,464	5,789	5,852	8,257	5,687	1,144
Bus*	—	*	*	*	*	*	*	*

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-27. Bronx Daily Vehicle-Miles Traveled by Roadway Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Vehicle-Miles Traveled								
All Roads	7,489,634	7,512,109	7,508,943	7,491,356	7,479,948	7,465,870	7,495,104	7,497,337
Highways	4,941,832	4,965,292	4,965,119	4,950,635	4,941,795	4,934,194	4,953,800	4,956,677
Local Streets	2,017,196	2,012,399	2,010,155	2,008,325	2,006,281	2,001,172	2,007,692	2,006,147
Ramps	530,606	534,418	533,668	532,397	531,872	530,504	533,613	534,513
Bronx Vehicle-Miles Traveled (Difference from No Action Alternative)								
All Roads	—	22,475	19,308	1,722	-9,686	-23,764	5,470	7,703
Highways	—	23,460	23,287	8,803	-38	-7,638	11,967	14,844
Local Streets	—	-4,797	-7,041	-8,872	-10,915	-16,024	-9,504	-11,049
Ramps	—	3,812	3,063	1,791	1,266	-102	3,007	3,907

Table 4A-28. Bronx Daily Vehicle-Miles Traveled on Highways by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	4,275,956	4,298,318	4,294,704	4,282,357	4,275,223	4,264,603	4,282,572	4,296,317
Taxi/FHV/ Commercial Van	249,631	242,846	245,607	245,673	243,385	247,686	249,576	244,131
Commercial Truck	405,597	413,481	414,161	411,957	412,540	411,258	411,005	405,582
Bus	10,647	10,647	10,647	10,647	10,647	10,647	10,647	10,647
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	22,362	18,748	6,401	-734	-11,354	6,616	20,360
Taxi/FHV/ Commercial Van	—	-6,786	-4,024	-3,958	-6,246	-1,945	-56	-5,500
Commercial Truck	—	7,884	8,564	6,360	6,942	5,660	5,407	-16
Bus*	—	*	*	*	*	*	*	*

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-29. Cross-Bronx Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	562,113	573,862	571,858	570,545	567,198	569,538	567,172	574,355
Taxi/FHV/ Commercial Van	35,574	35,752	36,516	36,513	36,928	37,472	37,117	36,352
Commercial Truck	100,673	102,559	102,661	101,775	102,333	101,447	102,642	100,226
Bus	58	58	58	58	58	58	58	58
TOTAL	**698,418**	**712,232**	**711,093**	**708,892**	**706,518**	**708,515**	**706,989**	**710,991**
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	11,749	9,746	8,433	5,086	7,426	5,059	12,242
Taxi/FHV/ Commercial Van	—	179	942	939	1,354	1,898	1,543	778
Commercial Truck	—	1,886	1,988	1,102	1,660	774	1,969	-447
Bus*	—	*	*	*	*	*	*	*
TOTAL	—	**13,814**	**12,675**	**10,474**	**8,100**	**10,097**	**8,571**	**12,573**

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Finally, several comments were made regarding traffic and VMT increases on the three primary highways in the South Bronx—the Cross Bronx Expressway, Major Deegan Expressway, and Bruckner Expressway. The increases on the Cross Bronx Expressway are covered earlier in this section. The Major Deegan Expressway and Bruckner Expressway would both have lower VMT in all the tolling scenarios compared to the No Action Alternative. With the number of vehicles entering the Manhattan CBD decreasing, fewer drivers would use these two highways to access the CBD thus reducing VMT on these two highways (Table 4A-32).This is consistent as well with an overall decline in driving on local streets within the Bronx (Table 4A-27).

During early public outreach, concern was raised regarding the incremental increase in truck traffic, specifically, over the Cross Bronx Expressway. Additional analysis was done to provide more insight into the number of trucks that would divert. As a result of that analysis, Tolling Scenario G was added to this EA to demonstrate how that number could be reduced through the toll structure. Table 4A-30 shows the volume of trucks on the Cross Bronx Expressway at Macombs Road, a location with a particularly high increase in daily truck volume. Analysis of the reason behind the truck volume increases revealed that long-distance trucks that previously passed through the Manhattan CBD would switch to the Cross Bronx Expressway in large numbers in Tolling Scenarios A through F. The significant reduction in additional trucks in Tolling Scenario G would result from reducing the truck toll to match the passenger vehicle toll.

