CENTRAL BUSINESS DISTRICT (CBD) TOLLING PROGRAM

Appendix 10, Air Quality

2023

Contents

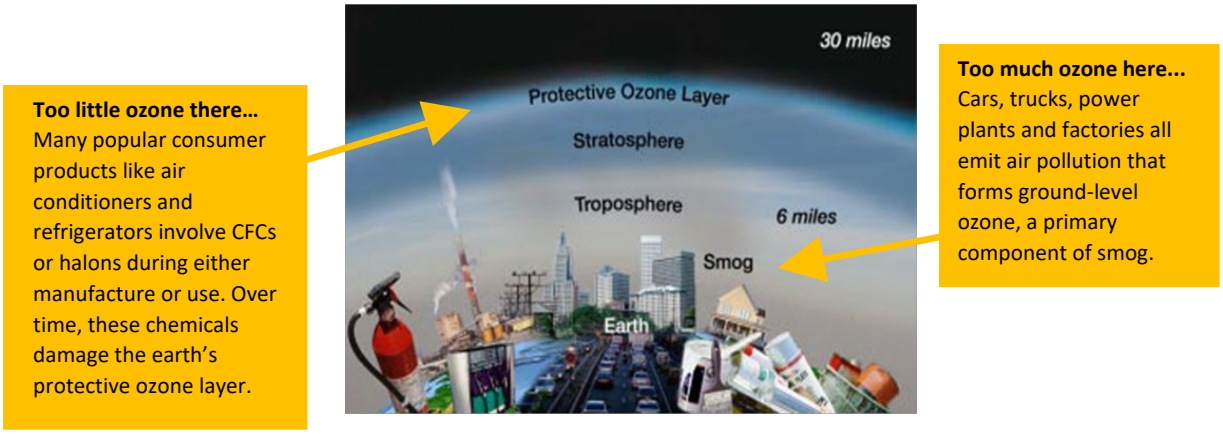
10A, Description of Pollutants and MOVES Modeling Files (Electronic)

10A.1 Criteria and Mobile Source Air Toxic Descriptions

Ozone

Ozone (O_3) is a colorless toxic gas. As shown in **Figure 10A-1**, O_3 is found in both the Earth's upper and lower atmospheric levels. In the upper atmosphere, O_3 is a naturally occurring gas that helps to prevent the sun's harmful ultraviolet rays from reaching the Earth. In the lower layer of the atmosphere, O_3 is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOCs). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight.

Figure 10A-1. Ozone in the Atmosphere



Source: EPA

O_3 at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in "smog." O_3 in the air we breathe can harm our health. People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers.

Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased medical care. O_3 also damages vegetation by inhibiting its growth. The effects of changes in VOC and NOx emissions are examined on a regional level.

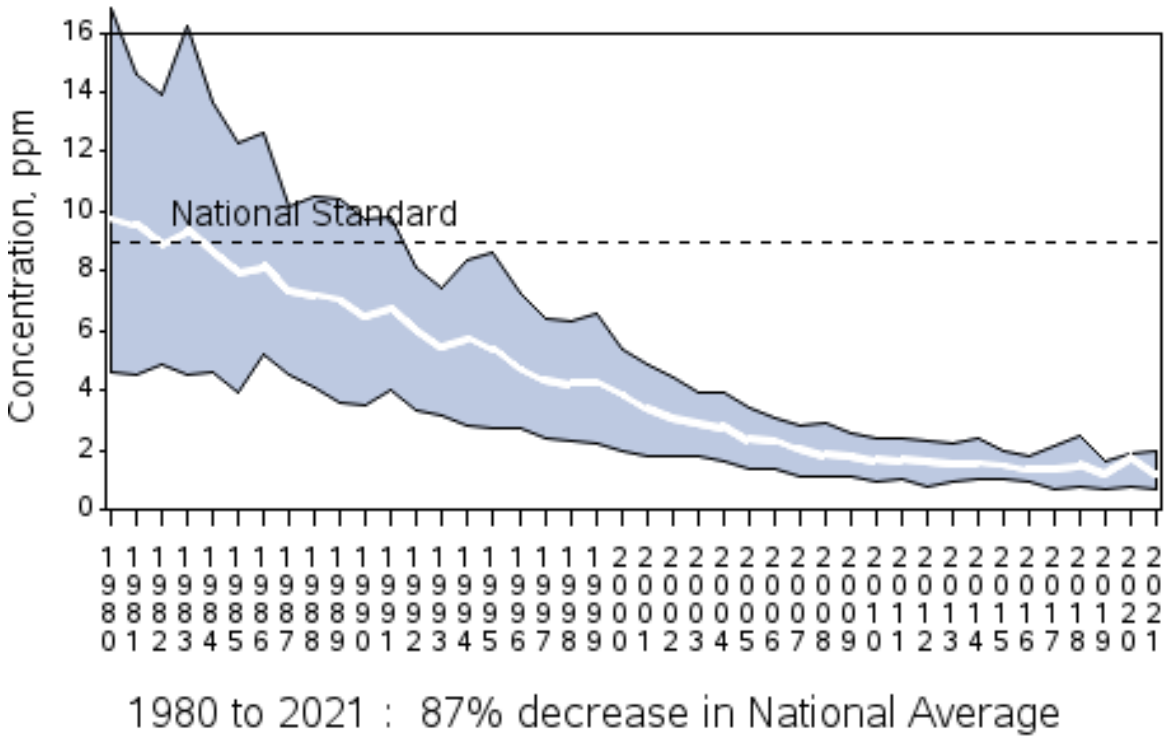
Carbon Monoxide

Carbon monoxide (CO) is a colorless gas that interferes with the transfer of oxygen to the brain. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Motor vehicle emissions (on-road motor vehicle exhaust) are the primary source of CO. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Prolonged exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, or heart disease. CO levels are generally highest in the colder months of the year when temperature inversions (when warmer air traps colder air near the ground) and/or stable atmospheric conditions are more frequent.

CO concentrations can vary greatly over relatively short distances. Relatively high concentrations of CO are typically found near congested intersections, along heavily used roadways carrying slow-moving traffic, and in areas where atmospheric dispersion is inhibited by urban "street canyon" conditions. Consequently, CO concentrations are predicted on a microscale basis.

As shown in **Figure 10A-2**, national 8-hour average CO levels have decreased by 87 percent between 1980 and 2021. This reduction is due in large part to the Clean Air Act (CAA). The CAA required the U.S. Environmental Protection Agency (EPA) to issue a series of rules to reduce pollution from vehicle exhaust, refueling emissions and evaporating gasoline. As a result, emissions from a new car purchased today are over 90 percent cleaner than a new vehicle purchased in 1970. This applies to SUVs and pickup trucks, as well. As cleaner vehicles enter the national fleet and older vehicles are taken out of service, emissions continue to drop.

Figure 10A-2: CO Air Quality, 1980-2021



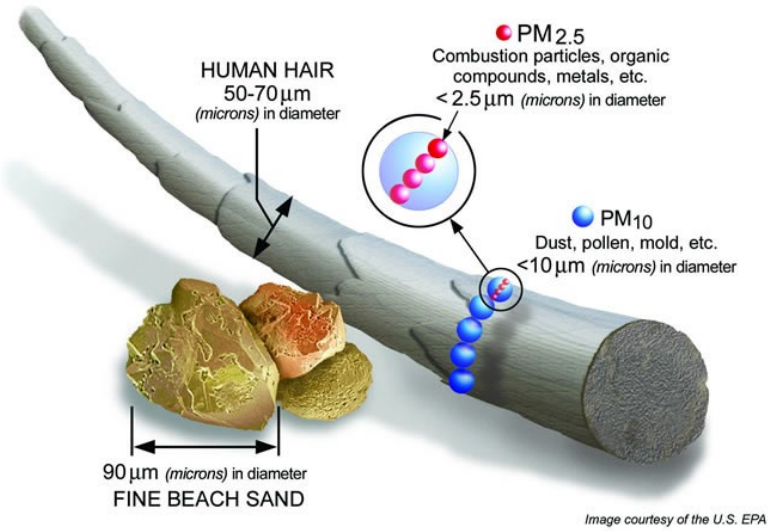
Source: https://www.epa.gov/air-trends/carbon-monoxide-trends#conat

Particulate Matter and Black Carbon

Particulate pollution is composed of solid particles or liquid droplets that are small enough to remain suspended in the air. In general, particulate pollution can include dust, soot, salts, acids, metals and smoke; these can be irritating but usually are not poisonous. Particulate pollution also can include bits of solid or liquid substances that can be highly toxic. Of particular concern are those particles that are smaller than, or equal to, 10 microns (PM_{10}) or 2.5 microns ($PM_{2.5}$) in size. A micron, also referred to as a micrometer, is

a millionth of a meter. PM_{10} refers to particulate matter less than or equal to 10 microns in diameter, about one-seventh the thickness of a human hair (**Figure 10A-3**).

Figure 10A-3. Relative Particulate Matter Size



Source: EPA Office of Air and Radiation

Major sources of PM_{10} include motor vehicles; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Suspended particulates produce haze and reduce visibility. Data collected through numerous nationwide studies indicate that most of the PM_{10} comes from the following:

- Fugitive dust
- Wind erosion
- Agricultural and forestry sources

A small portion of particulate matter is the product of fuel combustion processes. In the case of $PM_{2.5}$, the combustion of fossil fuels accounts for a large portion of this pollutant. The main health effect of airborne particulate matter is on the respiratory system. $PM_{2.5}$ refers to particulates that are 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide (SO_2), nitrogen oxides, and volatile organic compounds. Black carbon (BC) is one component of $PM_{2.5}$ and is emitted from diesel exhaust and other sources. Like PM_{10}, $PM_{2.5}$ can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues.

Nitrogen Dioxide and Nitric Oxide

Nitrogen dioxide (NO_2), a brownish gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Like O_3, NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NOx) and are major contributors to ozone formation. NO_2 also contributes to the formation of PM_{10}, small liquid and solid particles that are less than 10 microns in diameter (see discussion of PM_{10} above). At atmospheric concentration, NO_2 is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 parts per million (ppm).

Lead

Pb is a stable element that persists and accumulates both in the environment and in animals. Its principal effects in humans are on the blood-forming, nervous, and renal systems. Lead levels in the urban environment from mobile sources have substantially decreased due to the Federally mandated switch to lead-free gasoline.

Sulfur Dioxide

SO_2 is a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industry and for domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Mobile Source Air Toxics

In addition to the criteria pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most air toxics originate from human made sources, including on-road mobile sources, nonroad mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile source air toxics (MSATs) are a subset of the 188 air toxics defined by the CAA Amendments. MSAT are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/iris/). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from its 2011 National Air Toxics Assessment (NATA) (https://www.epa.gov/national-air-toxics-assessment). These are:

- 1,3-butadiene – characterized as carcinogenic to humans by inhalation.
- Acetaldehyde – classified as a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- Acrolein – major effects from chronic (long-term) inhalation exposure consist of general respiratory congestion and eye, nose, and throat irritation. The potential carcinogenicity of acrolein cannot be determined based on existing data.
- Benzene – characterized as a known human carcinogen.
- Diesel particulate matter (DPM) – likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases. Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.
- Ethylbenzene – classified as a Group D, not classifiable as to human carcinogenicity. Chronic exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood.
- Formaldehyde – classified as a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- Naphthalene – classified naphthalene as a Group C, possible human carcinogen. Acute exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion.
- Polycyclic organic matter (POM) – defines a broad class of compounds that includes the polycyclic aromatic hydrocarbon compounds (PAHs), of which benzo[a]pyrene is a member. Cancer is the major concern from exposure to POM. EPA has classified seven PAHs (benzo[a]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) as Group B2, probable human carcinogens.

10B, Project-Level Hot-Spot Screening Procedure

The following tables present the details of the screening analysis that was performed to determine if detailed microscale modeling for carbon monoxide (CO), particulate matter (PM_{10} or $PM_{2.5}$) would be required to assess the potential air quality effects of implementing the CBD Tolling Program. The screening was conducted using the criteria from NYSDOT's *The Environmental Manual*, Chapter 1.1. **Chapter 10, "Air Quality," Section 10.3.2.2** presents the results of the screening analysis.

Table 10B-1. Upper East Side Study Area – No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	E 60th Street & Queensboro Bridge Exit	0	0	807	618	Pass	NA	0	0	940	711	Pass	NA	0	0	473	243	Pass	NA	0	0	437	366	Pass	NA
2	E 60th Street & 3rd Ave	C	C	1720	1439	Pass	NA	C	C	1582	1238	Pass	NA	C	B	1477	939	Pass	NA	C	B	1676	1189	Pass	NA
3	E 60th Street & York Ave	C	C	1386	1128	Pass	NA	C	C	1653	1224	Pass	NA	C	B	1691	1151	Pass	NA	C	C	1402	1002	Pass	NA
4	E 59th Street & 2nd Ave	E	C	3246	2455	Pass	NA	D	C	3686	1731	Pass	NA	E	B	3803	1041	Pass	NA	C	A	3476	1035	Pass	NA
5	E 60th Street & 2nd Ave	C	C	2829	2368	Pass	NA	C	C	3188	2041	Pass	NA	C	B	3092	1109	Pass	NA	C	B	2939	976	Pass	NA
6	E 60th Street & 1st Ave	C	C	1740	1274	Pass	NA	C	C	1667	1158	Pass	NA	B	B	1469	847	Pass	NA	B	B	1727	1434	Pass	NA
7	E 60th Street & Lexington Ave	C	C	1495	1266	Pass	NA	C	C	1345	1006	Pass	NA	B	B	1205	711	Pass	NA	C	C	1640	903	Pass	NA
8a	E 60th Street & Park Ave NB	C	C	1476	1273	Pass	NA	C	C	1305	1037	Pass	NA	C	C	1474	1024	Pass	NA	C	C	974	822	Pass	NA
8b	E 60th Street & Park Ave SB	C	C	1754	1701	Pass	NA	B	B	1344	1225	Pass	NA	B	B	1325	1105	Pass	NA	B	B	1368	1094	Pass	NA
9	E 60th Street & Madison Ave	B	B	1392	1172	Pass	NA	B	B	1074	828	Pass	NA	C	B	1372	1007	Pass	NA	B	B	1374	1120	Pass	NA
10	E 62nd Street & Queensboro Bridge Exit	B	B	1638	1200	Pass	NA	B	B	1795	1645	Pass	NA	B	A	1308	672	Pass	NA	B	B	1880	2032	Pass	NA
11	E 60th Street & 5th Ave	C	C	1607	1313	Pass	NA	C	C	1270	955	Pass	NA	C	B	1209	827	Pass	NA	C	B	1508	956	Pass	NA
12	E 63rd Street & York Ave	C	C	2394	2086	Pass	NA	C	C	2457	1988	Pass	NA	D	D	2374	1869	Fail	Pass	C	C	2021	1437	Pass	NA
13	E 53rd Street & FDR Drive	0	0	491	454	Pass	NA	0	0	502	434	Pass	NA	0	0	528	444	Pass	NA	0	0	523	417	Pass	NA
14	E 61st Street & 5th Ave	C	B	1125	862	Pass	NA	B	B	918	629	Pass	NA	C	B	832	518	Pass	NA	C	B	1160	658	Pass	NA
15	E 65th Street & 5th Ave	D	C	1981	1841	Pass	NA	C	C	1555	1441	Pass	NA	C	C	1819	1701	Pass	NA	C	C	1680	1555	Pass	NA
16	E 66th Street & 5th Avenue	C	C	1590	1420	Pass	NA	C	C	1502	1365	Pass	NA	C	C	1616	1479	Pass	NA	C	C	1529	1360	Pass	NA
17	E 79th Street & 5th Ave	D	D	2012	1839	Fail	Pass	D	C	1920	1771	Pass	NA	D	C	2044	1879	Pass	NA	C	C	1653	1491	Pass	NA
18	E 71st Street & York Ave	C	C	1275	1120	Pass	NA	C	C	1361	1151	Pass	NA	C	C	1430	1183	Pass	NA	C	C	963	642	Pass	NA

Table 10B-2. Upper East Side Study Area – No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	E 60th Street & Queensboro Bridge Exit	0	0	-6	-4	0	-10	Pass	NA	0	0	-1	-4	0	-5	Pass	NA	0	0	0	-3	-1	-4	Pass	NA	0	0	-2	-1	0	-3	Pass	NA
2	E 60th Street & 3rd Ave	C	C	-21	-11	-1	-33	Pass	NA	C	C	-28	-11	0	-39	Pass	NA	C	B	-17	-16	0	-33	Pass	NA	C	B	-15	-6	0	-21	Pass	NA
3	E 60th Street & York Ave	C	C	-3	-6	0	-9	Pass	NA	C	C	-4	-7	0	-11	Pass	NA	C	B	-4	-6	0	-10	Pass	NA	C	C	-2	-4	0	-6	Pass	NA
4	E 59th Street & 2nd Ave	E	C	-53	-27	-3	-83	Pass	NA	D	C	-212	-30	-11	-253	Pass	NA	E	B	-303	-79	-8	-390	Pass	NA	C	A	-65	-31	-16	-112	Pass	NA
5	E 60th Street & 2nd Ave	C	C	-36	-25	-2	-63	Pass	NA	C	C	-99	-31	-1	-131	Pass	NA	C	B	-135	-82	-7	-224	Pass	NA	C	B	-53	-17	-16	-86	Pass	NA
6	E 60th Street & 1st Ave	C	C	-31	-19	-2	-52	Pass	NA	C	C	-46	-13	-3	-62	Pass	NA	B	B	-17	-21	-1	-39	Pass	NA	B	B	-6	-4	0	-10	Pass	NA
7	E 60th Street & Lexington Ave	C	C	-15	-10	-1	-26	Pass	NA	C	C	-22	-10	-1	-33	Pass	NA	B	B	-22	-13	0	-35	Pass	NA	C	C	-11	-10	-1	-22	Pass	NA
8a	E 60th Street & Park Ave NB	C	C	-60	-22	-4	-86	Pass	NA	C	C	-23	-11	-2	-36	Pass	NA	C	C	-8	-14	0	-22	Pass	NA	C	C	-6	-7	0	-13	Pass	NA
8b	E 60th Street & Park Ave SB	C	C	-3	-1	0	-4	Pass	NA	B	B	-5	-3	0	-8	Pass	NA	B	B	-2	-5	0	-7	Pass	NA	B	B	-3	-2	0	-5	Pass	NA
9	E 60th Street & Madison Ave	B	B	-16	-17	-1	-34	Pass	NA	B	B	-11	-10	-1	-22	Pass	NA	C	B	-7	-25	0	-32	Pass	NA	B	B	-3	-6	0	-9	Pass	NA
10	E 62nd Street & Queensboro Bridge Exit	B	B	-4	-4	0	-8	Pass	NA	B	B	-1	0	0	-1	Pass	NA	B	A	0	-2	0	-2	Pass	NA	B	B	-1	0	0	-1	Pass	NA
11	E 60th Street & 5th Ave	C	C	-8	-25	0	-33	Pass	NA	C	C	-7	-16	0	-23	Pass	NA	C	B	-10	-34	0	-44	Pass	NA	C	B	-3	-11	-1	-15	Pass	NA
12	E 63rd Street & York Ave	C	C	-2	-5	0	-7	Pass	NA	C	C	-4	-6	0	-10	Pass	NA	D	D	-3	-5	0	-8	Fail	Pass	C	C	-4	-2	0	-6	Pass	NA
13	E 53rd Street & FDR Drive	0	0	-1	0	0	-1	Pass	NA	0	0	-1	-2	0	-3	Pass	NA	0	0	0	-1	0	-1	Pass	NA	0	0	-1	0	0	-1	Pass	NA
14	E 61st Street & 5th Ave	C	B	-6	-23	0	-29	Pass	NA	B	B	-7	-15	0	-22	Pass	NA	C	B	-7	-20	0	-27	Pass	NA	C	B	-2	-10	-2	-14	Pass	NA
15	E 65th Street & 5th Ave	D	C	-2	-12	0	-14	Pass	NA	C	C	-4	-7	0	-11	Pass	NA	C	C	-1	-6	0	-7	Pass	NA	C	C	-1	-4	0	-5	Pass	NA
16	E 66th Street & 5th Avenue	C	C	-5	-13	0	-18	Pass	NA	C	C	-6	-7	0	-13	Pass	NA	C	C	-1	-6	0	-7	Pass	NA	C	C	-1	-4	0	-5	Pass	NA
17	E 79th Street & 5th Ave	D	D	-5	-13	0	-18	Fail	Pass	D	C	-2	-6	0	-8	Pass	NA	D	C	-2	-5	0	-7	Pass	NA	C	C	-1	-4	0	-5	Pass	NA
18	E 71st Street & York Ave	C	C	-3	-5	0	-8	Pass	NA	C	C	-4	-5	0	-9	Pass	NA	C	C	-5	-6	0	-11	Pass	NA	C	C	-4	-6	0	-10	Pass	NA

Table 10B-3. Long Island City Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1a	Pulaski Bridge / 11th Street & Jackson Avenue	E	E	2473	2447	Fail	Pass	D	D	2030	2038	Fail	Pass	D	D	2690	2739	Fail	Pass	0	0	0	0	Pass	NA
1b	11th Street & 48TH Avenue	C	C	1305	1293	Pass	NA	C	C	1060	1068	Pass	NA	B	B	1361	1363	Pass	NA	0	0	0	0	Pass	NA
2	50th Avenue @ Vernon Blvd	B	B	544	553	Pass	NA	B	B	586	635	Pass	NA	B	B	648	739	Pass	NA	0	0	0	0	Pass	NA
3	Green Street & McGuiness Blvd	C	C	2487	2442	Pass	NA	C	C	1837	1774	Pass	NA	D	D	2201	2068	Fail	Pass	0	0	0	0	Pass	NA
4	McGuinness Blvd & Freeman Street	0	0	2723	2647	Pass	NA	0	0	2097	1965	Pass	NA	0	0	2570	2401	Pass	NA	0	0	0	0	Pass	NA
5	21st Street & 49th Avenue	D	D	948	941	Fail	Pass	D	C	875	880	Pass	NA	B	B	1108	1150	Pass	NA	0	0	0	0	Pass	NA
7	11th Street & Borden Avenue	0	0	1443	1409	Pass	NA	0	0	1696	1784	Pass	NA	0	0	1529	1670	Pass	NA	0	0	0	0	Pass	NA
8a	Van Dam Street & QMT Expy	D	C	2344	2200	Pass	NA	D	B	2192	2009	Pass	NA	C	C	2072	1852	Pass	NA	0	0	0	0	Pass	NA
8b	Van Dam Street & Borden Avenue	E	E	1376	1290	Fail	Pass	D	D	1276	1077	Fail	Pass	C	C	1373	1251	Pass	NA	0	0	0	0	Pass	NA
9	Jackson Ave / Northern Blvd & Queens Plaza	C	C	2556	2416	Pass	NA	0	0	2497	1966	Pass	NA	0	0	2582	1908	Pass	NA	0	0	0	0	Pass	NA
11a	Thomson Avenue & Dutch Kills Street	0	0	1681	1669	Pass	NA	C	C	1530	1483	Pass	NA	C	C	2143	2144	Pass	NA	0	0	0	0	Pass	NA
11b	Thomson Avenue & Dutch Kills Street	0	0	2523	2358	Pass	NA	0	0	2390	2344	Pass	NA	0	0	2798	2799	Pass	NA	0	0	0	0	Pass	NA
12	21st Street & Queens Plaza N	D	D	1998	1915	Fail	Pass	D	D	1723	1710	Fail	Pass	E	E	2298	2198	Fail	Pass	0	0	0	0	Pass	NA

Table 10B-4. Long Island City Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1a	Pulaski Bridge / 11th Street & Jackson Avenue	E	E	0	0	0	0	Fail	Pass	D	D	0	0	0	0	Fail	Pass	D	D	0	0	0	0	Fail	Pass	0	0	0	0	0	0	Pass	NA
1b	11th Street & 48th Avenue	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA	B	B	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
2	50th Avenue @ Vernon Blvd	B	B	1	-1	0	0	Pass	NA	B	B	2	1	0	3	Pass	NA	B	B	3	1	0	4	Pass	NA	0	0	0	0	0	0	Pass	NA
3	Green Street & McGuiness Blvd	C	C	-2	-1	0	-3	Pass	NA	C	C	-6	-1	-1	-8	Pass	NA	D	D	-4	0	0	-4	Fail	Pass	0	0	0	0	0	0	Pass	NA
4	McGuinness Blvd & Freeman Street	0	0	-5	0	0	-5	Pass	NA	0	0	-11	-2	0	-13	Pass	NA	0	0	-6	-1	0	-7	Pass	NA	0	0	0	0	0	0	Pass	NA
5	21st Street & 49th Avenue	D	D	0	0	0	0	Fail	Pass	D	C	0	0	0	0	Pass	NA	B	B	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
7	11th Street & Borden Avenue	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
8a	Van Dam Street & QMT Expy	D	C	-10	-2	-1	-13	Pass	NA	D	B	-16	-2	-1	-19	Pass	NA	C	C	-12	-6	-1	-19	Pass	NA	0	0	0	0	0	0	Pass	NA
8b	Van Dam Street & Borden Avenue	E	E	-7	-1	0	-8	Fail	Pass	D	D	-14	-3	-2	-19	Fail	Pass	C	C	-9	-5	-1	-15	Pass	NA	0	0	0	0	0	0	Pass	NA
9	Jackson Ave / Northern Blvd & Queens Plaza	C	C	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
11a	Thomson Avenue & Dutch Kills Street	0	0	-1	-1	0	-2	Pass	NA	C	C	-2	-1	0	-3	Pass	NA	C	C	0	1	0	1	Pass	NA	0	0	0	0	0	0	Pass	NA
11b	Thomson Avenue & Dutch Kills Street	0	0	-1	-1	0	-2	Pass	NA	0	0	-3	-3	-1	-7	Pass	NA	0	0	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
12	21st Street & Queens Plaza N	D	D	0	0	0	0	Fail	Pass	D	D	-2	-1	0	-3	Fail	Pass	E	E	0	-1	0	-1	Fail	Pass	0	0	0	0	0	0	Pass	NA

Table 10B-5. Lower Manhattan Study Area – No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	Trinity Place & Edgar Street	B	B	117	97	Pass	NA	C	C	364	462	Pass	NA	C	C	144	138	Pass	NA	0	0	0	0	Pass	NA
2	Trinity Place & Rector Street	C	C	251	228	Pass	NA	C	C	508	584	Pass	NA	C	C	264	236	Pass	NA	0	0	0	0	Pass	NA
3a	HCT Entrance/Exit & West Street	C	C	4216	4200	Pass	NA	B	B	4055	4205	Pass	NA	A	A	3511	3597	Pass	NA	0	0	0	0	Pass	NA
3b	HCT Exit & West Street & West Thams Street	C	C	3339	3310	Pass	NA	C	C	3265	3237	Pass	NA	C	C	2373	2240	Pass	NA	0	0	0	0	Pass	NA
4	Chambers Street & Centre Street	C	C	1588	1489	Pass	NA	C	C	1409	988	Pass	NA	E	D	1873	1545	Fail	Pass	0	0	0	0	Pass	NA
5a	Canal Street & Hudson Street/Holland Tunnel On-Ramp	C	C	2586	2324	Pass	NA	D	D	1988	1525	Fail	Pass	C	C	1533	1452	Pass	NA	0	0	0	0	Pass	NA
5b	Canal Street & Holland Tunnel On-Ramp	E	E	2013	1905	Fail	Pass	C	B	1319	1091	Pass	NA	F	F	1889	1829	Fail	Pass	0	0	0	0	Pass	NA
7a	Canal Street S & West Street	D	D	5849	5740	Fail	Pass	C	C	4638	4610	Pass	NA	D	D	5146	4982	Fail	Pass	0	0	0	0	Pass	NA
9	West Street & Albany Street	C	C	4436	4422	Pass	NA	C	C	4149	4373	Pass	NA	C	C	4049	4070	Pass	NA	0	0	0	0	Pass	NA
10	West Street & Vesey Street	C	C	4668	4628	Pass	NA	C	C	4562	4701	Pass	NA	C	C	4373	4360	Pass	NA	0	0	0	0	Pass	NA
11	West Street & Chambers Street	D	C	5053	4961	Pass	NA	C	C	4845	4848	Pass	NA	D	C	4840	4721	Pass	NA	0	0	0	0	Pass	NA
14	Canal Street/Manhattan Bridge & Bowery	D	C	8718	8252	Pass	NA	C	B	2774	1769	Pass	NA	C	B	3276	2217	Pass	NA	0	0	0	0	Pass	NA
15	Manhattan Bridge & Bowery	C	B	1421	1149	Pass	NA	B	A	1162	630	Pass	NA	B	B	1395	792	Pass	NA	0	0	0	0	Pass	NA
18	6th Avenue & Watts Street	B	B	1884	1739	Pass	NA	B	B	1784	1525	Pass	NA	C	C	997	851	Pass	NA	0	0	0	0	Pass	NA
19	Canal Street & 6th Avenue/Laight Street	E	D	3634	3451	Fail	Pass	C	C	2555	2186	Pass	NA	C	C	2932	2631	Pass	NA	0	0	0	0	Pass	NA

Table 10B-6. Lower Manhattan Study Area – No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	Trinity Place & Edgar Street	B	B	-1	-10	0	-11	Pass	NA	C	C	10	-11	0	-1	Pass	NA	C	C	0	-4	0	-4	Pass	NA	0	0	0	0	0	0	Pass	NA
2	Trinity Place & Rector Street	C	C	-2	-8	0	-10	Pass	NA	C	C	3	14	0	17	Pass	NA	C	C	-1	-3	0	-4	Pass	NA	0	0	0	0	0	0	Pass	NA
3a	HCT Entrance/Exit & West Street	C	C	-2	8	0	6	Pass	NA	B	B	1	12	0	13	Pass	NA	A	A	0	17	0	17	Pass	NA	0	0	0	0	0	0	Pass	NA
3b	HCT Exit & West Street & West Thames Street	C	C	-1	0	0	-1	Pass	NA	C	C	-3	-1	0	-4	Pass	NA	C	C	-2	-4	0	-6	Pass	NA	0	0	0	0	0	0	Pass	NA
4	Chambers Street & Centre Street	C	C	-23	-40	0	-63	Pass	NA	C	C	-32	-152	0	-184	Pass	NA	E	D	-61	-124	0	-185	Fail	Pass	0	0	0	0	0	0	Pass	NA
5a	Canal Street & Hudson Street/Holland Tunnel On-Ramp	C	C	-17	-13	-1	-31	Pass	NA	D	D	-42	-6	-8	-56	Fail	Pass	C	C	-2	-1	0	-3	Pass	NA	0	0	0	0	0	0	Pass	NA
5b	Canal Street & Holland Tunnel On-Ramp	E	E	-13	-9	-3	-25	Fail	Pass	C	B	-33	-6	-10	-49	Pass	NA	F	F	-2	-1	0	-3	Fail	Pass	0	0	0	0	0	0	Pass	NA
7a	Canal Street S & West Street	D	D	-6	-5	0	-11	Fail	Pass	C	C	-5	-1	0	-6	Pass	NA	D	D	-5	-4	0	-9	Fail	Pass	0	0	0	0	0	0	Pass	NA
9	West Street & Albany Street	C	C	0	0	0	0	Pass	NA	C	C	6	4	0	10	Pass	NA	C	C	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
10	West Street & Vesey Street	C	C	-1	-1	0	-2	Pass	NA	C	C	5	2	0	7	Pass	NA	C	C	-1	-1	0	-2	Pass	NA	0	0	0	0	0	0	Pass	NA
11	West Street & Chambers Street	D	C	-4	-2	0	-6	Pass	NA	C	C	1	0	0	1	Pass	NA	D	C	-2	-4	0	-6	Pass	NA	0	0	0	0	0	0	Pass	NA
14	Canal Street/Manhattan Bridge & Bowery	D	C	-44	-14	-4	-62	Pass	NA	C	B	-127	-31	-9	-167	Pass	NA	C	B	-48	-35	-1	-84	Pass	NA	0	0	0	0	0	0	Pass	NA
15	Manhattan Bridge & Bowery	C	B	0	0	0	0	Pass	NA	B	A	0	0	0	0	Pass	NA	B	B	0	0	0	0	Pass	NA	0	0	0	0	0	0	Pass	NA
18	6th Avenue & Watts Street	B	B	-7	-6	0	-13	Pass	NA	B	B	-9	-6	-1	-16	Pass	NA	C	C	-2	-6	0	-8	Pass	NA	0	0	0	0	0	0	Pass	NA
19	Canal Street & 6th Avenue/Laight Street	E	D	-20	-8	-1	-29	Fail	Pass	C	C	-46	-4	-3	-53	Pass	NA	C	C	-16	-6	-1	-23	Pass	NA	0	0	0	0	0	0	Pass	NA

Table 10B-7. Queens-Midtown Tunnel – No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

		AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
INTERSECTION #	INTERSECTION NAME	NB	BD	NB	BD	LOS	10%	NB	BD	NB	BD	LOS	10%	NB	BD	NB	BD	LOS	10%	NB	BD	NB	BD	LOS	10%
1	E 37th Street & 3rd Avenue	B	B	1837	1808	Pass	NA	C	C	1521	1531	Pass	NA	B	B	1790	1723	Pass	NA	C	C	1799	1861	Pass	NA
2	E 36th Street & 2nd Avenue	D	D	2437	2353	Fail	Pass	F	F	2640	2656	Fail	Pass	C	C	3036	3177	Pass	NA	C	C	2581	2980	Pass	NA
3	E 34th Street & 3rd Avenue	D	D	2071	1943	Fail	Pass	D	C	2247	2028	Pass	NA	D	C	2507	2232	Pass	NA	C	C	2410	2156	Pass	NA
4	E 35th Street & 3rd Avenue	B	B	1684	1584	Pass	NA	B	B	1734	1580	Pass	NA	B	B	1961	1733	Pass	NA	B	B	1878	1666	Pass	NA
5	E 34th Street & 2nd Avenue	D	C	2826	2768	Pass	NA	C	C	2573	2477	Pass	NA	C	D	2712	2605	Fail	Pass	C	B	2769	2591	Pass	NA
6	E 35th Street & 2nd Avenue	B	B	2205	2160	Pass	NA	B	B	1767	1707	Pass	NA	B	B	2067	1977	Pass	NA	B	B	2042	1926	Pass	NA

Table 10B-8. Queens-Midtown Tunnel – No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

		AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
INTERSECTION #	INTERSECTION NAME	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	E 37th Street & 3rd Avenue	B	B	-2	-1	-1	-4	Pass	NA	C	C	-2	0	0	-2	Pass	NA	B	B	-4	-2	0	-6	Pass	NA	C	C	1	-1	0	0	Pass	NA
2	E 36th Street & 2nd Avenue	D	D	-8	-7	0	-15	Fail	Pass	F	F	-2	0	0	-2	Fail	Pass	C	C	7	-2	0	5	Pass	NA	C	C	4	6	0	10	Pass	NA
3	E 34th Street & 3rd Avenue	D	D	-9	-11	0	-20	Fail	Pass	D	C	-14	-6	0	-20	Pass	NA	D	C	-9	-14	0	-23	Pass	NA	C	C	-3	-2	0	-5	Pass	NA
4	E 35th Street & 3rd Avenue	B	B	-5	-2	0	-7	Pass	NA	B	B	-8	-2	-1	-11	Pass	NA	B	B	-6	-6	0	-12	Pass	NA	B	B	-2	-2	0	-4	Pass	NA
5	E 34th Street & 2nd Avenue	D	C	-4	-3	0	-7	Pass	NA	C	C	-6	-2	0	-8	Pass	NA	C	D	-1	-6	0	-7	Fail	Pass	C	B	-1	-4	0	-5	Pass	NA
6	E 35th Street & 2nd Avenue	B	B	-3	-4	0	-7	Pass	NA	B	B	-4	-2	0	-6	Pass	NA	B	B	-2	-3	0	-5	Pass	NA	B	B	-1	-1	0	-2	Pass	NA

Table 10B-9. Red Hook Study Area – No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

		AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
INTERSECTION #	INTERSECTION NAME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	Hamilton Avenue, Clinton Street & West 9th Street	A	B	5490	5506	Pass	NA	B	B	5387	5689	Pass	NA	B	B	5372	5471	Pass	NA	A	A	3035	3290	Pass	NA
2	Hamilton Avenue NB & West 9th Street	B	B	2324	2289	Pass	NA	B	B	2099	2129	Pass	NA	B	B	1859	1773	Pass	NA	B	B	1110	945	Pass	NA

Table 10B-10. Red Hook Study Area – No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

		AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
INTERSECTION #	INTERSECTION NAME	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	Hamilton Avenue, Clinton Street & West 9th Street	A	B	3	3	1	7	Pass	NA	B	B	23	2	4	29	Pass	NA	B	B	6	2	2	10	Pass	NA	A	A	12	3	2	17	Pass	NA
2	Hamilton Avenue NB & West 9th Street	B	B	-2	0	-1	-3	Pass	NA	B	B	2	1	1	4	Pass	NA	B	B	-5	-3	0	-8	Pass	NA	B	B	-3	-1	-1	-5	Pass	NA

Table 10B-11. Upper West Side Study Area – No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	W 72nd Street & West End Ave	C	C	1322	1213	Pass	NA	C	C	1360	1214	Pass	NA	D	C	1754	1503	Pass	NA	C	C	1019	872	Pass	NA
2	W 61st Street & West End Ave	B	B	1200	957	Pass	NA	B	B	1088	760	Pass	NA	B	B	1667	1111	Pass	NA	B	B	958	601	Pass	NA
3a	W 79th Street & Riverside Drive	C	C	1856	1712	Pass	NA	B	B	1593	1424	Pass	NA	C	B	1996	1731	Pass	NA	B	B	1308	1129	Pass	NA
4a	W 56th Street & 12th Avenue	B	B	1482	1472	Pass	NA	B	B	903	886	Pass	NA	B	B	989	963	Pass	NA	A	A	625	580	Pass	NA
4b	W 56th Street & West Side Highway	C	C	6271	6230	Pass	NA	C	C	5284	5203	Pass	NA	B	B	5251	5157	Pass	NA	B	B	4724	4564	Pass	NA
5a	W 55th Street & West Side Highway	C	C	5332	5290	Pass	NA	D	D	5106	5025	Fail	Pass	C	C	5021	4921	Pass	NA	C	B	4419	4260	Pass	NA
5b	W 55th Street & 12th Avenue	D	D	598	583	Fail	Pass	C	C	755	729	Pass	NA	D	D	933	889	Fail	Pass	C	C	585	507	Pass	NA
5c	W 55th Street & West Side Highway Arterial	D	D	105	104	Fail	Pass	E	E	220	217	Fail	Pass	A	A	25	25	Pass	NA	A	A	10	9	Pass	NA
6	W 60th Street & Broadway	C	C	1740	1544	Pass	NA	C	C	1620	1364	Pass	NA	C	C	1878	1561	Pass	NA	C	B	1493	1148	Pass	NA
7	W 60th Street & Columbus Ave	B	B	1442	1181	Pass	NA	A	A	1507	1101	Pass	NA	A	A	1650	1077	Pass	NA	A	A	1491	850	Pass	NA
8	W 60th Street & Amsterdam Ave	C	C	1238	970	Pass	NA	C	C	1421	1065	Pass	NA	C	C	1795	1254	Pass	NA	B	B	1221	1005	Pass	NA
9	W 60th Street & West End Ave	B	B	1316	1049	Pass	NA	B	B	1294	903	Pass	NA	B	B	1801	1218	Pass	NA	B	B	1055	665	Pass	NA
10	W 61st Street & Amsterdam Ave	A	A	1114	872	Pass	NA	A	A	1230	915	Pass	NA	A	A	1599	1096	Pass	NA	A	A	1133	932	Pass	NA
11	W 61st Street & Columbus Ave	C	B	1232	968	Pass	NA	C	B	1314	904	Pass	NA	C	B	1453	867	Pass	NA	B	B	1278	665	Pass	NA
12	W 61st Street & Broadway	B	B	1506	1292	Pass	NA	B	B	1392	1112	Pass	NA	B	B	1688	1332	Pass	NA	B	B	1270	917	Pass	NA
13	W 61st Street & Columbus Ave	B	B	672	624	Pass	NA	B	B	690	615	Pass	NA	B	B	894	804	Pass	NA	B	B	732	632	Pass	NA
14	W 81st Street & Central Park West	D	C	1849	1726	Pass	NA	D	C	2061	1894	Pass	NA	D	C	2318	2118	Pass	NA	C	C	1530	1359	Pass	NA
15	W 66th Street & Central Park West	C	C	1841	1711	Pass	NA	C	C	2037	1862	Pass	NA	C	C	2162	1949	Pass	NA	C	B	1613	1365	Pass	NA
16	W 65th Street & Central Park West	D	C	2030	1910	Pass	NA	C	C	1915	1763	Pass	NA	D	D	2191	1998	Fail	Pass	C	C	1735	1569	Pass	NA