Table 4A-30. Cross-Bronx Daily Truck Volume Changes (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Cross Bronx Expressway Daily Truck Volume at Macombs Road								
Commercial Trucks	27,592	28,100	28,296	27,762	28,102	27,970	28,128	27,642
Cross Bronx Expressway Daily Truck Volume at Macombs Road (Difference from No Action Alternative)								
Commercial Trucks	—	509	704	170	510	378	536	50

Source: WSP, BPM

Table 4A-31. Bronx Highways excluding Cross Bronx Expressway Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	3,713,844	3,724,456	3,722,846	3,711,812	3,708,024	3,695,064	3,715,400	3,721,962
Taxi/FHV/ Commercial Van	214,057	207,093	209,091	209,160	206,457	210,215	212,459	207,780
Commercial Truck	304,924	310,922	311,500	310,182	310,207	309,811	308,362	305,356
Bus	10,589	10,589	10,589	10,589	10,589	10,589	10,589	10,589
TOTAL	**4,243,414**	**4,253,061**	**4,254,026**	**4,241,743**	**4,235,277**	**4,225,679**	**4,246,811**	**4,245,687**
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	10,613	9,002	-2,032	-5,819	-18,779	1,557	8,118
Taxi/FHV/ Commercial Van	—	-6,964	-4,966	-4,897	-7,601	-3,843	-1,598	-6,278
Commercial Truck	—	5,998	6,576	5,257	5,283	4,887	3,438	431
Bus*	—	*	*	*	*	*	*	*
TOTAL	—	**9,646**	**10,612**	**-1,671**	**-8,137**	**-17,735**	**3,396**	**2,271**

* In the BPM, all buses (e.g., Metropolitan Transportation Agency [MTA] New York City Transit, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-32. Select Bronx Highways Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Select Bronx Highways Vehicle-Miles Traveled								
Major Deegan Freeway	1,119,278	1,115,360	1,114,715	1,106,730	1,105,357	1,103,220	1,111,200	1,113,208
Bruckner Expressway	476,409	472,256	476,060	472,911	467,568	465,258	471,241	472,443
Select Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Major Deegan Freeway	—	-3,918	-4,563	-12,548	-13,921	-16,058	-8,078	-6,070
Bruckner Expressway	—	-4,154	-349	-3,499	-8,842	-11,151	-5,169	-3,966

TRIP SUPPRESSION

Trip suppression is a trip to the Manhattan CBD that would be "canceled" as a result of the Project. The trip would either no longer take place or divert to a different destination outside of the Manhattan CBD. These types of trips are different from trips that switch modes from driving to transit as discussed earlier in this chapter. The BPM includes explicit representations of destination change and mode choice; however, the BPM has a limited accounting for the third and smallest type of trip suppression (i.e., trip cancellation).

It is anticipated that some trips would be canceled due to the implementation of the Project based on similar program implementations in London and Stockholm. In those implementations, there is a strong relationship between trip cancellation and congestion pricing programs, although the available data varies between London and Stockholm. Of the available data, the trends in London and Stockholm similarly show that the implementation of congestion pricing programs are effective in reducing car traffic and suppressing trips to a CBD. After one year of implementing congestion pricing in Central London in February 2003, the number of vehicles entering the Central London CBD charging zone decreased by 18 percent, and there was an average daily decrease of approximately 60,000 trips made to the Central London CBD. Of these 60,000 trips, approximately 50 percent switched to public transit, approximately 20 percent of trips avoided the Central London CBD charging zone, roughly 15 percent switched to car share, and the remaining 15 percent of trips were assumed to be suppressed. In 2020, the program charged a flat weekday fee of £15 (around $20.25) when entering the zone between 7:00 a.m. and 10:00 p.m.

Similarly, after a six-month trial, Stockholm saw a 22 percent decrease in car traffic entering the Stockholm CBD charging zone between 2005 and 2006. Less than 50 percent of car users who stopped commuting into the Stockholm CBD charging zone switched to transit. It can be inferred that the remaining 50 percent or so of trips that were no longer made to the Stockholm CBD were suppressed, transferred to car share, routed elsewhere outside the Stockholm CBD, or switched to take place outside of tolling hours. The Stockholm CBD charges were effective weekdays from 6:30 a.m. to 6:30 p.m., and the price was set at 10 SEK to 20 SEK (US $1.33 to $2.67 at 2006 rates) for off-peak and peak periods.