Table 10B-12. Upper West Side Study Area – No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	W 72nd Street & West End Ave	C	C	-4	-10	0	-14	Pass	NA	C	C	-6	-4	0	-10	Pass	NA	D	C	-4	-10	0	-14	Pass	NA	C	C	0	-5	0	-5	Pass	NA
2	W 61st Street & West End Ave	B	B	-17	-14	0	-31	Pass	NA	B	B	-22	-8	0	-30	Pass	NA	B	B	-15	-13	0	-28	Pass	NA	B	B	-3	-9	0	-12	Pass	NA
3a	W 79th Street & Riverside Drive	C	C	0	-7	0	-7	Pass	NA	B	B	0	-5	0	-5	Pass	NA	C	B	0	-7	0	-7	Pass	NA	B	B	0	-2	0	-2	Pass	NA
4a	W 56th Street & 12th Avenue	B	B	-2	0	0	-2	Pass	NA	B	B	-1	0	0	-1	Pass	NA	B	B	-1	-1	0	-2	Pass	NA	A	A	0	-3	0	-3	Pass	NA
4b	W 56th Street & West Side Highway	C	C	-2	-1	-1	-4	Pass	NA	C	C	-55	-2	-1	-58	Pass	NA	B	B	-2	-3	0	-5	Pass	NA	B	B	-1	-9	0	-10	Pass	NA
5a	W 55th Street & West Side Highway	C	C	0	0	0	0	Pass	NA	D	D	0	-1	0	-1	Fail	Pass	C	C	-1	-1	0	-2	Pass	NA	C	B	-1	0	0	-1	Pass	NA
5b	W 55th Street & 12th Avenue	D	D	0	-2	0	-2	Fail	Pass	C	C	-1	-1	0	-2	Pass	NA	D	D	-1	-1	0	-2	Fail	Pass	C	C	0	-2	0	-2	Pass	NA
5c	W 55th Street & West Side Highway Arterial	D	D	0	0	0	0	Fail	Pass	E	E	0	0	0	0	Fail	Pass	A	A	0	0	0	0	Pass	NA	A	A	0	0	0	0	Pass	NA
6	W 60th Street & Broadway	C	C	-10	-11	0	-21	Pass	NA	C	C	-15	-9	-1	-25	Pass	NA	C	C	-5	-9	0	-14	Pass	NA	C	B	-2	-8	0	-10	Pass	NA
7	W 60th Street & Columbus Ave	B	B	-28	-8	-3	-39	Pass	NA	A	A	-40	-8	-1	-49	Pass	NA	A	A	-27	-8	-2	-37	Pass	NA	A	A	-14	-6	-4	-24	Pass	NA
8	W 60th Street & Amsterdam Ave	C	C	-36	-10	-2	-48	Pass	NA	C	C	-33	-7	-5	-45	Pass	NA	C	C	-18	-8	-3	-29	Pass	NA	B	B	-4	-2	0	-6	Pass	NA
9	W 60th Street & West End Ave	B	B	-16	-16	-2	-34	Pass	NA	B	B	-25	-13	-1	-39	Pass	NA	B	B	-15	-16	0	-31	Pass	NA	B	B	-5	-10	0	-15	Pass	NA
10	W 61st Street & Amsterdam Ave	A	A	-35	-9	-3	-47	Pass	NA	A	A	-29	-6	-5	-40	Pass	NA	A	A	-17	-7	-2	-26	Pass	NA	A	A	-4	-2	0	-6	Pass	NA
11	W 61st Street & Columbus Ave	C	B	-29	-5	-4	-38	Pass	NA	C	B	-38	-8	-1	-47	Pass	NA	C	B	-25	-7	-2	-34	Pass	NA	B	B	-14	-5	-2	-21	Pass	NA
12	W 61st Street & Broadway	B	B	-13	-10	0	-23	Pass	NA	B	B	-14	-10	0	-24	Pass	NA	B	B	-7	-9	0	-16	Pass	NA	B	B	-3	-10	0	-13	Pass	NA
13	W 61st Street & Columbus Ave	B	B	-4	-1	0	-5	Pass	NA	B	B	-2	-1	0	-3	Pass	NA	B	B	-1	-1	0	-2	Pass	NA	B	B	0	-1	0	-1	Pass	NA
14	W 81st Street & Central Park West	D	C	0	-6	0	-6	Pass	NA	D	C	0	-4	0	-4	Pass	NA	D	C	0	-5	0	-5	Pass	NA	C	C	0	-2	0	-2	Pass	NA
15	W 66th Street & Central Park West	C	C	-3	-3	0	-6	Pass	NA	C	C	-3	-4	0	-7	Pass	NA	C	C	-3	-5	0	-8	Pass	NA	C	B	-2	-3	0	-5	Pass	NA
16	W 65th Street & Central Park West	D	C	-4	-4	0	-8	Pass	NA	C	C	-4	-3	0	-7	Pass	NA	D	D	-2	-4	0	-6	Fail	Pass	C	C	-1	-2	0	-3	Pass	NA

Table 10B-13. Robert F. Kennedy Bridge Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	LN SCREEN
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	126th Street and 2nd Avenue	C	C	2084	1995	Pass	NA	C	B	2416	2283	Pass	NA	C	C	2600	2352	Pass	NA	B	B	1310	1077	Pass	NA
2	125th Street and 2nd Avenue	C	D	2587	2604	Fail	Pass	C	C	2217	2107	Pass	NA	C	D	2988	2962	Fail	Pass	C	C	1576	1507	Pass	NA
11	E 134th Street & St. Ann's Avenue	C	C	775	775	Pass	NA	C	C	835	835	Pass	NA	C	C	665	665	Pass	NA	C	C	490	490	Pass	NA
22	St Ann's Ave and Bruckner Blvd	C	C	2415	2415	Pass	NA	D	D	2620	2620	Fail	Pass	C	C	2320	2320	Pass	NA	C	C	2265	2265	Pass	NA
17	31st St & Astoria Blvd	C	C	1243	1247	Pass	NA	B	B	901	832	Pass	NA	E	E	1199	1128	Fail	Pass	B	B	954	842	Pass	NA
24	Hoyt N & 31st St	C	C	3076	3049	Pass	NA	B	B	2383	2295	Pass	NA	B	B	2326	2187	Pass	NA	C	C	1956	1769	Pass	NA
3	Hoyt S & 31st St	C	D	1766	1805	Fail	Pass	C	C	1505	1473	Pass	NA	C	C	1860	1812	Pass	NA	C	C	1594	1582	Pass	NA

Table 10B-14. Robert F. Kennedy Bridge Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	126th Street and 2nd Avenue	C	C	-9	-4	0	-13	Pass	NA	C	B	-9	-9	0	-18	Pass	NA	C	C	-5	-10	0	-15	Pass	NA	B	B	-12	-4	-1	-17	Pass	NA
2	125th Street and 2nd Avenue	C	D	-14	-1	-2	-17	Fail	Pass	C	C	-4	-10	0	-14	Pass	NA	C	D	-8	-17	0	-25	Fail	Pass	C	C	-7	-1	-1	-9	Pass	NA
11	E 134th Street & St. Ann's Avenue	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA
22	St Ann's Ave and Bruckner Blvd	C	C	0	0	0	0	Pass	NA	D	D	0	0	0	0	Fail	Pass	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA
17	31st St & Astoria Blvd	C	C	0	0	0	0	Pass	NA	B	B	0	1	0	1	Pass	NA	E	E	-3	0	0	-3	Fail	Pass	B	B	-1	1	0	0	Pass	NA
24	Hoyt N & 31st St	C	C	0	-1	-1	-2	Pass	NA	B	B	-3	0	-1	-4	Pass	NA	B	B	-4	-2	0	-6	Pass	NA	C	C	-3	0	0	-3	Pass	NA
3	Hoyt S & 31st St	C	D	4	0	1	5	Fail	Pass	C	C	2	0	1	3	Pass	NA	C	C	1	1	0	2	Pass	NA	C	C	1	0	1	2	Pass	NA

Table 10B-15. Downtown Brooklyn Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	APPROACH	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN		
			NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	HDDT
1	Flatbush Avenue and Tillary Street	Intersection	F	E	4887	4436	Fail	Pass	E	D	4505	3877	Fail	Pass	E	D	5083	4287	Fail	Pass	D	D	4383	3464	Fail	Pass	Pass
2	Adam Street and Tillary Street	Intersection	D	D	2997	2949	Fail	Pass	D	D	2874	2813	Fail	Pass	D	D	3543	3295	Fail	Pass	C	C	2109	2050	Pass	NA	NA
3	Old Fulton Street and Vine Street	Intersection	D	D	2805	2797	Fail	Pass	D	D	2356	2306	Fail	Pass	B	B	2201	2122	Fail	Pass	C	C	2062	2049	Pass	NA	NA

Table 10B-16. Downtown Brooklyn Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	Flatbush Avenue and Tillary Street	F	E	-73	-12	-6	-91	Fail	Pass	E	D	-75	-14	-2	-91	Fail	Pass	E	D	-29	-16	-2	-47	Fail	Pass	D	D	-9	-13	-2	-24	Fail	Pass
2	Adam Street and Tillary Street	D	D	-1	-2	0	-3	Fail	Pass	D	D	-3	0	0	-3	Fail	Pass	D	D	-2	0	0	-2	Fail	Pass	C	C	-2	-2	0	-4	Pass	NA
3	Old Fulton Street and Vine Street	D	D	-1	0	0	-1	Fail	Pass	D	D	-2	-1	0	-3	Fail	Pass	B	B	-1	0	0	-1	Pass	NA	C	C	-1	-1	0	-2	Pass	NA

Table 10B-17. Lincoln Tunnel Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	9th Ave and 33rd Street	B	B	1269	1221	Pass	NA	B	B	1219	1133	Pass	NA	B	B	1433	1324	Pass	NA	0	0	0	0	Pass	NA
2	Dyer Ave and 34th Street	C	C	3774	3649	Pass	NA	C	C	3642	3422	Pass	NA	C	C	4181	3912	Pass	NA	0	0	0	0	Pass	NA
3	12th Ave and 34th Street	C	C	4588	4439	Pass	NA	C	C	3819	3676	Pass	NA	C	C	5495	5204	Pass	NA	0	0	0	0	Pass	NA
4	11th Ave and 42nd Street	C	C	12866	12298	Pass	NA	C	C	11647	10729	Pass	NA	C	C	13637	12611	Pass	NA	0	0	0	0	Pass	NA
5	Dyer Ave & 36th Street	C	C	1531	1492	Pass	NA	C	C	1019	908	Pass	NA	C	C	1449	1369	Pass	NA	0	0	0	0	Pass	NA
6	10th Ave and 33rd Street	B	B	1401	1372	Pass	NA	B	B	1482	1403	Pass	NA	B	B	1937	1848	Pass	NA	0	0	0	0	Pass	NA
7	11th Ave and 34th Street	C	C	1955	1903	Pass	NA	C	C	1734	1678	Pass	NA	D	D	1320	1241	Fail	Pass	0	0	0	0	Pass	NA
8	10th Ave and 41st Street	C	C	2411	2296	Pass	NA	C	C	2913	2581	Pass	NA	C	C	2188	1817	Pass	NA	0	0	0	0	Pass	NA
9	12th Ave and 42nd Street	D	D	5394	5232	Fail	Pass	D	D	4831	4650	Fail	Pass	C	C	5824	5527	Pass	NA	0	0	0	0	Pass	NA

Table 10B-18. Lincoln Tunnel Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	9th Ave and 33rd Street	B	B	-5	-3	0	-8	Pass	NA	B	B	-6	-2	0	-8	Pass	NA	B	B	-4	-2	0	-6	Pass	NA	0	0	0	0	0	0	Pass	NA
2	Dyer Ave and 34th Street	C	C	-2	-2	0	-4	Pass	NA	C	C	-3	-3	0	-6	Pass	NA	C	C	-1	-2	0	-3	Pass	NA	0	0	0	0	0	0	Pass	NA
3	12th Ave and 34th Street	C	C	-6	-5	0	-11	Pass	NA	C	C	-2	-4	0	-6	Pass	NA	C	C	-5	-6	0	-11	Pass	NA	0	0	0	0	0	0	Pass	NA
4	11th Ave and 42nd Street	C	C	-6	-7	-1	-14	Pass	NA	C	C	-19	-10	-2	-31	Pass	NA	C	C	-11	-9	-1	-21	Pass	NA	0	0	0	0	0	0	Pass	NA
5	Dyer Ave & 36th Street	C	C	-4	-1	0	-5	Pass	NA	C	C	-9	-1	-1	-11	Pass	NA	C	C	-2	0	0	-2	Pass	NA	0	0	0	0	0	0	Pass	NA
6	10th Ave and 33rd Street	B	B	-4	0	0	-4	Pass	NA	B	B	-22	-1	-1	-24	Pass	NA	B	B	-5	-2	0	-7	Pass	NA	0	0	0	0	0	0	Pass	NA
7	11th Ave and 34th Street	C	C	-3	-2	0	-5	Pass	NA	C	C	-8	-2	0	-10	Pass	NA	D	D	-5	-6	0	-11	Fail	Pass	0	0	0	0	0	0	Pass	NA
8	10th Ave and 41st Street	C	C	-13	-27	-1	-41	Pass	NA	C	C	-37	-31	-2	-70	Pass	NA	C	C	-53	-49	-4	-106	Pass	NA	0	0	0	0	0	0	Pass	NA
9	12th Ave and 42nd Street	D	D	-1	-4	0	-5	Fail	Pass	D	D	-2	-3	0	-5	Fail	Pass	C	C	-4	-5	0	-9	Pass	NA	0	0	0	0	0	0	Pass	NA

Table 10B-19. New Jersey Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	14th Street / Holland Tunnel (E-W) & Marin Boulevard (N-S)	E	D	3181	2888	Fail	Pass	D	D	3052	2574	Fail	Pass	E	E	2962	2944	Fail	Pass	0	0	0	0	Pass	NA
4	14th Street (E-W) & Jersey Avenue (N-S)	D	D	4689	4396	Fail	Pass	C	C	3738	3260	Pass	NA	E	E	5664	5646	Fail	Pass	0	0	0	0	Pass	NA
5	12th Street (E-W) & Jersey Avenue (N-S)	F	E	3772	3694	Fail	Pass	D	D	2687	2586	Fail	Pass	E	E	3749	3609	Fail	Pass	0	0	0	0	Pass	NA
8	12th Street/Holland Tunnel (E-W) & Marin Boulevard (N-S)	E	D	3085	3007	Fail	Pass	C	C	2577	2476	Pass	NA	C	C	3576	3436	Pass	NA	0	0	0	0	Pass	NA

Table 10B-20. New Jersey Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM SCREEN		LN LOS		LN INCREMENT			LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	LOS	HDDT	NB	BD	MT	BUS	HT	LOS	HDDT
1	14th Street / Holland Tunnel (E-W) & Marin Boulevard (N-S)	E	D	-15	-7	0	-22	Fail	Pass	D	D	-56	-3	-3	-62	Fail	Pass	E	E	0	0	0	Fail	Pass	0	0	0	0	0	Pass	NA
4	14th Street (E-W) & Jersey Avenue (N-S)	D	D	-10	-7	0	-17	Fail	Pass	C	C	-45	-2	-3	-50	Pass	NA	E	E	0	0	0	Fail	Pass	0	0	0	0	0	Pass	NA
5	12th Street (E-W) & Jersey Avenue (N-S)	F	E	-5	-3	0	-8	Fail	Pass	D	D	-3	-1	0	-4	Fail	Pass	E	E	-2	-3	0	Fail	Pass	0	0	0	0	0	Pass	NA
8	12th Street/Holland Tunnel (E-W) & Marin Boulevard (N-S)	E	D	-6	-2	0	-8	Fail	Pass	C	C	-5	0	0	-5	Pass	NA	C	C	-2	-2	0	Pass	NA	0	0	0	0	0	Pass	NA

Table 10B-21. West Side Highway/Route 9A Study Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN		
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	HDDT
1	24th Street & 12th Ave	C	C	4133	4005	Pass	NA	C	C	3484	3350	Pass	NA	C	C	4976	4711	Pass	NA	C	C	3235	2966	Pass	NA	NA

Table 10B-22. West Side Highway/Route 9A Study Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	24th Street & 12th Ave	C	C	-5	-3	0	-8	Pass	NA	C	C	-4	-4	0	-8	Pass	NA	C	C	-5	-3	0	-8	Pass	NA	C	C	-4	-3	-2	-9	Pass	NA

Table 10B-23. Little Dominican Republic Area - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	W 179th St & Broadway	C	C	813	823	Pass	Pass	C	C	1081	1142	Pass	Pass	C	C	1117	1144	Pass	Pass	0	0	0	0	Pass	Pass

Table 10B-24. Little Dominican Republic Area - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	W 179th St & Broadway	C	C	1	5	0	6	Pass	NA	C	C	0	0	0	0	Pass	NA	C	C	0	0	0	0	Pass	NA			0	0	0	0	Pass	NA

Table 10B-25. Lower Eastside - No-Action Alternative vs. CBD Tolling Alternative Carbon Monoxide Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM VOLUME		AM SCREEN		MD LOS		MD VOLUME		MD SCREEN		PM LOS		PM VOLUME		PM SCREEN		LN LOS		LN VOLUME		LN SCREEN	
		NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME	NB	BD	NB	BD	LOS	10% VOLUME
1	Park Row/Chatham Square & Worth/Oliver St & Mott St	C	C	1076	1026	Pass	Pass	D	C	1050	798	Pass	Pass	D	C	1146	900	Pass	Pass	0	0	0	0	Pass	Pass
2	Chatham Square & E Broadway	C	C	791	741	Pass	Pass	C	D	885	633	Fail	Pass	D	D	1026	780	Fail	Pass	0	0	0	0	Pass	Pass
3	Chatham Square/Bowery & Division St	B	B	816	766	Pass	Pass	B	B	845	593	Pass	Pass	B	C	1096	850	Pass	Pass	0	0	0	0	Pass	Pass

Table 10B-26. Lower Eastside - No-Action Alternative vs. CBD Tolling Alternative Particulate Matter Screening

INTERSECTION #	INTERSECTION NAME	AM LOS		AM INCREMENT			AM HDDV	AM SCREEN		MD LOS		MD INCREMENT			MD HDDV	MD SCREEN		PM LOS		PM INCREMENT			PM HDDV	PM SCREEN		LN LOS		LN INCREMENT			LN HDDV	LN SCREEN	
		NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT	NB	BD	MT	BUS	HT	TOTAL	LOS	HDDT
1	Park Row/Chatham Square & Worth/Oliver St & Mott St	C	C	-5	-2	0	-7	Pass	NA	D	C	-22	-10	0	-32	Pass	NA	D	C	-19	-8	0	-27	Pass	NA	0	0	0	0	0	0	Pass	NA
2	Chatham Square & E Broadway	C	C	-6	-3	0	-9	Pass	NA	C	D	-28	-12	0	-40	Fail	Pass	D	D	-27	-12	0	-39	Fail	Pass	0	0	0	0	0	0	Pass	NA
3	Chatham Square/Bowery & Division St	B	B	-2	-1	0	-3	Pass	NA	B	B	-6	-4	0	-10	Pass	NA	B	C	-9	-5	0	-14	Pass	NA	0	0	0	0	0	0	Pass	NA

Table 10B-27. Maximum Truck Changes on Highway Links with Project – All Tolling Scenarios

WORST-CASE SCENARIO	COUNTY	LINK #	ROADWAY	EJ COMMUNITY	MAXIMUM CHANGE IN TRUCKS	AADT - NO ACTION	AADT - SCENARIO	TOTAL TRUCKS - NO ACTION	TOTAL TRUCKS - SCENARIO	% TRUCKS - NO ACTION	% TRUCKS - SCENARIO
E	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	2,125	72,057	79,003	7,467	9,592	10%	12%
E	Queens	64851	TRIBOROUGH BRIDGE	yes	2,125	72,148	79,094	7,467	9,592	10%	12%
E	Queens	64831	TRIBOROUGH BRIDGE	yes	1,991	67,666	81,185	8,044	10,035	12%	12%
E	New York	64916	TRIBOROUGH BRIDGE (SOUTH) - S	yes	1,991	67,666	81,185	8,044	10,035	12%	12%
D	Queens	64851	TRIBOROUGH BRIDGE	yes	1,767	72,148	79,215	7,467	9,234	10%	12%
D	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	1,767	72,057	79,124	7,467	9,234	10%	12%
D	Queens	64831	TRIBOROUGH BRIDGE	yes	1,712	67,666	80,531	8,044	9,756	12%	12%
D	New York	64916	TRIBOROUGH BRIDGE (SOUTH) - S	yes	1,712	67,666	80,531	8,044	9,756	12%	12%
F	Queens	64851	TRIBOROUGH BRIDGE	yes	1,606	72,148	79,557	7,467	9,073	10%	11%
F	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	1,606	72,057	79,465	7,467	9,073	10%	11%
E	New York	64926	I 278	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	New York	90365	TRIBOROUGH BRIDGE	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	New York	64925	TRIBOROUGH BRIDGE	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	Bronx	64930	TRIBOROUGH BRIDGE (NORTH) - N	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	New York	64931	I 278	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	Bronx	64940	TRIBORO BR	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	Queens	220948	GRAND CENTRAL PKY	yes	1,543	48,951	54,546	5,358	6,901	11%	13%
D	New York	64926	I 278	yes	1,530	42,009	44,709	6,554	8,084	16%	18%
D	New York	90365	TRIBOROUGH BRIDGE	yes	1,530	42,009	44,709	6,554	8,084	16%	18%
D	New York	64926	I 278	yes	1,530	42,009	44,709	6,554	8,084	16%	18%

Table 10B-28. Maximum Average Annual Daily Traffic (AADT) on Highway Links with Project – All Tolling Scenarios

WORST-CASE SCENARIO	COUNTY	LINK #	ROADWAY	EJ COMMUNITY	AADT - NO ACTION	AADT - SCENARIO	TRUCKS - NO ACTION	TRUCKS - SCENARIO	MAXIMUM CHANGE IN TRUCKS	% TRUCKS - NO ACTION	% TRUCKS - SCENARIO
C	Bergen	268133	I-95	yes	124,642	130,713	18,019	18,421	401	14.5%	14.1%
E	Bergen	268133	I-95	yes	124,642	130,668	18,019	18,421	401	14.5%	14.1%
F	Bergen	268133	I-95	yes	124,642	130,461	18,019	18,421	401	14.5%	14.1%
D	Bergen	268133	I-95	yes	124,642	130,461	18,019	18,421	401	14.5%	14.1%
B	Bergen	268133	I-95	yes	124,642	129,686	18,019	18,421	401	14.5%	14.2%
A	Bergen	268133	I-95	yes	124,642	128,575	18,019	18,421	401	14.5%	14.3%
C	Queens	64554	VAN WYCK EXPY	yes	128,793	127,045	5,664	5,703	39	4.4%	4.5%
C	Bergen	268077	I-95	yes	120,803	126,821	17,101	17,517	416	14.2%	13.8%
E	Bergen	268077	I-95	yes	120,803	126,656	17,101	17,517	416	14.2%	13.8%
F	Bergen	268077	I-95	yes	120,803	126,645	17,101	17,517	416	14.2%	13.8%
D	Bergen	268077	I-95	yes	120,803	126,416	17,101	17,517	416	14.2%	13.9%
B	Bergen	268077	I-95	yes	120,803	126,029	17,101	17,517	416	14.2%	13.9%
A	Bergen	268077	I-95	yes	120,803	124,622	17,101	17,517	416	14.2%	14.1%
A	Queens	64564	VAN WYCK EXPY	yes	123,598	123,416	4,731	4,850	119	3.8%	3.9%
B	Bergen	268131	I-95	yes	116,685	123,100	16,114	16,514	400	13.8%	13.4%
A	Bergen	268131	I-95	yes	116,685	122,596	16,114	16,514	400	13.8%	13.5%
F	Queens	64564	VAN WYCK EXPY	yes	123,598	122,259	4,731	4,850	119	3.8%	4.0%
C	Queens	64564	VAN WYCK EXPY	yes	123,598	122,250	4,731	4,850	119	3.8%	4.0%
D	Queens	64564	VAN WYCK EXPY	yes	123,598	122,200	4,731	4,850	119	3.8%	4.0%
E	Queens	64564	VAN WYCK EXPY	yes	123,598	121,845	4,731	4,850	119	3.8%	4.0%
J	Queens	64564	VAN WYCK EXPY	yes	123,598	121,602	4,731	4,850	119	3.8%	4.0%
B	Queens	63972	VAN WYCK EXPY	yes	119,688	119,497	4,081	4,101	21	3.4%	3.4%
B	Queens	64564	VAN WYCK EXPY	yes	123,598	119,188	4,731	4,850	119	3.8%	4.1%
C	Bergen	268131	I-95	yes	116,685	118,593	16,114	16,514	400	13.8%	13.9%
B	Queens	64564	VAN WYCK EXPY	yes	123,598	119,188	4,731	4,850	119	3.8%	4.1%
C	Bergen	268131	I-95	yes	116,685	118,593	16,114	16,514	400	13.8%	13.9%
E	Bergen	268131	I-95	yes	116,685	117,737	16,114	16,514	400	13.8%	14.0%
E	Queens	64289	LONGISLAND EXPY	yes	117,103	117,281	6,571	6,672	102	5.6%	5.7%
F	Queens	64289	LONGISLAND EXPY	yes	117,103	117,108	6,571	6,672	102	5.6%	5.7%
A	Bergen	266111	SR 4	yes	117,502	117,077	7,057	7,062	5	6.0%	6.0%

10C, Highway Link Particulate Matter Hot-Spot Detailed Assessment (Methodology, Interagency Consultation, and Results)

1 Particulate Matter Hot Spot Analysis Methodology

1.1 INTRODUCTION

The Triborough Bridge and Tunnel Authority (TBTA), which is an affiliate of MTA; the New York State Department of Transportation (NYSDOT); and the New York City Department of Transportation (NYCDOT) (collectively, the Project Sponsors) are proposing a program, known as the Central Business District Tolling Program (CBD Tolling Program or the Project), to address congestion in the Manhattan Central Business District.

The Project purpose is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into the Federal Highway Administration's (FHWA's) Value Pricing Pilot Program (VPPP). The Project would address the need to reduce vehicle congestion in the Manhattan CBD and create a new local, recurring funding source for MTA's capital projects.

The Project was included in the regional emissions analysis for NYMTC's current Transportation Conformity Determination, adopted on August 19, 2021, and is included in NYMTC's current FFY 2022-2050 Regional Transportation Plan, adopted on September 9, 2021.

1.2 PURPOSE OF THIS DOCUMENT

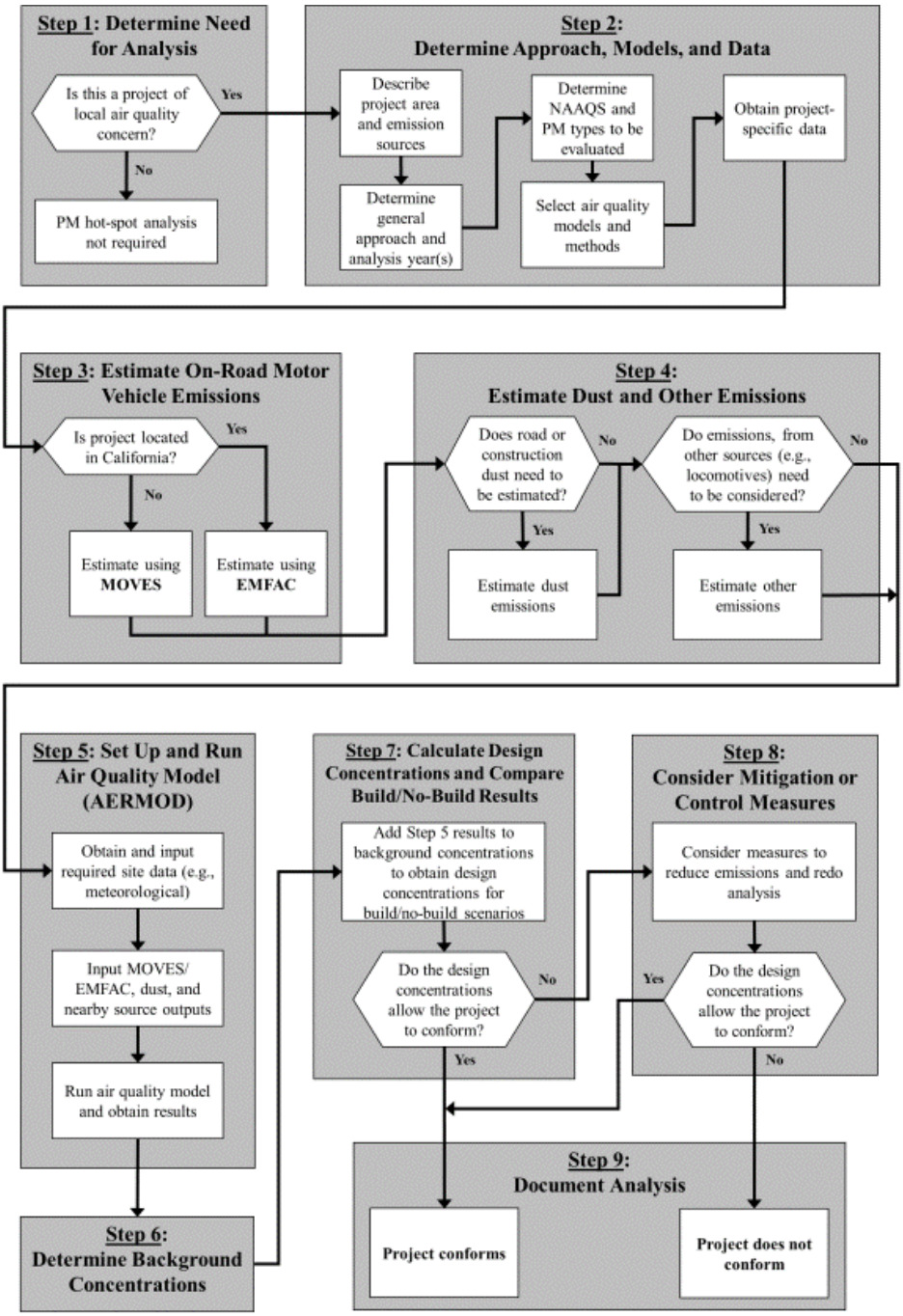
An effect of the Project includes truck diversions from the CBD to highways surrounding Manhattan – especially those going over the RFK Bridge into the South Bronx and over the George Washington Bridge into New Jersey. This is mainly due to truck traffic to/from Long Island and Pennsylvania that will re-route due to the tolling in the CBD.

As such, the Project Sponsors, in coordination with NYMTC staff, are meeting with the Interagency Consultation Group (ICG) on April 19, 2022 (Refer to Appendix A for ICG Presentation). This meeting is to discuss the PM_{10} and $PM_{2.5}$ hot-spot analysis that will be undertaken to determine potential impacts from the truck diversions on highway segments. This analysis will be performed in accordance with the United States Environmental Protection Agency (USEPA) *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (EPA-420-B-21-037, October 2021).[1]

This **PM Hot-Spot Analysis Methodology** identifies the process for conducting a project-specific hot-spot analysis following USEPA's nine-step process as summarized in Exhibit 3-1 of that document, presented here in Figure 1-1.

[1] https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1013C6A.pdf

Figure 1-1 Overview of a PM Hot-Spot Analysis



Source: USEPA, "PM Hot-spot Guidance: Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" (EPA-420-B-21-037, October 2021), page 19.

All modeling procedures will follow the applicable guidance in NYSDOT *Environmental Procedures Manual* (EPM) and will be reviewed and approved for use by the ICG prior to the start of the analysis. For the purposes of this project, it is assumed that three analysis sites will require a detailed PM microscale analysis and that the sites will be analyzed for the No Action Alternative as well as for the worst-case scenario of the Action Alternative.

1.3 PROPOSED NINE-STEP PM HOT-SPOT ANALYSIS

Step 1. Determine Need for a PM Hot-Spot Analysis

A $PM_{2.5}$ and PM_{10} (PM) microscale/hotspot analysis will be conducted for NEPA purposes to address public concerns regarding air quality and shall be performed in a manner consistent with USEPA guidance for PM hotspot analyses.

Step 2. Determine Approach, Models and Data

a. Approach

Three approximately 1000' long highway-segment locations have been selected for detailed analysis. These sites demonstrate an increase in diesel truck traffic due to the project and were chosen for detailed analysis based upon either highest Annual Average Daily Traffic (AADT), community concern, or the largest increase in trucks between the No Action and Action Alternatives. Details of the site selection can be found in Appendix A. The location of the nearest sensitive receptors at these selected sites can be found in Appendix B. The analysis sites are listed below and shown in Figure 1-2, Figure 1-3, and Figure 1-4. As shown in these figures, all the red traffic links within the ovals will be included in the analysis. The analysis locations are as follows:

1. **I-95 west of the George Washington Bridge, Scenario C**
    - Highest AADT in all scenarios
    - New Jersey location
    - EJ community
2. **Cross Bronx Expressway @ Macombs Road, Scenario B**
    - Community concern
    - Bronx location
    - EJ community
3. **RFK (Triborough) Bridge Queens Approach, Scenario E**
    - Highest truck increase across all scenarios
    - Queens location
    - EJ community

Figure 1-2 I-95 west of the GWB, Scenario C

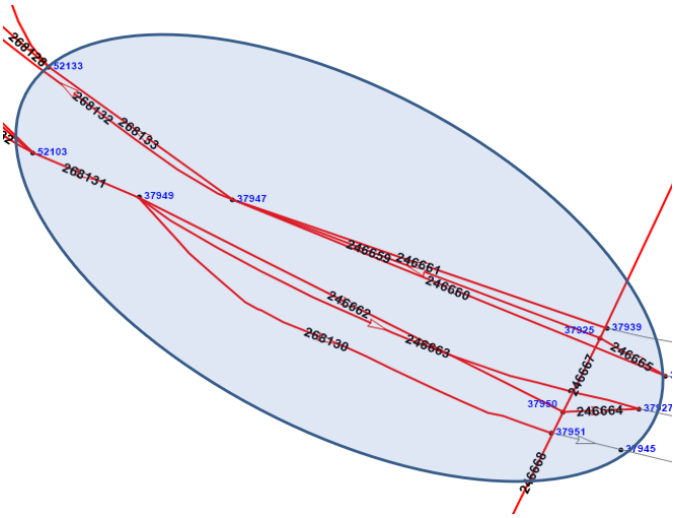


Figure 1-3 Cross Bronx @ Macombs, Scenario B

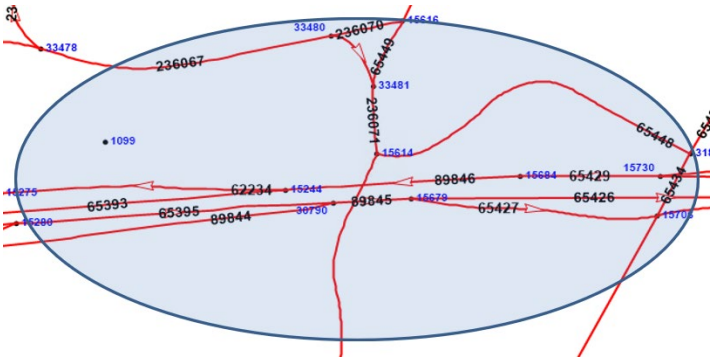
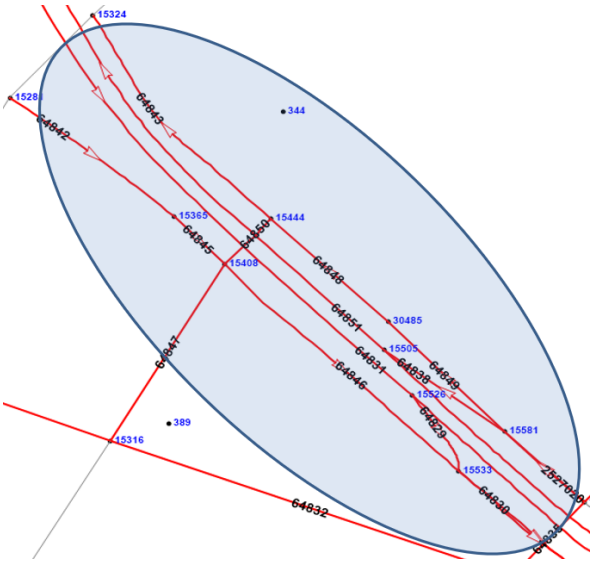


Figure 1-4 RFK (Triborough) Queens Approach, Scenario E



b. Analysis Years

The analysis is being conducted for opening year conditions (2023) with and without the project. This will capture the immediate effects of the project, particularly with regards to truck diversions on highways in the area. In addition, based on the regional emission burden analysis, which accounts for traffic growth rates and vehicle emission rates, 2023 is predicted to be the year of highest emissions for $PM_{2.5}$ emissions.

c. PM Emissions

The PM_{10} and $PM_{2.5}$ hot-spot analyses will include only directly emitted PM_{10} and $PM_{2.5}$ emissions. $PM_{2.5}$ precursors are not considered in PM hot-spot analyses, since precursors take time at the regional level to form into secondary PM. Exhaust, brake wear, and tire wear emissions from on-road vehicles are included in the project's PM_{10} and $PM_{2.5}$ analyses. For these analyses, both running and crankcase running exhaust will be considered because start exhaust is unlikely to occur on the roadways included in the model domain.

Re-entrained road dust will be included in the PM_{10} analysis because the New York State Implementation Plan previously identified that such emissions contribute to PM_{10} concentrations. Road dust will not be included in the $PM_{2.5}$ analysis.

d. Model

The analysis will be performed using the EPA's MOVES3 emissions model, AP-42 and the AERMOD dispersion model (currently version 21112).

e. Data

MOVES input parameters have been obtained from NYSDOT and NYSDEC. It will be confirmed that these parameters are still the latest and best input parameters to be used for the project. Project-specific base traffic data, including volumes, average vehicle speeds, and facility type for each roadway section in the project area, will also be obtained from the project team. Vehicle volumes will be obtained for AM, midday, PM, and overnight periods. The appropriate hourly meteorological data will be obtained in the format required for use in AERMOD, as provided by NYSDEC. The meteorological data will be representative of the terrain, climate, and topography of the study area. It is currently assumed that surface meteorological data and upper air data from LaGuardia Airport, NY will be used.

Step 3. Estimate On-Road Vehicle Emissions

On-road vehicle emissions will be estimated using MOVES. MOVES input parameters will be provided by NYSDOT and NYSDEC. MOVES input relies on link-specific data. The PM emissions vary by time of day and time of year. Volume and speed data for each link will be obtained from the traffic analysis being conducted for this project for AM, midday, PM, and overnight

periods. For each intersection and analysis year, MOVES will be run four (4) times (AM, PM, midday, and overnight) for one quarter. The month selected in MOVES will coincide with the month with seasonal fuel that results in highest PM emissions. For every source, a set of four (4) emission factors in units of grams per mile will be developed for use for each of the analysis years and for each pollutant. Based on the traffic analysis for the Proposed Project, the data will be allocated into the time periods shown in Table 1-1.

Table 1-1 Proposed Traffic Analysis Time Period Combinations

Name	Description	From	To	# of Hours
Period 1	Overnight	8:00 PM	6:00 AM	10
Period 2	AM	6:00 AM	10:00 AM	4
Period 3	Midday	10:00 AM	4:00 PM	6
Period 4	PM	4:00 PM	8:00 PM	4

Step 4. Estimate Emissions from Road Dust, Construction and Additional Sources

Road dust emissions will be included in the analysis, as described in step 2(b).

No additional sources of PM emissions will be included. It is assumed that PM concentrations due to any other nearby emissions sources will be included in the ambient monitor values used for background concentrations. In addition, the Proposed Project is not expected to result in changes to emissions from nearby sources.