TAXIS AND FHVS

The tolling scenarios test a variety of tolling policies for taxis and FHVs ranging from charging a toll each time a taxi or FHV enters the Manhattan CBD to a complete exemption from paying the CBD toll. **Table 4A-33** provides an overview of the CBD tolling policy for taxis and FHVs in each tolling scenario. The CBD tolls would be collected in addition to the New York State Congestion Surcharge[29] of $2.50 and $2.75 for taxis and FHVs, respectively, for trips that start, end, or pass through the congestion surcharge zone—Manhattan south of 96th Street.

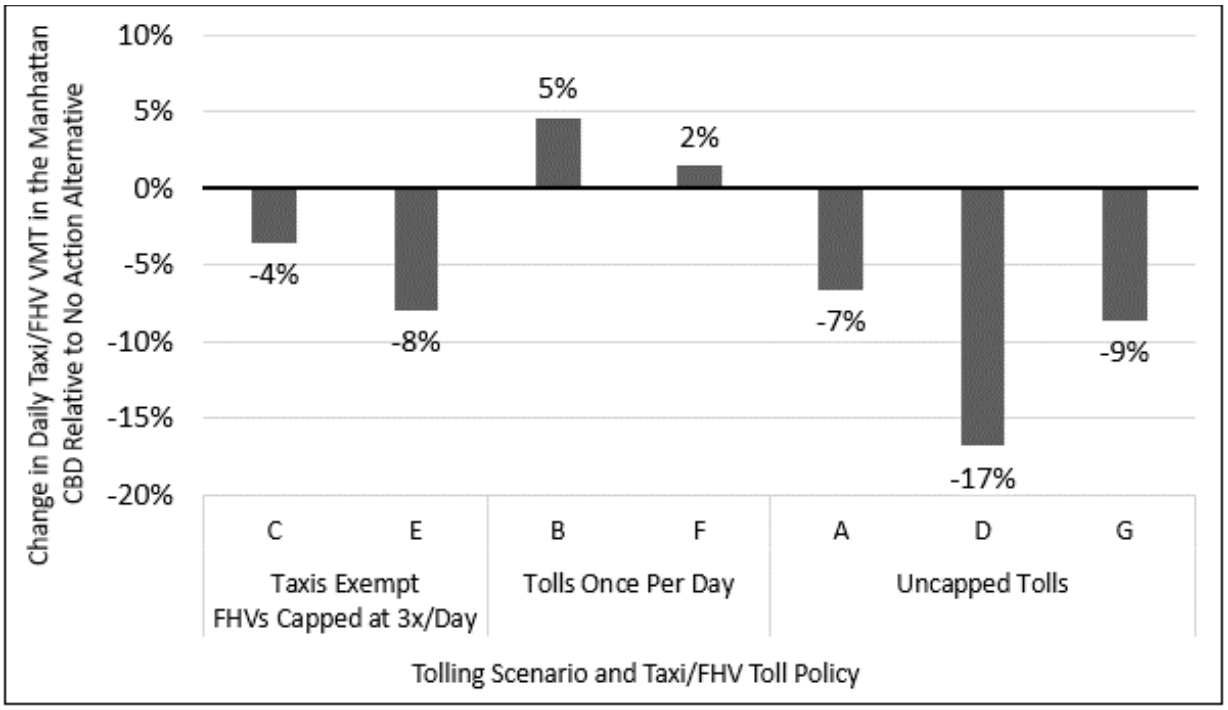
[29] Congestion Surcharge. New York City Taxi & Limousine Commission. December 25, 2021. https://www1.nyc.gov/site/tlc/about/congestion-surcharge.page.