Step 5. Select an Air Quality Model, Data Inputs and Receptors

a. Model

The USEPA's AERMOD air dispersion model, currently version 21112, will be used to estimate concentrations of PM due to project operations. The model uses traffic data, emission factor data, and meteorological data to estimate concentrations of PM at a series of receptors. For each modeled alternative, the model setup will include a series of links, or roadway segments, for and approximately 1,000 feet segment of the highway. The analysis will include adjacent service roads and cross-streets, as presented in Step 2.

b. Data Inputs

Link-specific inputs include length, mixing zone width, volume, emission factor, initial vertical dimension and vertical dispersion coefficient, as well as release height above ground. The project team shall provide volume and speed data on the affected roadway links for the Action and No Action condition for the agreed-upon analysis year and scenario. The vehicle mix, including the percentage of medium trucks, heavy trucks and buses, along with roadway grade (slope) on the affected roadway links will also be obtained. Meteorological input files will be

obtained from NYSDEC. As recommended in EPA's "Guideline on Air Quality Models" (Appendix W to 40 CFR Part 51), five consecutive years of the most recent and readily available meteorological data will be used for the dispersion modeling analysis. It is currently assumed that meteorological data from LaGuardia Airport will be used. For each alternative, AERMOD will be run for each of the five years of meteorological data.

c. Receptors

Receptors will be placed to estimate the highest concentrations of PM_{10} and $PM_{2.5}$ to determine any possible violations of the NAAQS. Highest concentrations are expected to occur near the areas with the highest-volume roadways. Receptors will be placed in a grid, as applicable. Pursuant to the NYSDOT's TEM and USEPA guidance, receptors will be placed five meters (approximately 16 feet) from the source of emissions, with a grid of receptors spaced at 25 meters (approximately 82 feet) nearer to the main roadway sources and 50 meters (approximately 164 feet) farther from these sources. Receptors will be placed up to 300 meters (approximately 1,000 feet) from the source of emissions.

Figure 1-5 presents a sample receptor grid.

Figure 1-5 Sample Receptor Grid

Step 6. Determine Background Concentrations from Nearby and Other Sources

The applicable background concentrations will be obtained from EPA's design value database (https://www.epa.gov/air-trends/air-quality-design-values). The background value will be added to the AERMOD modeled design values for comparison to the NAAQS. Currently these values are 22 ug/m^3 for 24 hour $PM_{2.5}$ and 8.7 ug/m^3 for annual $PM_{2.5}$. EPA does not currently provide PM_{10} design values for the area due to incomplete information. As such, the highest

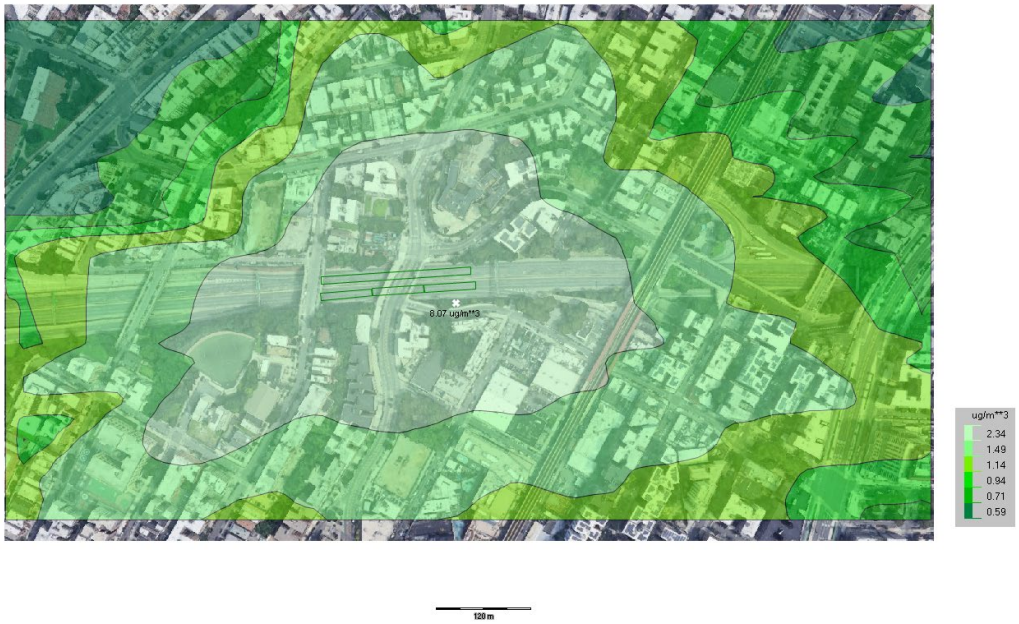
maximum annual average at the closest PM_{10} monitor to the site (PS 124) 43 ug/m^3 will be applied.

Step 7. Calculate Design Values and Determine Conformity

The model results (Step 5) will be added to the background concentration(s) (Step 6) for both the No Action and Action alternatives to calculate the design values. The maximum design values for No Action and Action alternatives will be calculated using the steps outlined in EPA's PM hot-spot guidance, which are consistent with the statistical form of the National Ambient Air Quality Standards (NAAQS). The design values will be evaluated to determine the project's potential impacts on PM_{10} and $PM_{2.5}$ concentrations in the project area.

In additional to the maximum design values, contour maps will be created using the dispersion model results to demonstrate the relative concentrations at all receptors included in the analysis. Figure 1-6 presents a sample contour diagram.

Figure 1-6 Sample Contours



Step 8. Consider Mitigation or Control Measures

If the project results in any violation of NAAQS, mitigation or control measures to reduce emissions in the project area may be considered by the project sponsors. If such measures are considered, additional modeling will need to be completed and new design values calculated to ensure that conformity requirements are met. Mitigation measures, which must include written commitments for implementation (40 CFR 93.125), include the following:

a. Retrofitting, replacing vehicles/engines, and using cleaner fuels;
b. Reducing idling;
c. Redesigning the transportation project itself;
d. Controlling fugitive dust; and
e. Controlling other sources of emissions.

Step 9. Document the PM Hot-Spot Analysis

The PM hotspot analysis and results will be documented in an Air Quality Technical Report. Due to the large volume of input and output files created for this analysis, these files will be available electronically.

Appendix A

Air Quality Interagency Consultation Presentation

April 19, 2022

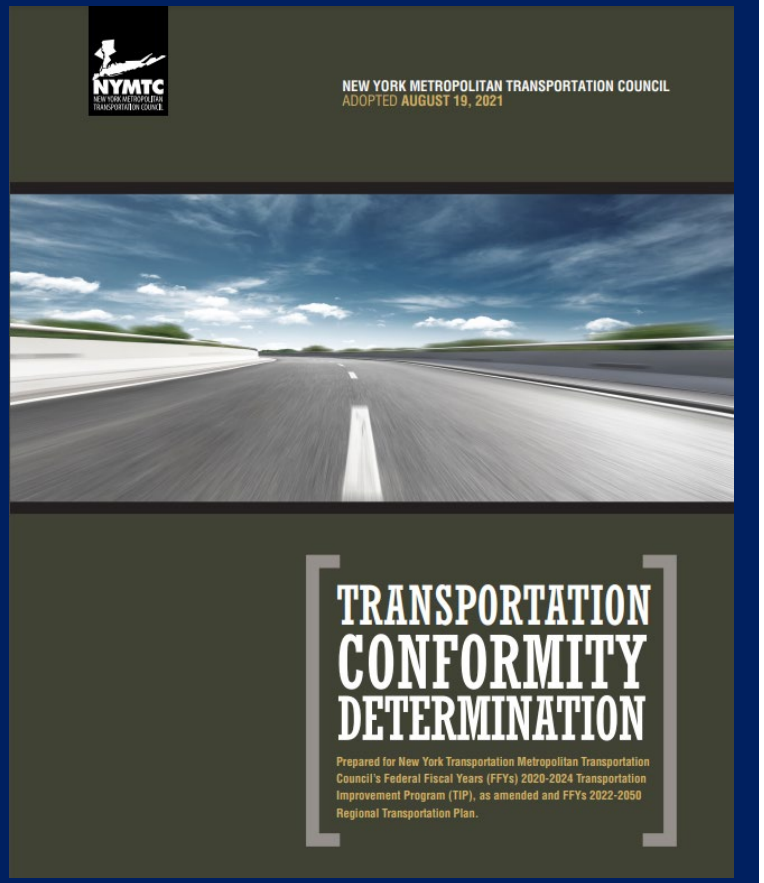
Central Business District Tolling Program

Air Quality Interagency Consultation
April 19, 2022

U.S. Department of Transportation Federal Highway Administration | MTA Bridges and Tunnels | New York State Department of Transportation | New York City DOT

Regional Conformity

- The Central Business District Tolling Program (CBDTP) was included in the regional emissions analysis for NYMTC's current Transportation Conformity Determination, adopted on August 19, 2021.
- The CBDTP is included in NYMTC's current FFY 2022-2050 Regional Transportation Plan, adopted on September 9, 2021.



Project-Level Conformity

Outcomes from 8/29/19 Interagency Consultation Group (ICG) meeting:

- **Project-level hot-spot screening** will be conducted for the CBDTP as part of the environmental review process.
    - Environmental Process will look at Hot Spot Analysis for CO or PM.
    - Screening analysis based on level of service (LOS) and traffic volume.
- If a project-level analysis is needed, the project team will meet with ICG to discuss the approach.

Projects Requiring a Quantitative $PM_{2.5}$ or PM_{10} Hot-Spot Analysis

Project Type	Assessment of Applicability to the CBDTP
New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles	Not Applicable
Projects affecting intersections that are at Level of Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level of Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project	Not Applicable
New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location	Not Applicable
Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location	Not Applicable
Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation	Not Applicable

Project-Level Conformity

- 98 intersections around the study area were screened in consultation with NYSDOT.
- For CO, intersections with a build Level of Service (LOS) of C or better **passed the screening**.
    - If the intersection was LOS D or below in the Action Alternative, the intersection was further screened by a 10 percent or more increase in traffic volume.
- For PM, intersections with a build Level of Service (LOS) of C or better **passed the screening**.
    - For intersections that demonstrated a LOS of D or worse under the Action Alternative, an hourly change of 10 or less heavy-duty diesel vehicles would not warrant further analysis.
- **All Intersections passed the CO and PM screening analyses**.

U.S. Department of Transportation Federal Highway Administration | MTA Bridges and Tunnels | New York State Department of Transportation | New York City DOT

Preliminary - Recap of Tolling Scenarios

	Scenario					
	A	**B**	**C**	**D**	**E**	**F**
	Base Plan	**Base Plan with Caps and Exemptions**	**Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions**	**High Crossing Credits for Vehicles Using Tunnels to Access the CBD**	**High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions**	**High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions**
Toll Level	Lowest	Low	Medium	High	Highest	Highest
Net Revenue Projections ($/B)	$1.06	$0.83	$1.11	$1.34	$1.48	$1.02
Credits	None		Tolled CBD Crossings; Lower Credit	Tolled CBD Crossings; Higher Credit		All Manhattan; Higher Credit
Autos	1x Daily					
Taxis	Uncapped	1x Daily @ Auto Rate	Exempt	Uncapped	Exempt	1x Daily @ Auto Rate
FHVs	Uncapped	1x Daily @ Auto Rate	3x Daily @ Auto Rate	Uncapped	3x Daily @ Auto Rate	1x Daily @ Auto Rate
Trucks	Uncapped	2x Daily	Uncapped			1x Daily
Buses	Uncapped	Exempt	Uncapped		Transit: Exempt; Non-Transit: Uncapped	Exempt

Highway Link Analyses

- **Since all intersections passed the screenings, and per agreement of the 2019 ICG, no detailed hotspot analysis were required.**
- In response to concerns raised during community meetings, the team decided to analyze the effects of the link-level highway segments on localized communities – particularly on the Cross Bronx Expressway in the vicinity of Macombs Road and on the FDR Drive near 10th Street.
- Due to the changes in truck volumes at Macombs Road, a highway link PM microscale analysis was conducted to determine air quality effects of the project.
- As the FDR does not allow trucks, a PM analysis was not conducted. A CO screening at that location passed NYSDOT TEM's Volume Threshold Analysis.

Table 1: Cross Bronx Expressway Volumes at Macombs Road

Time Period	# Hours	No Action	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
Cross Bronx Expressway Volumes at Macombs Road								
AM	4	39,205	39,975	40,003	39,613	39,757	40,235	39,703
MD	6	54,071	54,596	54,522	54,277	54,666	54,659	54,689
PM	4	44,092	44,297	44,046	44,332	44,213	44,063	44,438
NT	10	49,711	52,111	52,503	50,913	50,209	51,879	50,436
Total	24	187,079	190,980	191,075	189,135	188,845	190,836	189,267
Cross Bronx Expressway Truck Volumes at Macombs Road								
AM	4	7,003	7,045	7,063	6,926	7,089	7,029	7,156
MD	6	9,924	9,896	9,986	9,893	9,851	9,896	9,845
PM	4	3,923	3,927	3,988	3,936	4,057	3,977	3,937
NT	10	6,742	7,231	7,259	7,007	7,105	7,068	7,189
Total	24	27,592	28,100	28,296	27,762	28,102	27,970	28,128
Cross Bronx Expressway Truck Percentages at Macombs Road								
AM	4	18%	18%	18%	17%	18%	17%	18%
MD	6	18%	18%	18%	18%	18%	18%	18%
PM	4	9%	9%	9%	9%	9%	9%	9%
NT	10	14%	14%	14%	14%	14%	14%	14%
Total	24	14.7%	14.7%	14.8%	14.7%	14.9%	14.7%	14.9%
Cross Bronx Expressway Truck Volume Changes at Macombs Road								
AM	4	-	42	60	-77	85	25	153
MD	6	-	-28	63	-31	-73	-27	-78
PM	4	-	5	65	13	134	54	15
NT	10	-	489	517	265	363	326	447
Total	24	-	509	704	170	510	378	536

Source: WSP

U.S. Department of Transportation Federal Highway Administration | Bridges and Tunnels | New York State Department of Transportation | New York City DOT

PM Microscale Analysis at Cross Bronx Expressway and Macombs Road (Analysis Year 2023)

As shown, the levels are below the NAAQS.

	PM_{10} (24-hr)		$PM_{2.5}$ (24-hr)		$PM_{2.5}$ (annual)	
	No Action	Scenario B	No Action	Scenario B	No Action	Scenario B
Model result	67	70	7.6	8.1	1.9	2
Background	43		22		8.7	
Total	**110**	**113**	**29.6**	**30.1**	**10.6**	**10.7**
NAAQS ($\mu g/m^3$)	*150*		*35*		*12*	

AERMOD $PM_{2.5}$ 24-hour contours, Scenario B

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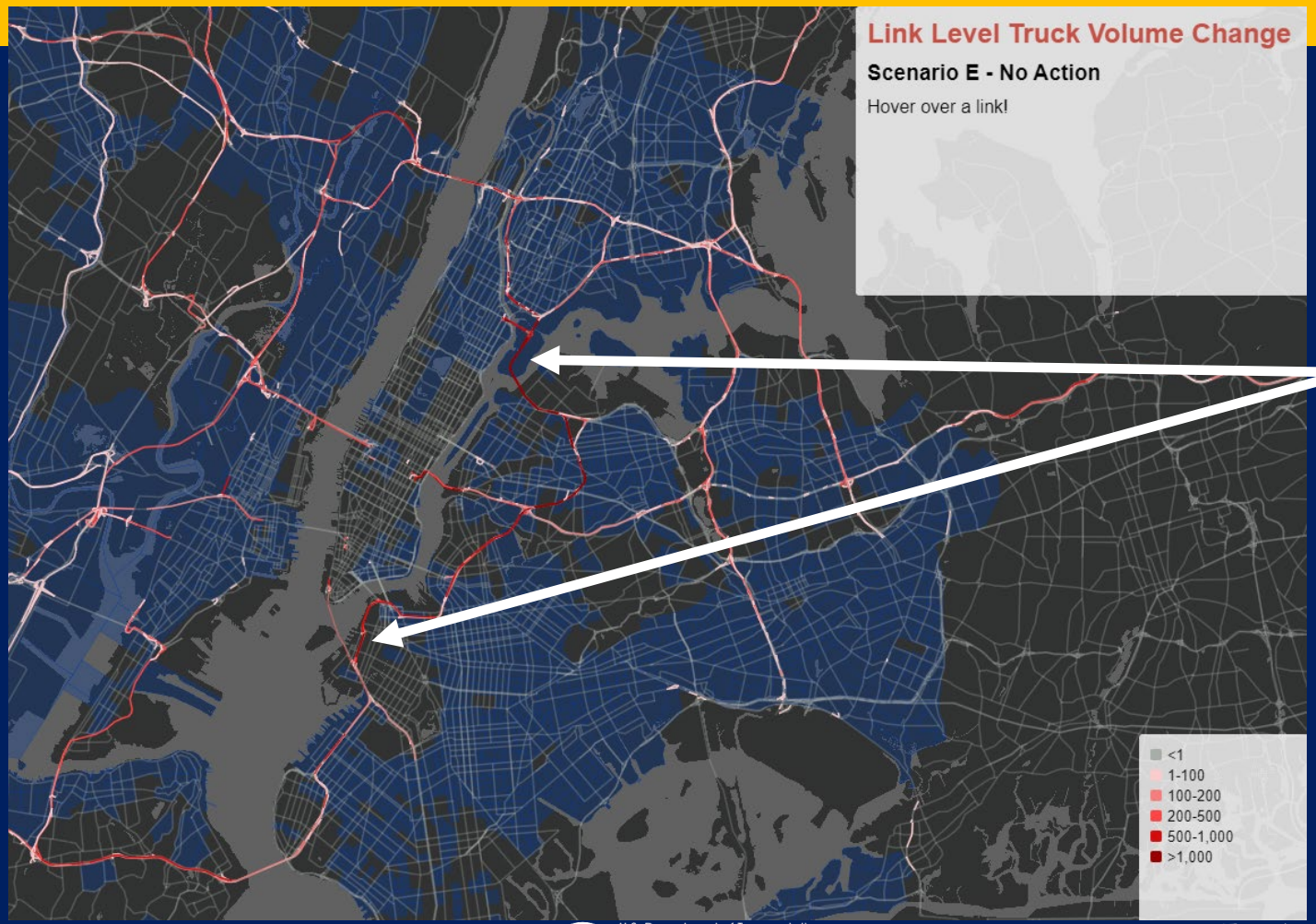
Circumferential Truck Diversions



A more in-depth analysis of truck movements was then conducted.

As shown by the darker red links, the tolling scenarios show varying degrees of truck diversions around Manhattan.

This is mainly due to truck traffic to/from Long Island and Pennsylvania.

Note: Blue shaded areas are EJ communities

Highway Link Analysis – Maximum Truck Changes (Top 20 Highway Links)

Worst-Case Scenario	County	link #	Roadway	EJ Community	Maximum Daily Change in Trucks	AADT - No Action	AADT - Scenario	Total Trucks - No Action	Total Trucks - Scenario	% Trucks - No Action	% Trucks - Scenario
E	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	2,125	72,057	79,003	7,467	9,592	10%	12%
E	Queens	64851	TRIBOROUGH BRIDGE	yes	2,125	72,148	79,094	7,467	9,592	10%	12%
E	Queens	64831	TRIBOROUGH BRIDGE	yes	1,991	67,666	81,185	8,044	10,035	12%	12%
E	New York	64916	TRIBOROUGH BRIDGE (SOUTH) - S	yes	1,991	67,666	81,185	8,044	10,035	12%	12%
D	Queens	64851	TRIBOROUGH BRIDGE	yes	1,767	72,148	79,215	7,467	9,234	10%	12%
D	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	1,767	72,057	79,124	7,467	9,234	10%	12%
D	Queens	64831	TRIBOROUGH BRIDGE	yes	1,712	67,666	80,531	8,044	9,756	12%	12%
D	New York	64916	TRIBOROUGH BRIDGE (SOUTH) - S	yes	1,712	67,666	80,531	8,044	9,756	12%	12%
F	Queens	64851	TRIBOROUGH BRIDGE	yes	1,606	72,148	79,557	7,467	9,073	10%	11%
F	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	1,606	72,057	79,465	7,467	9,073	10%	11%
E	New York	64926	I 278	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	New York	90365	TRIBOROUGH BRIDGE	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	New York	64925	TRIBOROUGH BRIDGE	yes	1,554	42,009	44,713	6,554	8,108	16%	18%
E	Bronx	64930	TRIBOROUGH BRIDGE (NORTH) - N	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	New York	64931	I 278	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	Bronx	64940	TRIBORO BR	yes	1,552	45,875	47,691	6,711	8,263	15%	17%
E	Queens	220948	GRAND CENTRAL PKY	yes	1,543	48,951	54,546	5,358	6,901	11%	13%
D	New York	64926	I 278	yes	1,530	42,009	44,709	6,554	8,084	16%	18%
D	New York	90365	TRIBOROUGH BRIDGE	yes	1,530	42,009	44,709	6,554	8,084	16%	18%
D	New York	64926	I 278	yes	1,530	42,009	44,709	6,554	8,084	16%	18%

Notes: map shows Scenario E truck changes
Blue shaded areas are EJ communities

The project team assessed the truck data to determine those links with maximum truck changes across all scenarios. This was done to identify "worst case" locations to perform highway link PM analyses.

Note: one-way directional links

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Highway Link Analysis - Max Truck Changes by County

Worst-Case Scenario	County	link #	Roadway	EJ Community	Maximum Daily Change in Trucks	AADT - No Action	AADT - Scenario	Total Trucks - No Action	Total Trucks - Scenario	% Trucks - No Action	% Trucks - Scenario
E	New York	220571	TRIBOROUGH BRIDGE (SOUTH) - N	yes	2,125	72,057	79,003	7,467	9,592	10.4%	12.1%
E	Queens	64851	TRIBOROUGH BRIDGE	yes	2,125	72,148	79,094	7,467	9,592	10.3%	12.1%
E	Bronx	64930	TRIBOROUGH BRIDGE (NORTH) - N	yes	1,552	45,875	47,691	6,711	8,263	14.6%	17.3%
D	Kings	90378	BROOKLYN BATTERY TUNNEL	no	1,277	23,795	43,802	1,796	3,073	7.5%	7.0%
E	Nassau	283052	LIE HOV WB	no	726	8,713	12,305	381	1,107	4.4%	9.0%
D	Bergen	246640	George Washington Bridge	yes	722	86,255	92,162	19,274	19,996	22.3%	21.7%
E	Richmond	90359	I 278	no	722	106,278	113,169	6,294	7,016	5.9%	6.2%
F	Fairfield	2601002	I 95 HOV	no	588	14,441	17,358	1,331	1,919	9.2%	11.1%
E	Hudson	267169	Tonnele Av	yes	540	90,326	93,367	4,460	5,000	4.9%	5.4%
A	Somerset	255656	I-78 to I-287 ramp	no	530	20,965	22,517	4,223	4,752	20.1%	21.1%
J	Suffolk	223379	LIE WB	yes	492	5,071	10,362	330	822	6.5%	7.9%
E	Rockland	246472	I 287	yes	423	35,214	37,193	5,577	6,001	15.8%	16.1%
E	Morris	256254	I 287	no	380	33,856	34,618	6,268	6,647	18.5%	19.2%
E	Union	246785	GOETHALS BRIDGE - WB	yes	347	27,265	30,664	2,533	2,880	9.3%	9.4%
E	Essex	266734	I-95 NB on-ramp	yes	311	5,773	5,915	1,141	1,452	19.8%	24.6%
F	Passaic	264358	I-80	yes	296	43,135	45,366	4,016	4,312	9.3%	9.5%
F	Westchester	77466	Westchester Ave Ramp	no	245	1,996	2,340	859	1,104	43.0%	47.2%
A	New Haven	239129	I-84 EB on-ramp	no	210	6,490	9,299	1,323	1,533	20.4%	16.5%
E	Middlesex	255463	I-287 EB	yes	157	38,414	38,461	4,557	4,713	11.9%	12.3%
B	Dutchess	244636	Rt 9 on-ramp	yes	123	8,395	8,263	373	496	4.4%	6.0%
F	Orange	222621	Rt 6 NB on-ramp	yes	46	10,229	10,877	550	596	5.4%	5.5%
F	Mercer	249007	Bruncswick Pike	yes	32	65,793	66,105	6,145	6,177	9.3%	9.3%
A	Warren	256441	-	no	26	53,670	53,640	8,729	8,755	16.3%	16.3%
E	Hunterdon	254727	I-78 WB	no	16	51,603	51,453	8,693	8,709	16.8%	16.9%
E	Putnam	79212	I 684	no	16	35,206	34,957	3,870	3,886	11.0%	11.1%
D	Monmouth	251620	CR 18	no	15	9,051	9,027	1,561	1,576	17.2%	17.5%
B	Ocean	251116	I -195	no	11	19,610	19,697	2,616	2,627	13.3%	13.3%
J	Sussex	256644	-	no	6	44,360	44,304	3,570	3,576	8.0%	8.1%

Note: one-way directional links

The project team assessed the truck data to determine those links with maximum truck changes by county across all scenarios.

This was done to identify "worst case" locations to perform highway link PM analyses.

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Highway Link Analysis - Maximum AADT

Worst-Case Scenario	County	link #	Roadway	EJ Community	AADT - No Action	AADT - Scenario	Trucks - No Action	Trucks - Scenario	Maximum Daily Change in Trucks	% Trucks - No Action	% Trucks - Scenario
C	Bergen	268133	I-95	yes	124,642	130,713	18,019	18,421	401	14.5%	14.1%
E	Bergen	268133	I-95	yes	124,642	130,668	18,019	18,421	401	14.5%	14.1%
F	Bergen	268133	I-95	yes	124,642	130,461	18,019	18,421	401	14.5%	14.1%
D	Bergen	268133	I-95	yes	124,642	130,461	18,019	18,421	401	14.5%	14.1%
B	Bergen	268133	I-95	yes	124,642	129,686	18,019	18,421	401	14.5%	14.2%
A	Bergen	268133	I-95	yes	124,642	128,575	18,019	18,421	401	14.5%	14.3%
C	Queens	64554	VAN WYCK EXPY	yes	128,793	127,045	5,664	5,703	39	4.4%	4.5%
C	Bergen	268077	I-95	yes	120,803	126,821	17,101	17,517	416	14.2%	13.8%
E	Bergen	268077	I-95	yes	120,803	126,656	17,101	17,517	416	14.2%	13.8%
F	Bergen	268077	I-95	yes	120,803	126,645	17,101	17,517	416	14.2%	13.8%
D	Bergen	268077	I-95	yes	120,803	126,416	17,101	17,517	416	14.2%	13.9%
B	Bergen	268077	I-95	yes	120,803	126,029	17,101	17,517	416	14.2%	13.9%
A	Bergen	268077	I-95	yes	120,803	124,622	17,101	17,517	416	14.2%	14.1%
A	Queens	64564	VAN WYCK EXPY	yes	123,598	123,416	4,731	4,850	119	3.8%	3.9%
B	Bergen	268131	I-95	yes	116,685	123,100	16,114	16,514	400	13.8%	13.4%
A	Bergen	268131	I-95	yes	116,685	122,596	16,114	16,514	400	13.8%	13.5%
F	Queens	64564	VAN WYCK EXPY	yes	123,598	122,259	4,731	4,850	119	3.8%	4.0%
C	Queens	64564	VAN WYCK EXPY	yes	123,598	122,250	4,731	4,850	119	3.8%	4.0%
D	Queens	64564	VAN WYCK EXPY	yes	123,598	122,200	4,731	4,850	119	3.8%	4.0%
E	Queens	64564	VAN WYCK EXPY	yes	123,598	121,845	4,731	4,850	119	3.8%	4.0%
J	Queens	64564	VAN WYCK EXPY	yes	123,598	121,602	4,731	4,850	119	3.8%	4.0%
B	Queens	63972	VAN WYCK EXPY	yes	119,688	119,497	4,081	4,101	21	3.4%	3.4%
B	Queens	64564	VAN WYCK EXPY	yes	123,598	119,188	4,731	4,850	119	3.8%	4.1%
C	Bergen	268131	I-95	yes	116,685	118,593	16,114	16,514	400	13.8%	13.9%
E	Bergen	268131	I-95	yes	116,685	117,737	16,114	16,514	400	13.8%	14.0%
E	Queens	64289	LONG ISLAND EXPY	yes	117,103	117,281	6,571	6,672	102	5.6%	5.7%
F	Queens	64289	LONG ISLAND EXPY	yes	117,103	117,108	6,571	6,672	102	5.6%	5.7%
A	Bergen	266111	SR 4	yes	117,502	117,077	7,057	7,062	5	6.0%	6.0%

Note: one-way directional links

The project team also assessed traffic data to determine those links with maximum AADT by county across all scenarios.

This was done to identify "worst case" locations to perform highway link PM analyses.

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Highway Link Analysis - PM Analysis Locations

- **I-95 west of the GWB, Scenario C**
  - Highest AADT in all scenarios
  - New Jersey location
  - EJ community
- ✓ **Cross Bronx @ Macombs, Scenario B**
  - Community concern
  - Scenario with highest truck increase at that location
  - Bronx location
  - EJ community
- **RFK (Triborough) Queens Approach, Scenario E**
  - Highest truck increase across all scenarios
  - Queens location
  - EJ community

Notes: map shows Scenario E truck changes
Blue shaded areas are EJ communities

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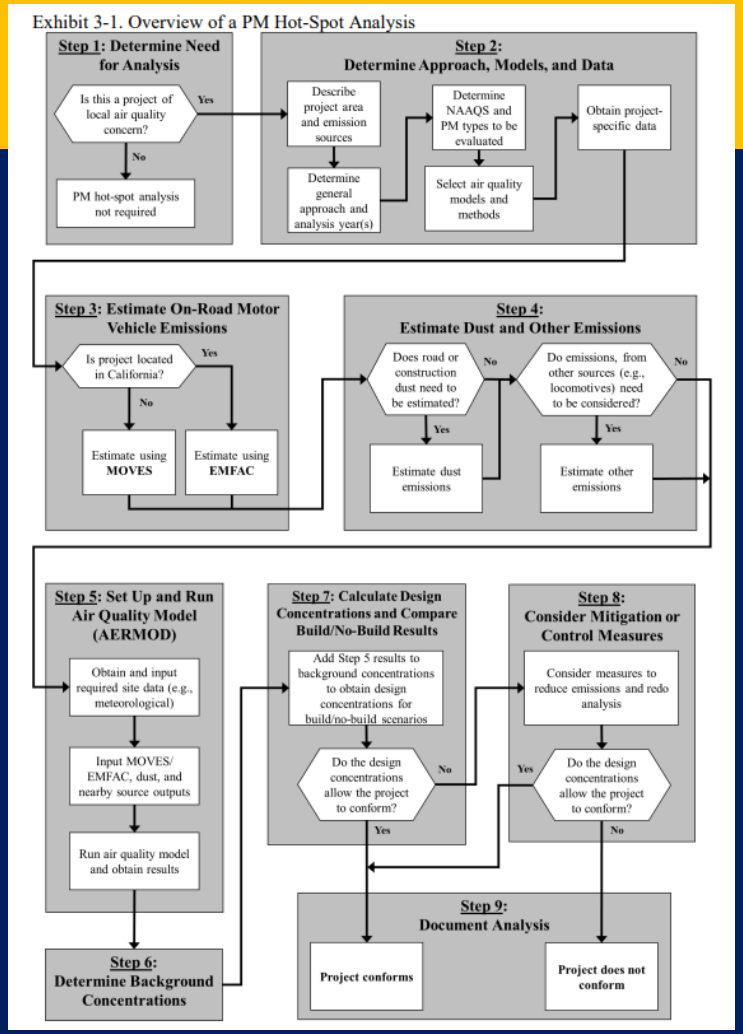
Action Items/Next Steps

- ICG concurrence on approach
  - Project team has provided draft methodology, following EPA's 9-step process, for ICG review
- ICG concurrence that no further consultation required if all levels are below NAAQS for all analyses
  - Findings for the additional locations will be circulated prior to release of EA

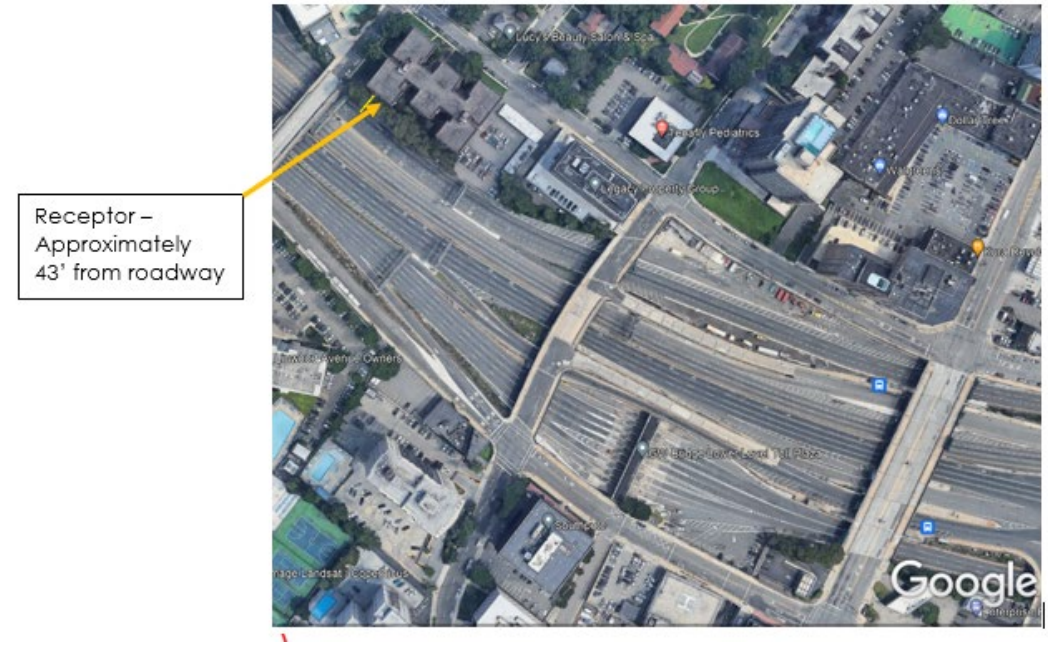


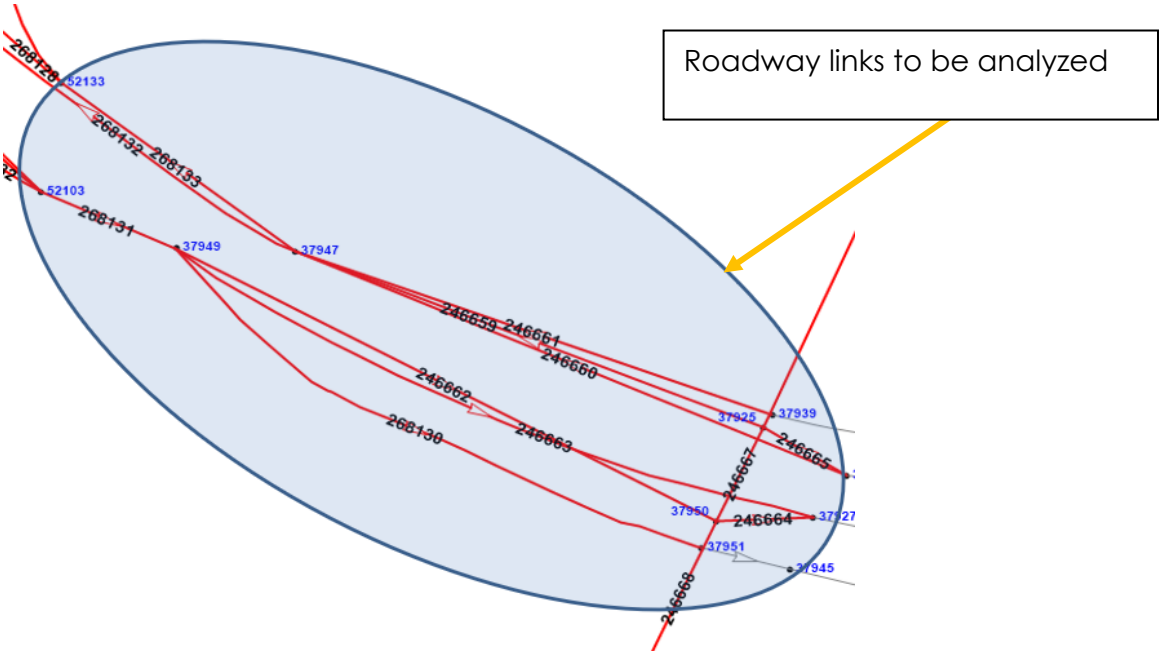
Appendix B

Nearest Sensitive Receptor Distances at Proposed Analysis Sites

During the interagency consultation meeting on 4/19/22, it was requested that more information be provided regarding the distance from the roadway to the nearest sensitive receptor at each of the proposed analysis sites. As shown in the figures below, the nearest sensitive receptors range from approximately 18' to 43' from roadway segments, depending on the analysis site. In addition to these receptors, a grid pattern of receptors, as per EPA guidance and detailed in the methodology, will also be placed at each analysis location.

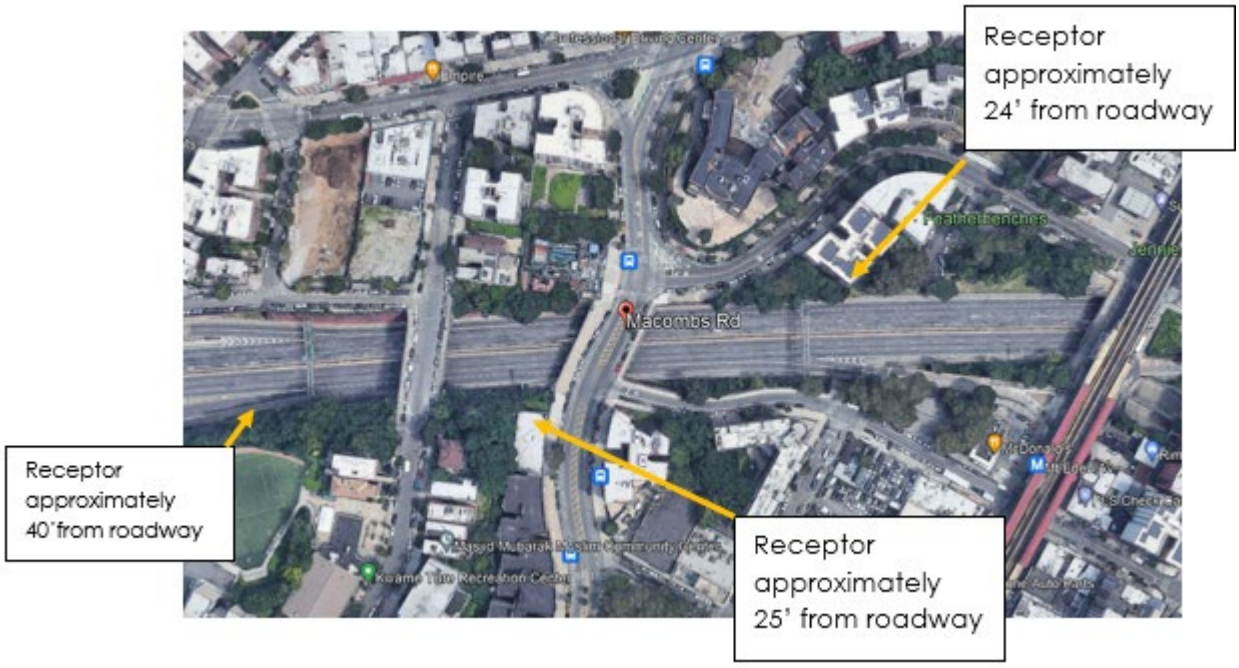
Site 1 - I-95 west of the GWB, Scenario C

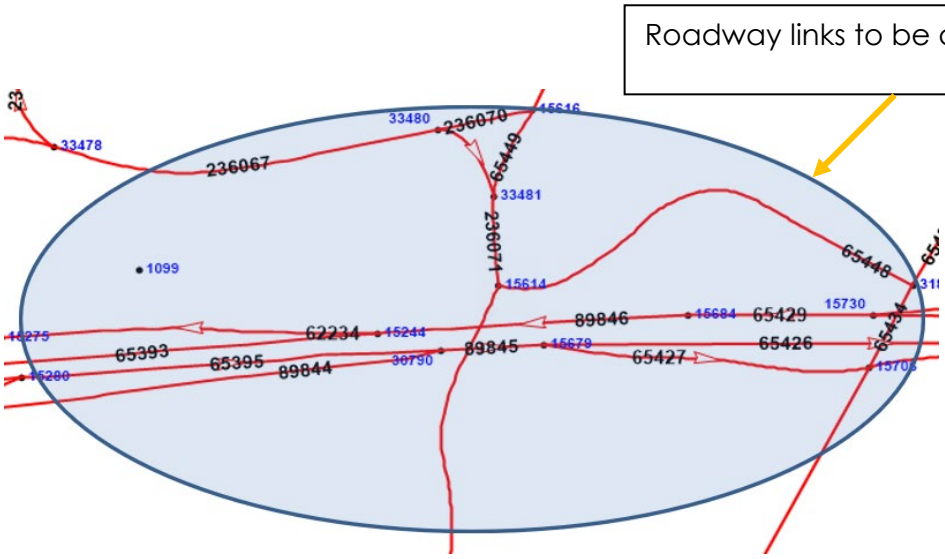




Site 2 - Cross Bronx @ Macombs, Scenario B

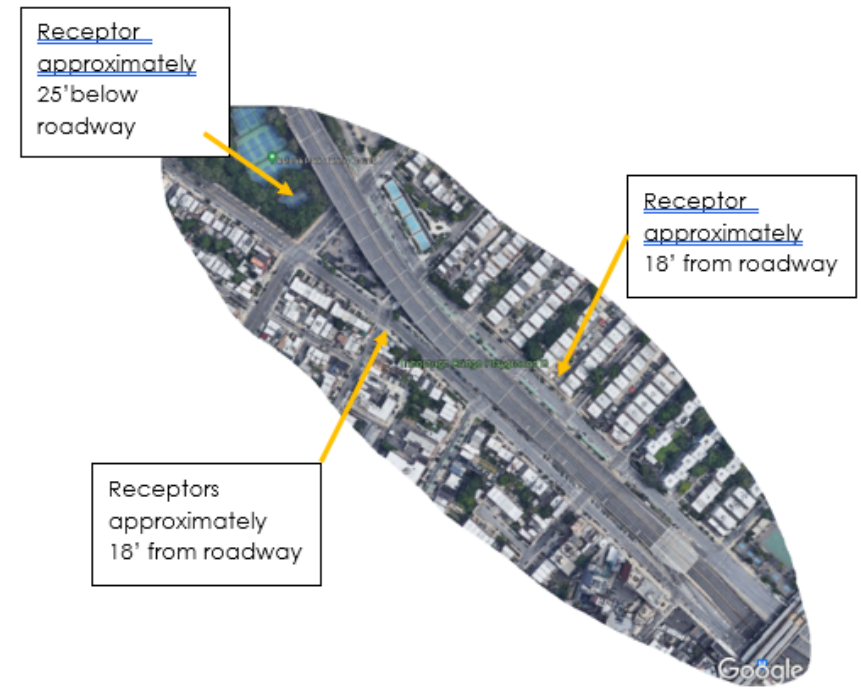
Nearest sensitive receptors are approximately 24' away from the edge of the roadway.