Table 4A-33. Taxi and FHV Manhattan CBD Tolling Policy

TOLLING POLICY	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Taxi Manhattan CBD Toll Policy	All Entries	Once per Day	Exempt	All Entries	Exempt	Once per Day	All Entries
FHV Manhattan CBD Toll Policy	All Entries	Once per Day	Up to 3x a Day	All Entries	Up to 3x a Day	Once per Day	All Entries

The CBD tolling policy for taxis and FHVs when combined with varying CBD toll rates would change demand for taxis and FHVs into, out of, and within the Manhattan CBD. Figure 4A-5 demonstrates how the different tolling policies would affect taxi and FHV VMT. Exemptions and caps decrease the toll burden on taxi/FHV drivers, while increasing the toll rate for other drivers to meet the Project's congestion and revenue objectives. If taxis and FHVs are charged for each trip, the demand for their service would decline, particularly in New York City, reducing trips and better meeting the Project objectives, but creating new direct costs and/or potential job insecurity.

Figure 4A-5. Changes in Daily Taxi/FHV VMT in the Manhattan CBD, CBD Tolling Alternative Tolling Scenarios Compared to the No Action Alternative



Source: Best Practice Model, WSP 2021

Additional Analyses of Taxis and FHVs

In response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on both taxi and FHV drivers, additional analyses were conducted. Specifically, analyses were done to assess the revenue and traffic effects of implementing Tolling Scenarios A and D with a cap of once per day for taxis and FHVs (like Tolling Scenarios B and F) and implementing Tolling

Scenario D with both taxis and FHVs exempt from the toll. In the following tolling scenarios, the revenue objectives of the Project would be maintained. The results of these analyses are presented as follows:

- Tolling Scenario A with Taxis/FHVs Capped at Once Per Day. The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $100 million in forgone net annual revenue under the tolling rates used in Tolling Scenario A. The cap would result in about 20 percent more taxis and FHVs entering the Manhattan CBD as compared to the original Tolling Scenario A presented earlier in this subchapter. To still meet the congestion and revenue objective of the Project, tolls would need to be raised 10 percent to 15 percent on all vehicle classes in Tolling Scenario A to offset forgone taxi and FHV revenues. This would further reduce personal vehicles and trucks at the Manhattan CBD boundary by 2 percent to 3 percent compared to Tolling Scenario A. However, the decline in personal vehicles and trucks would be mostly offset by the increase in taxis and FHVs entering the Manhattan CBD. As a result, the volumes of all vehicles entering the Manhattan CBD would not change in aggregate.
- Tolling Scenario D with Taxis/FHVs Capped at Once Per Day. The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $150 million to $180 million in forgone net annual revenue under the tolling rates used in Tolling Scenario D. The cap would result in about 25 percent more taxis and FHVs entering the Manhattan CBD compared to the existing Tolling Scenario D. Tolling Scenario D—as presented originally with uncapped tolling of taxis and FHVs—would exceed the annual net revenue objectives of the Project by over $300 million. Thus, it is reasonably expected that a cap on taxis and FHVs so that these vehicles would be charged once each day could be accommodated without needing to raise toll rates presented in Tolling Scenario D.
- Tolling Scenario D with Taxi/FHV Tolling Exemption. The estimated value of a taxi and FHV toll exemption is $200 million to $250 million in forgone net annual revenue under the tolling rates used in Tolling Scenario D. Exempting taxis and FHVs from the CBD toll would increase the number of additional taxis and FHVs entering the Manhattan CBD by up to 50 percent compared to the existing Tolling Scenario D. Tolling Scenario D—as presented originally with no exemptions for taxis and FHVs—would exceed the annual net revenue objectives of the Project by over $300 million. Thus, it is reasonably expected that including an exemption for taxis and FHVs so that these vehicles would not be charged could be accommodated without needing to raise toll rates presented in Tolling Scenario D.
- Tolling Scenario G with Taxis/FHVs Capped at Once Per Day. A variation of Tolling Scenario G was run to test the impact of adding a one-charge-per-day cap to taxis and FHVs. Adding this cap required increasing tolls on other vehicles by about 10 percent to meet the Project's revenue goal. This toll increase was low enough so as not to notably affect the results from Tolling Scenario G and, importantly, still addresses the concerns regarding commercial truck traffic in the South Bronx, though the number of trucks on the Cross Bronx Expressway at Macombs Road, would shift from 50 to 251, still lower than every other tolling scenario except Tolling Scenario C.

[For the Final EA, the Project Sponsors have committed to new mitigation to address the Project's potential effects on taxi and FHV drivers. Specifically, TBTA will ensure that a toll structure with tolls of no more than once per day for taxis or FHVs is included in the final CBD toll structure.]

"WHO PAYS" ANALYSIS

To better understand the distribution of toll revenue (burdens) and CBD trips (benefits) by geography, an analysis was conducted that quantified the share of revenues paid by drivers from different geographies versus the share of trips made to the Manhattan CBD from each of those same geographies. This analysis became known as "Who Pays." This was conducted using results from the 2023 BPM Tolling Scenarios A through G. Table 4A-34 contains the results of this analysis. Each cell contains the percentage of total net revenue paid by drivers from a particular geography and the percentage of total trips to the Manhattan CBD made by drivers from that geography. For example, in Tolling Scenario A, Bronx drivers would pay 6.2 percent of total net revenue and would make 6.6 percent of total CBD vehicle trips.

The percentages of CBD toll revenue and trips shown in Table 4A-34 tend to be more balanced for tolling scenarios that do not offer crossing credits (Tolling Scenarios A, B, and G), while the percentages tend to diverge for tolling scenarios that offer crossing credits (Tolling Scenarios C, D, E, and F).

Table 4A-34. Projected Percentage of Total Revenue/Percentage of Total Trips

GEOGRAPHY	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York (Manhattan)	13.5% / 14.0%	13.0% / 13.5%	15.7% / 13.6%	19.6% / 12.5%	17.9% / 12.4%	20.0% / 12.5%	13.1% / 13.5%
Kings (Brooklyn)	19.0% / 17.9%	18.9% / 17.8%	20.3% / 18.7%	17.1% / 16.5%	17.1% / 16.7%	17.5% / 16.5%	19.1% / 18.0%
Queens	17.9% / 16.4%	18.1% / 16.6%	17.7% / 17.6%	15.8% / 16.4%	16.6% / 16.5%	16.4% / 16.1%	18.2% / 16.7%
Bronx	6.2% / 6.6%	6.2% / 6.7%	7.9% / 7.1%	9.9% / 6.6%	9.1% / 6.6%	10.2% / 6.6%	6.3% / 6.8%
Richmond (Staten Island)	1.6% / 1.6%	1.6% / 1.5%	1.7% / 1.8%	1.1% / 1.7%	1.4% / 1.8%	1.4% / 1.7%	1.6% / 1.6%
Long Island	7.6% / 6.8%	7.7% / 6.9%	7.2% / 7.0%	6.3% / 6.7%	6.8% / 6.8%	6.3% / 6.6%	7.7% / 6.9%
Hudson Valley	6.6% / 7.1%	6.6% / 7.2%	8.4% / 7.7%	10.4% / 7.1%	9.4% / 7.1%	10.8% / 7.2%	6.6% / 7.1%
New Jersey	17.7% / 20.0%	17.8% / 20.0%	11.6% / 16.5%	10.0% / 21.9%	11.8% / 21.4%	7.8% / 21.9%	17.5% / 19.6%
Connecticut	2.4% / 2.5%	2.4% / 2.6%	3.1% / 2.8%	4.0% / 2.6%	3.5% / 2.5%	4.1% / 2.6%	2.4% / 2.6%
Other	7.5% / 7.2%	7.5% / 7.3%	6.4% / 7.1%	5.8% / 8.1%	6.5% / 8.4%	5.5% / 8.3%	7.4% / 7.2%

Note: *Revenue* includes only projected CBD toll revenue. Other existing TBTA and PANYNJ tolls, including those on crossings leading directly to or from the Manhattan CBD, are not included in the revenue calculations.

4A.5 CONCLUSION

This subchapter describes the travel forecasts that were prepared for the opening year (2023) and horizon year (2045) for each of the seven tolling scenarios established to evaluate the CBD Tolling Alternative. (See Chapter 2, "Project Alternatives," for more information on the tolling scenarios and how they vary by the value of the toll based on specific tolling actions such as exemptions, crossing credits, and daily toll caps.)

Overall, the BPM provides a baseline representation of the complicated, dense, and congested transportation network that serves the New York City region. The model forecast results show that compared to the No Action Alternative, the CBD Tolling Alternative would meet the purpose and need and established goals for congestion relief in the Manhattan CBD and raise revenue to support transit capital improvements. This section identifies and summarizes general effects on travel patterns from implementing the Project and describes high-level changes to travel and trip-making decisions as well as effects on the taxi/FHV industry.