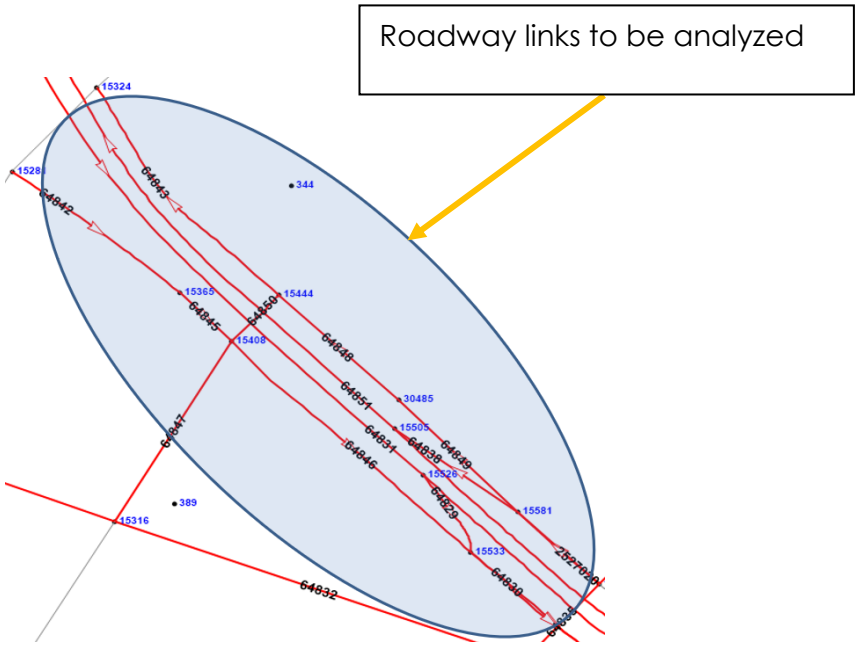




Site 3- RFK (Triborough) Queens Approach, Scenario E

Nearest sensitive receptor are approximately 18' from the edge of the roadway





Appendix C

ICG Concurrence E-mail

April 25, 2022

From: Lentlie, Patrick (DOT) <Patrick.Lentlie@dot.ny.gov>
Sent: Monday, April 25, 2022 12:55:41 PM
To: C. de Cerreno, Allison <allison.cdecerreno@mtahq.org>
Cc: Angel, Nichola <nangel@mtabt.org>; Flax, Leah <leah.flax@mtabt.org>; Wojnar, Michael <mwojnar@mtahq.org>; Nelson, Debra (DOT) <Debra.Nelson@dot.ny.gov>; gautam.mani@dot.gov <gautam.mani@dot.gov>; laurita.matthew@epa.gov <laurita.matthew@epa.gov>; Lentlie, Patrick (DOT) <Patrick.Lentlie@dot.ny.gov>; anna.price@dot.gov <anna.price@dot.gov>; Moser, Daniel (FTA) <daniel.moser@dot.gov>; Black, Lily <Black.Lily@epa.gov>; Burns, Donald (FTA) <Donald.Burns@dot.gov>; Anukwe, Uzoma (FTA) <uzoma.anukwe@dot.gov>; Smith, Terry (DOT) <Terry.Smith@dot.ny.gov>; Leslie, Catherine S. (DOT) <Catherine.Leslie@dot.ny.gov>; Nierenberg, Daniel R (DOT) <Daniel.Nierenberg@dot.ny.gov>; Savage, Laura E (DOT) <Laura.Savage@dot.ny.gov>; Neerackal, George (DOT) <George.Neerackal@dot.ny.gov>
Subject: RE: CBDTP Air Quality ICG Meeting: Presentation and proposed methodology

Allison,

The ICG concurs with the methodology used to identify the three locations for the CBDTP particulate matter hot-spot analysis. The ICG also concurs that if, after review of the analysis results and documentation, the three locations return values that do not violate the relevant NAAQS, then no further consultation with the ICG is required. This concurrence comes with the condition that the following comments are satisfactorily addressed:

- The USEPA and involved agencies reserve the right to request review of the modeling inputs/outputs and design value calculations during the review of the Air Quality technical report. Accordingly, the NYSDOT recommends the input files and relevant documentation be provided as soon as possible.
- Provide the source of age distribution data for the heavy-duty long-haul diesel trucks and confirm whether it is local or MOVES default data.
- For the RFK Bridge analysis location, confirm that the emissions from the nearby Astoria Generating Station are reasonably assumed to be reflected in the background PM concentrations
- Please specify the location(s) of the monitor(s) being used for the background concentrations used in the analysis.

If you have any questions, please let me know.

Thanks,

Patrick

Patrick Lentlie
Environmental Specialist 2, Environmental Science Bureau

New York State Department of Transportation
50 Wolf Rd, POD 4-1, Albany, NY 12232
(518) 457-0212 | Patrick.Lentlie@dot.ny.gov
www.dot.ny.gov

Appendix D

Analysis Results

(Electronic MOVES/AERMOD Files Available Upon Request)

Table 1 - Predicted 24-hour PM_{10} Design Value Concentrations

Site	Alternative	Background Concentration (µg/m³)	Modeled Concentration (µg/m³)	Total Concentration* (µg/m³)	NAAQS (µg/m³)
I-95 west of the GWB	No Build	43	62	105	150
	Scenario C		64	107	
Cross Bronx at Macombs Road	No Build		65	108	
	Scenario B		66	109	
RFK Bridge Queens Approach	No Build		64	107	
	Scenario E		79	122	

* Total concentrations = modeled results + 24-hour PM_{10} background
µg/m³ = micrograms per cubic meter

Table 2 - Predicted 24-hour $PM_{2.5}$ Design Value Concentrations

Site	Alternative	Background Concentration (µg/m³)	Modeled Concentration (µg/m³)	Total Concentration* (µg/m³)	NAAQS (µg/m³)
I-95 West of the GWB	No Build	22.0	7.5	29.5	35.0
	Scenario C		7.7	29.7	
Cross Bronx at Macombs Road	No Build		5.5	27.5	
	Scenario B		5.7	27.7	
RFK Bridge Queens Approach	No Build		3.2	25.2	
	Scenario E		5.7	27.7	

* Total concentrations = modeled results + 24-hour $PM_{2.5}$ background
µg/m³ = micrograms per cubic meter

Table 3 - Predicted Annual $PM_{2.5}$ Design Value Concentrations

Site	Alternative	Background Concentration (µg/m³)	Modeled Concentration (µg/m³)	Total Concentration* (µg/m³)	NAAQS (µg/m³)
I-95 West of the GWB	No Build	8.7	2.4	11.1	12.0
	Scenario C		2.5	11.2	
Cross Bronx at Macombs Road	No Build		2.2	10.9	
	Scenario B		2.3	11.0	
RFK Bridge Queens Approach	No Build		1.1	9.8	
	Scenario E		1.9	10.6	

* Total concentrations = modeled results + Annual $PM_{2.5}$ background
µg/m³ = micrograms per cubic meter