4A.5.1 General Effects

All tolling scenarios would result in travel pattern changes that would support congestion relief such as reduced automobile and truck trips to the Manhattan CBD, reduced VMT to and within the Manhattan CBD and regionally, and a shift from auto trips to transit. Percentage reductions in 2023 vehicle trips entering the Manhattan CBD would range from 15.4 percent to 19.9 percent. These travel pattern changes are the basis for many of the impact evaluations found in subsequent chapters of this EA.

- Transit: The declines in auto-based trips to the Manhattan CBD would result in increases in transit trips. Transit trips (e.g., commuter rail, subway, bus, tram, and ferry) to the Manhattan CBD from outside the Manhattan CBD would increase between 1 percent and 2 percent, depending on the tolling scenario (see Table 4A-8).
- VMT: For the tolling scenarios analyzed, each tolling scenario would result in reductions in VMT in the Manhattan CBD, as well as across the region (see Table 4A-7). Each tolling scenario has a different combination of toll rates, crossing credits, and exemptions that combined would reduce daily VMT between 7.1 percent and 9.2 percent in the Manhattan CBD. Crossing credits temper daily VMT reductions in the CBD, while leading to greater reductions outside of the CBD. Patterns of VMT changes would be consistent across the region with similar changes in areas identified as environmental justice and non-environmental justice communities.
- Travel Times: While the Project would improve travel times to the Manhattan CBD, some areas would experience longer auto travel times to the Manhattan CBD from increases in diversionary trips to avoid the Manhattan CBD via highways in the Bronx and Staten Island.

4A.5.2 Crossing Credits

Four of the seven analyzed tolling scenarios offer a range of crossing credits to vehicles that pay tolls on TBTA and PANYNJ bridges and tunnels. While the location and amount of the crossing credits differ in those tolling scenarios,[30] common general effects include the following:

- Some drivers who continue to drive to the Manhattan CBD would choose a different route based on the introduction of Manhattan CBD crossing credits.
- Crossing credits would increase the attractiveness of TBTA East River facilities (Hugh L. Carey Tunnel, Queens-Midtown Tunnel, and the Robert F. Kennedy Bridge) compared to existing free bridges. The travel model indicates that increased demand for these routes has the effect of increasing auto and truck travel times from much of Long Island to the Manhattan CBD market due to additional congestion in the Queens-Midtown Tunnel. While these effects are observed in the four tolling scenarios that would provide crossing credits, they are less prevalent in the three tolling scenarios that would not provide crossing credits. With crossing credits in place, there are certain travel markets where travel times and congestion could increase due to the Project, while other travel markets could see less congestion compared to tolling scenarios without crossing credits.
- For the Hudson River crossings in three of the tolling scenarios, some drivers bound to the Manhattan CBD from west of the Hudson River would divert to the Lincoln Tunnel and Holland Tunnel based on the availability of crossing credits to offset existing tolls as part of the total vehicle cost with Manhattan CBD tolling. As a result, volumes on the George Washington Bridge to Manhattan would decline; however, this decline is reversed in the tolling scenario that offers crossing credits to George Washington Bridge users.
- Tolling scenarios with crossing credits lead to lower VMT in environmental justice communities than tolling scenarios without crossing credits.

4A.5.3 Diversions/Toll Avoidance

Every tolling scenario would cause diversions of traffic by drivers wishing to avoid or minimize the tolls paid. The particular diversions for different travel markets are explained in more detail in this chapter, but important themes are:

- Modeling of the CBD Tolling Alternative indicates that passenger auto trips (i.e., not truckers) have three basic ways to avoid paying the CBD toll:
  - Choose a new and different path to avoid the CBD toll.
  - Switch to another mode such as transit.
  - Choose not to make the trip to the Manhattan CBD.

[30] Credits offered in tolling scenarios are described in **Chapter 2, "Project Alternatives,"** as well as in the narrative descriptions of the tolling scenarios found in "**Appendix 4A.2, Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables (2023 and 2045)**."

- For trucks, only through-traveling trucks that do not stop in the Manhattan CBD can avoid tolling by switching paths. The modeling of CBD tolling scenarios indicates that the level of tolls imposed on trucks would have an impact on the amount of diverted truck traffic seen outside the Manhattan CBD.
- Trucks of different sizes exhibit different diversion behavior. Because through-traveling small and medium trucks have access to all bridges and tunnels, their potential to divert to non-Manhattan CBD routes is greater than through-traveling large trucks, which face prohibitions and height restrictions in certain tunnels and roadways.

4A.5.4 Taxis and FHVs

Taxis and FHVs are an important part of the CBD transportation network; in addition, taxi and FHV drivers largely identify as minority populations and are therefore an environmental justice population. The CBD tolling policy for taxis and FHVs when combined with varying CBD toll rates would change demand for taxis and FHVs into, out of, and within the Manhattan CBD. In every tolling scenario, taxi and FHV journeys into, out of, or within the Manhattan CBD would decrease between 1 percent and 22 percent. When the taxi and FHV toll is charged only once per day per vehicle, the cost would be spread across multiple trips and passengers during the day, with minimal effect on travel patterns, while taxi and FHV trips would decline the most in tolling scenarios that charge a toll for each entry into the Manhattan CBD.

4A.6 SUMMARY OF EFFECTS

Finally, Table 4A-35 is provided to summarize the effects of the tolling scenarios across various topics. All tolling scenarios would reduce traffic volumes within the Manhattan CBD, but to varying degrees. Tolling Scenario D results in the greatest overall reduction in vehicle trips entering the Manhattan CBD because it has the greatest reduction in daily work trips by automobile. Tolling Scenario E results in the greatest reduction of truck trips traveling through the Manhattan CBD, while Tolling Scenario G minimizes the increase in truck trips diverting through the Bronx. Overall, the tolling scenarios result in a 7 percent to 9 percent reduction in VMT in the Manhattan CBD and less than 1 percent reduction in VMT elsewhere in the regional study area.

Table 4A-35. Summary of Effects of Tolling Scenarios on Regional Transportation Effects and Modeling

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION
				A	B	C	D	E	F	G		
Vehicle Volumes	▪ Decreases in daily vehicle trips to Manhattan CBD overall. ▪ Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD. ▪ Diversions would increase or decrease traffic volumes at local intersections near the Manhattan CBD crossings.	Crossing locations to Manhattan CBD	% Increase or decrease in daily vehicles entering the Manhattan CBD relative to No Action Alternative	-15%	-16%	-17%	-19%	-20%	-18%	-17%	No	**No mitigation needed.** Beneficial effects
Auto Journeys to Manhattan CBD		Manhattan CBD	% increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-5%	-5%	-7%	-9%	-11%	-10%	-6%	No	**No mitigation needed.** Beneficial effects
			Absolute increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-12,571	-12,883	-17,408	-24,017	-27,471	-24,433	-14,578		
Truck Trips Through Manhattan CBD		Manhattan CBD	Increase or decrease in truck trips through Manhattan CBD relative to No Action Alternative	-4,645 (-55%)	***[-4,967]*** (-59%)	-5,253 (-63%)	-5,687 (-68%)	-6,604 (-79%)	-6,784 (-81%)	***[-1,734]*** (-21%)	No	**No mitigation needed.** Beneficial effects

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION
				A	B	C	D	E	F	G		
Transit Journeys	▪ Overall decrease in vehicle-miles traveled (VMT) in the Manhattan CBD and region overall in all tolling scenarios and some shift from vehicle to transit mode.	Manhattan CBD	% Increase or decrease in daily Manhattan CBD-related transit journeys relative to No Action Alternative	1% to 3%							No	**No mitigation needed.** No adverse effects
Traffic Results		Manhattan CBD	% increase or decrease in daily VMT relative to No Action Alternative	-9% to -7%							No	**No mitigation needed.** Beneficial effects in Manhattan CBD, NYC (non-Manhattan CBD), north of NYC, and Connecticut; no adverse effects in Long Island and New Jersey
		NYC (non-Manhattan CBD)		-1 to 0%								
		New York north of NYC		-1% to 0%								
		Long Island		Less than (+) 0.2% change								
		New Jersey		Less than (+) 0.2% change								
		Connecticut		-0.2% to 0%								