Figure 1 – AERMOD Model Screenshot, I-95 west of GWB

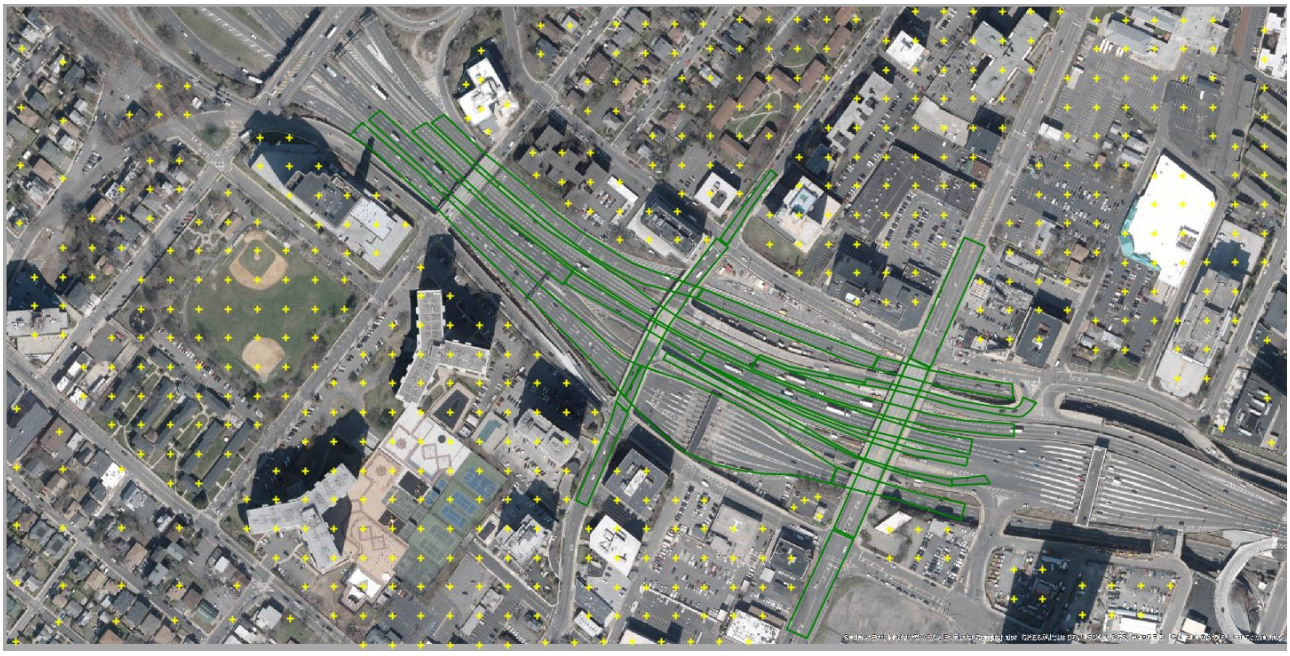


Figure 2 – 24-Hour PM_{10} No Build Contours (µg/m^3), I-95 west of GWB

Figure 3 – 24-Hour PM_{10} Scenario C Contours (µg/m^3), I-95 west of GWB

Figure 4 – 24-Hour $PM_{2.5}$ No Build Contours (µg/m^3), I-95 west of GWB

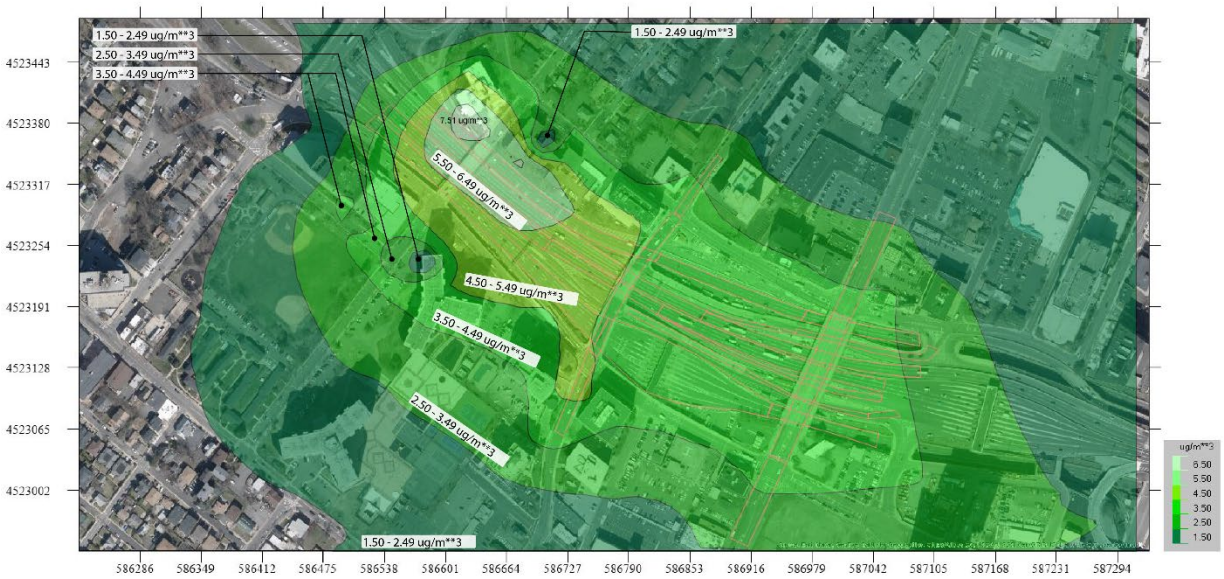


Figure 5 – 24-Hour $PM_{2.5}$ Scenario C Contours (µg/m^3), I-95 west of GWB

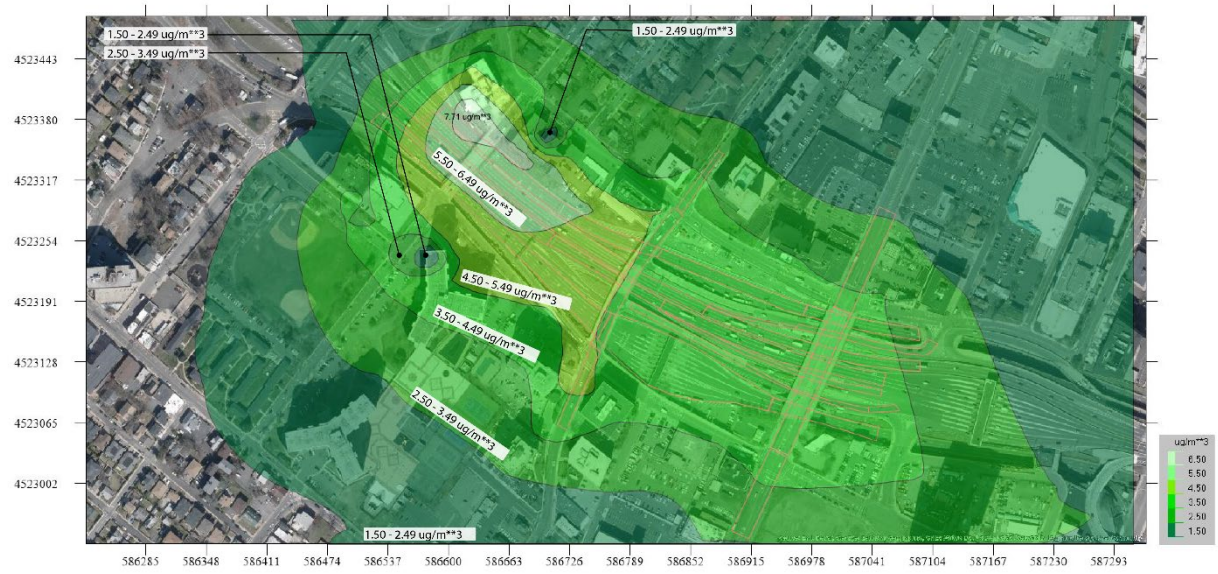


Figure 6 – Annual $PM_{2.5}$ No Build Contours (µg/m^3), I-95 west of GWB

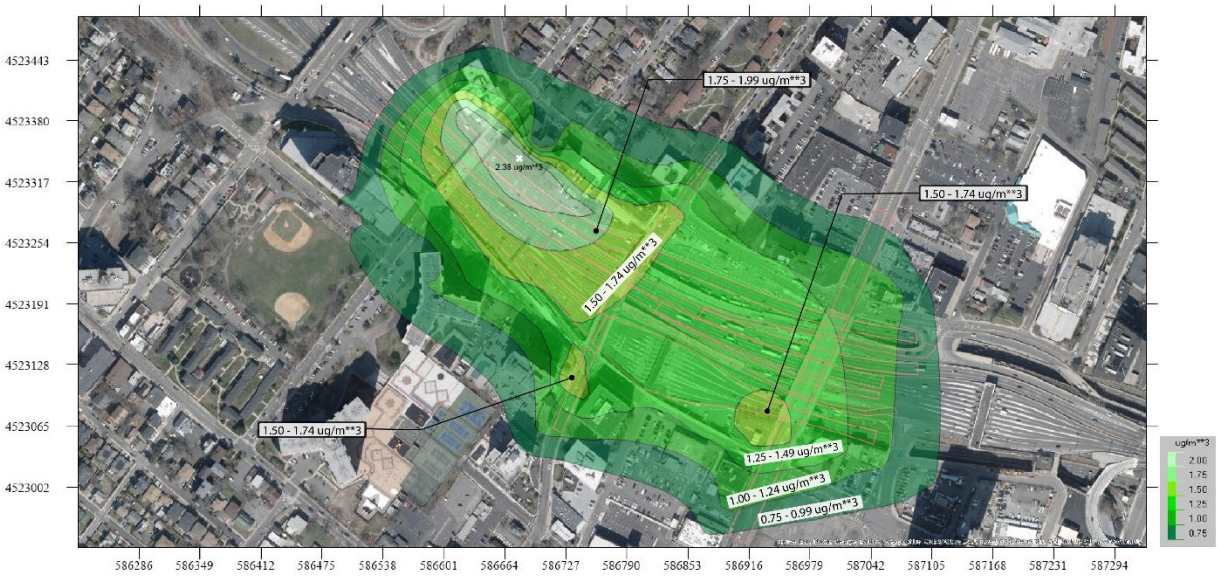


Figure 7 – Annual $PM_{2.5}$ Scenario C Contours (µg/m^3), I-95 west of GWB

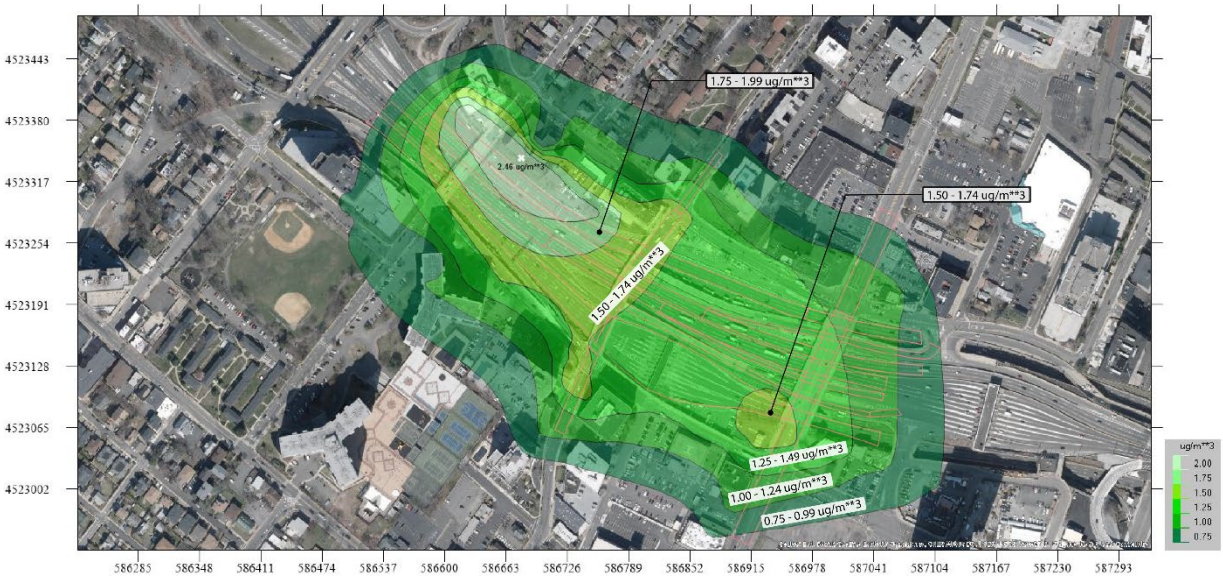


Figure 8 – AERMOD Model Screenshot, Cross Bronx at Macombs

Figure 9 – 24-Hour PM_{10} No Build Contours (µg/m^3), Cross Bronx at Macombs

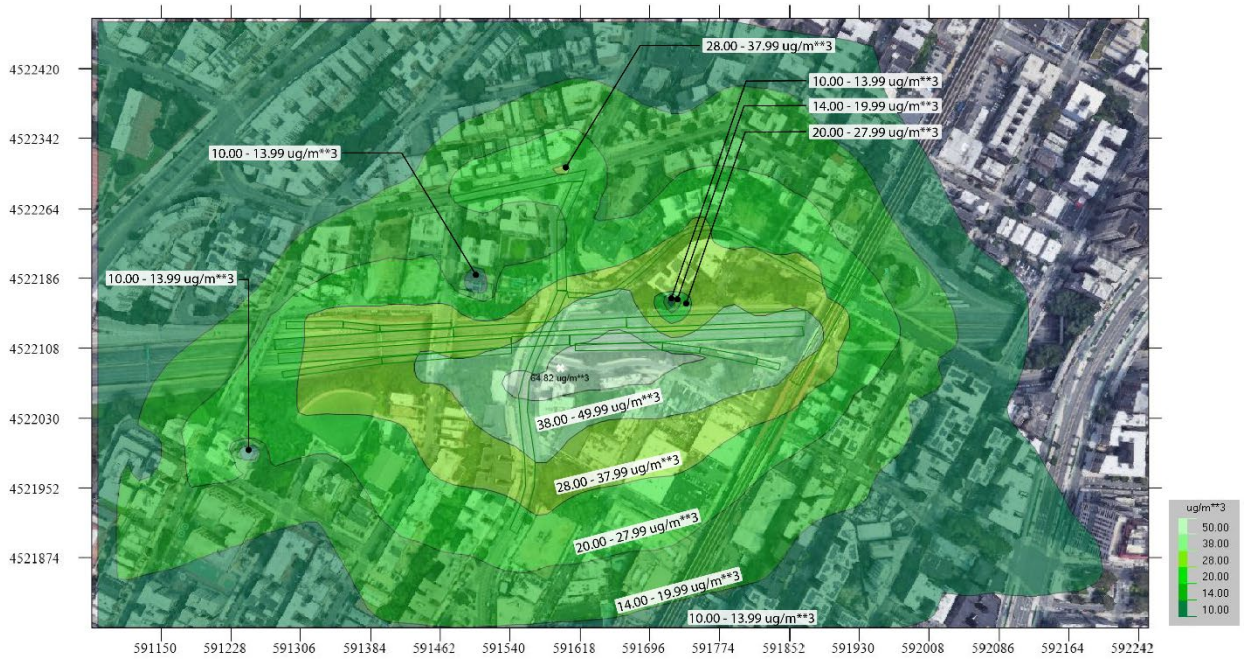


Figure 10 – 24-Hour PM_{10} Scenario B Contours (µg/m^3), Cross Bronx at Macombs

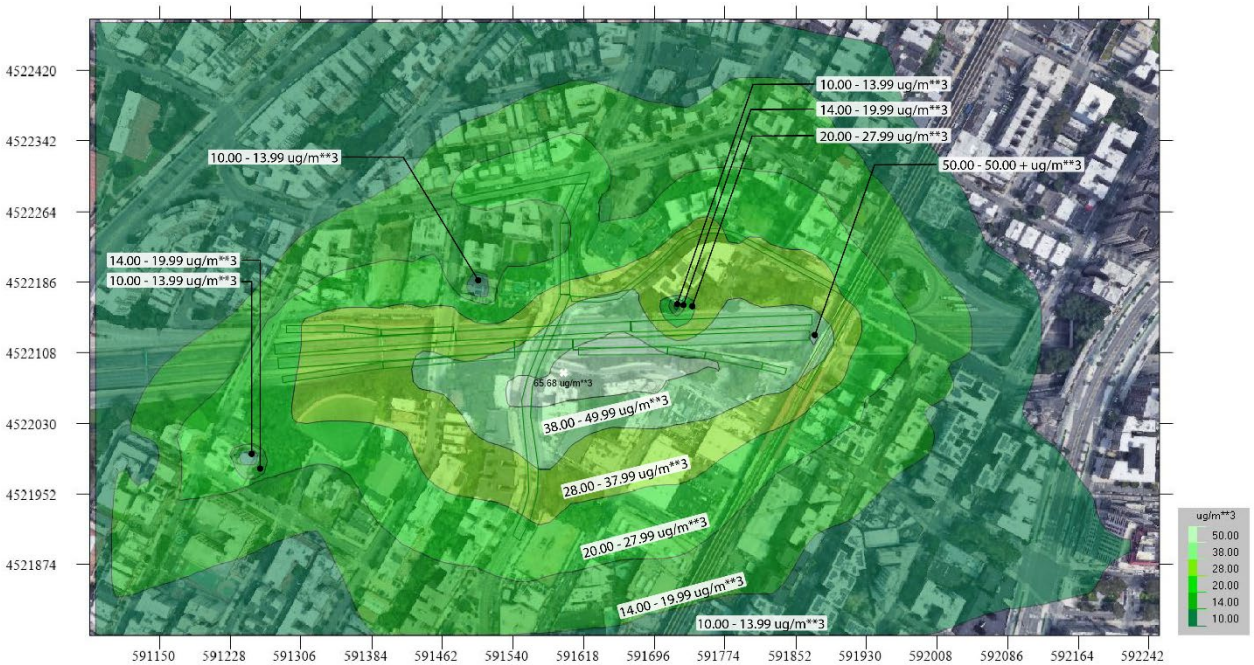


Figure 11 – 24-Hour $PM_{2.5}$ No Build Contours (µg/m^3), Cross Bronx at Macombs

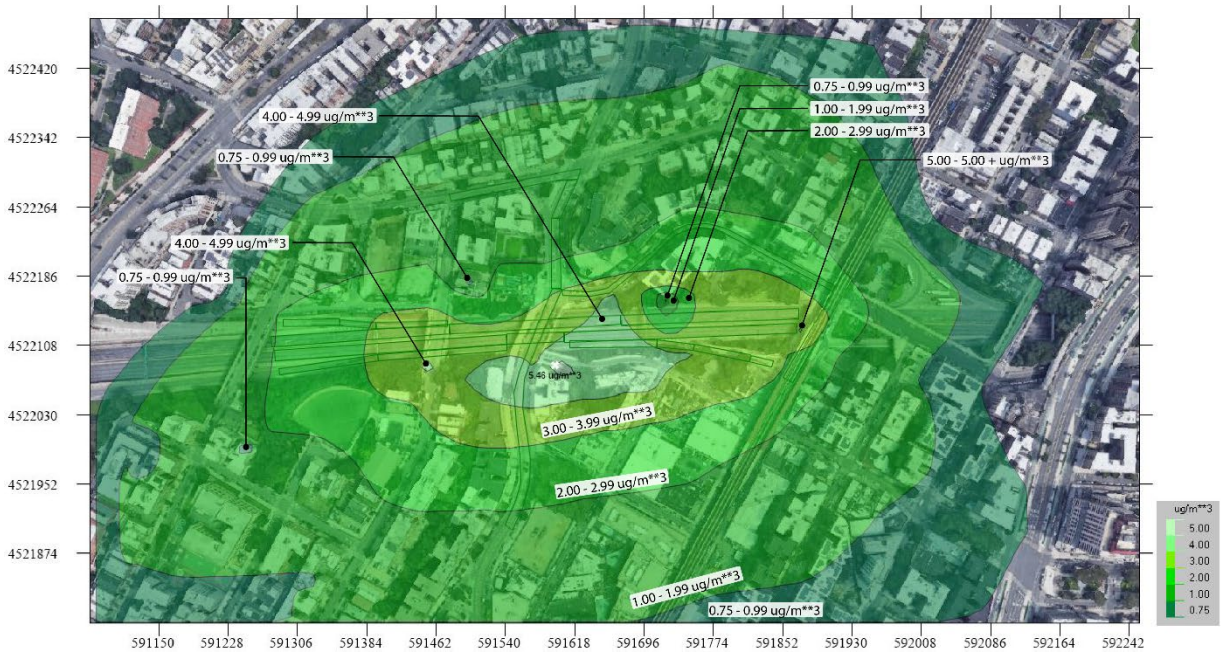


Figure 12 – 24-Hour $PM_{2.5}$ Scenario B Contours (µg/m^3), Cross Bronx at Macombs

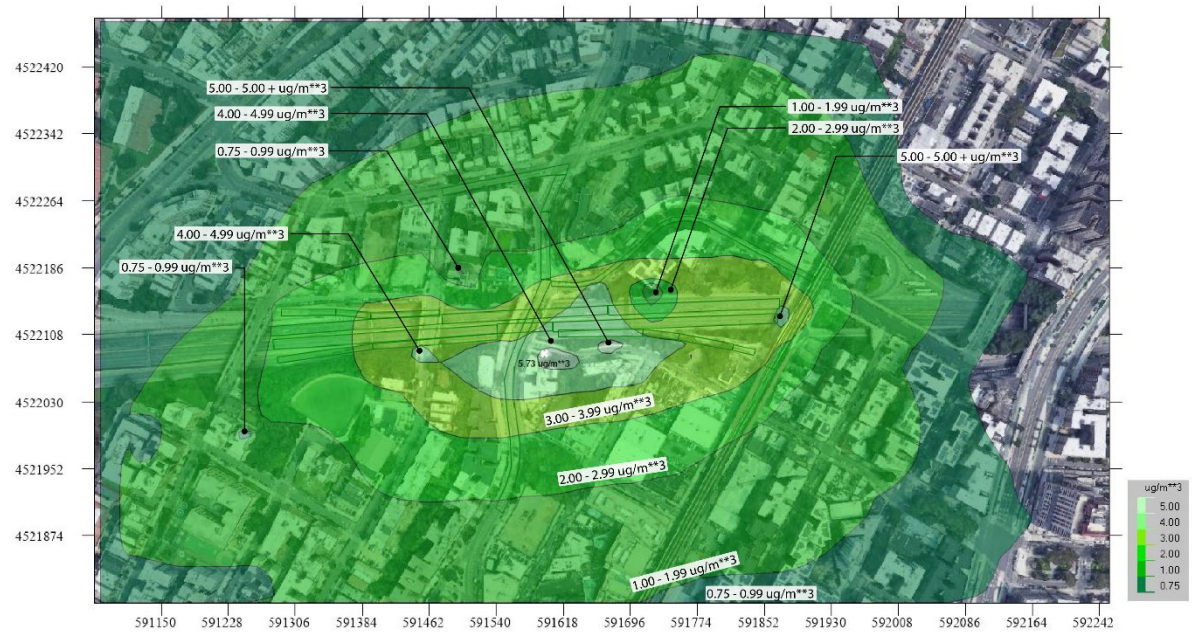


Figure 13 – Annual $PM_{2.5}$ No Build Contours (µg/m^3), Cross Bronx at Macombs

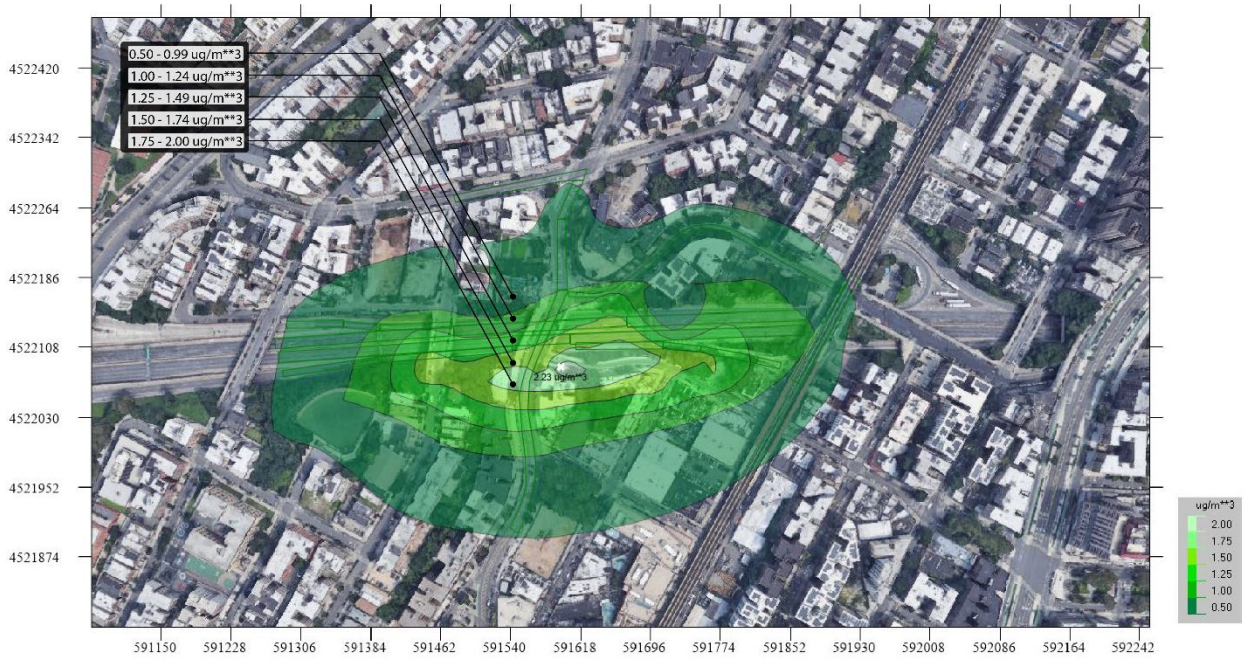


Figure 14 – Annual $PM_{2.5}$ Scenario B Contours (µg/m^3), Cross Bronx at Macombs

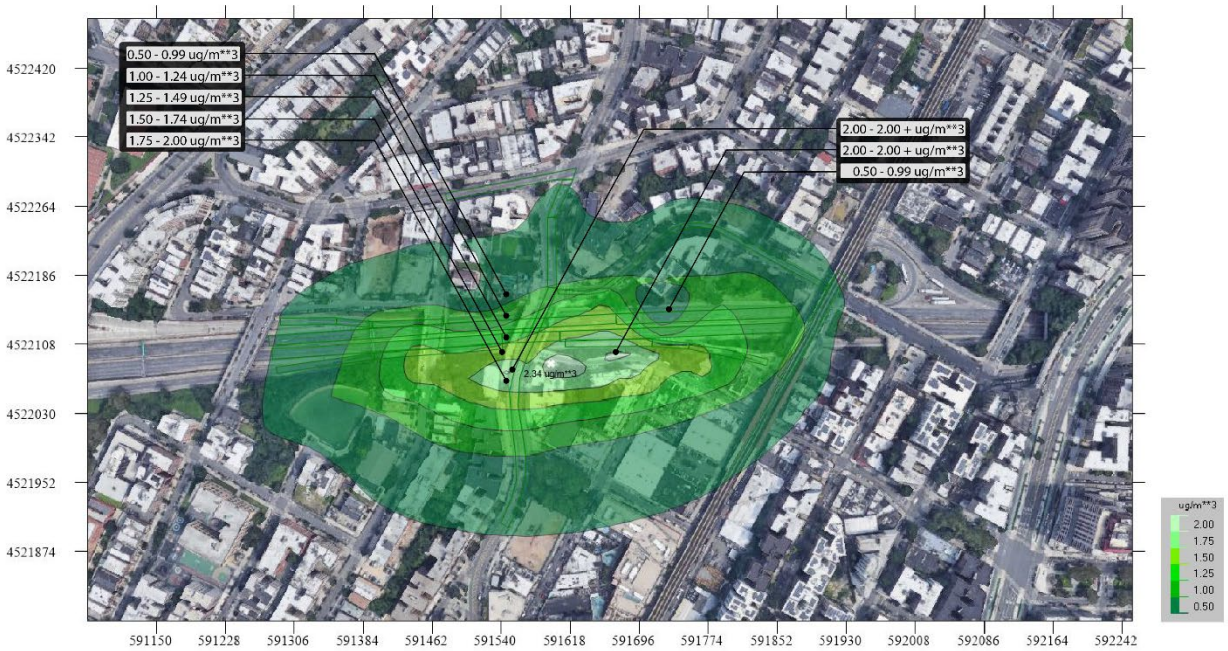


Figure 15 – AERMOD Model Screenshot, RFK Queens Approach

Figure 16 – 24-Hour PM_{10} No Build Contours (µg/m^3), RFK Queens Approach

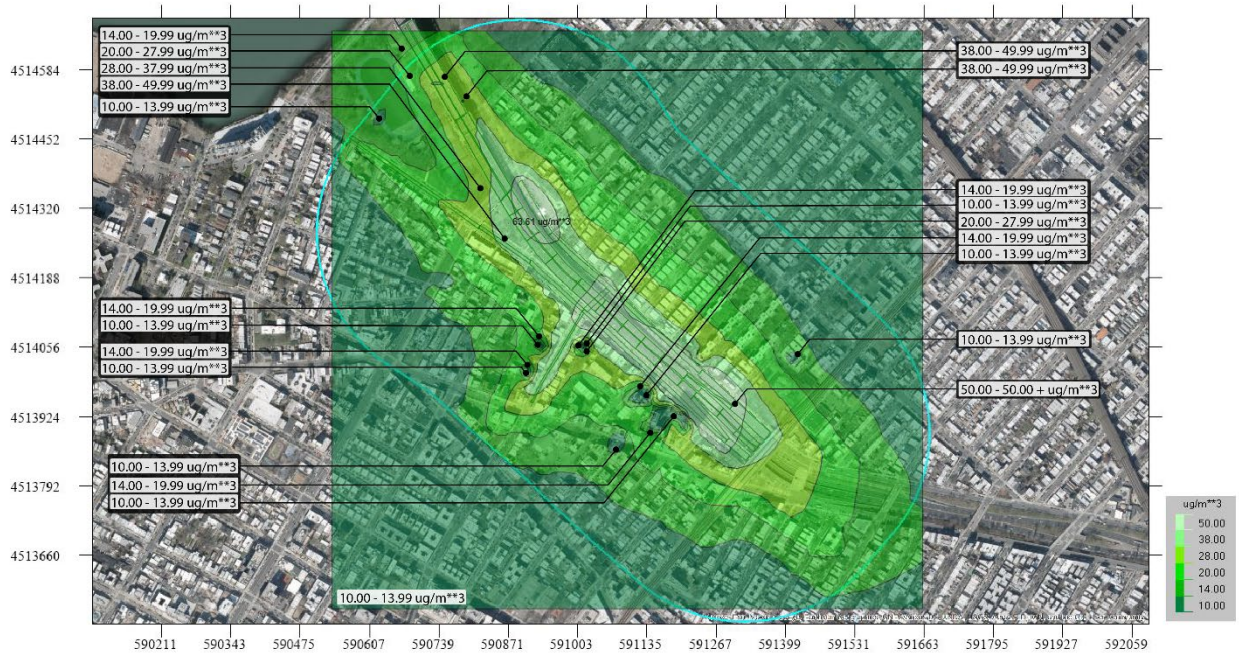


Figure 17 – 24-Hour PM_{10} Scenario E Contours (µg/m³), RFK Queens Approach

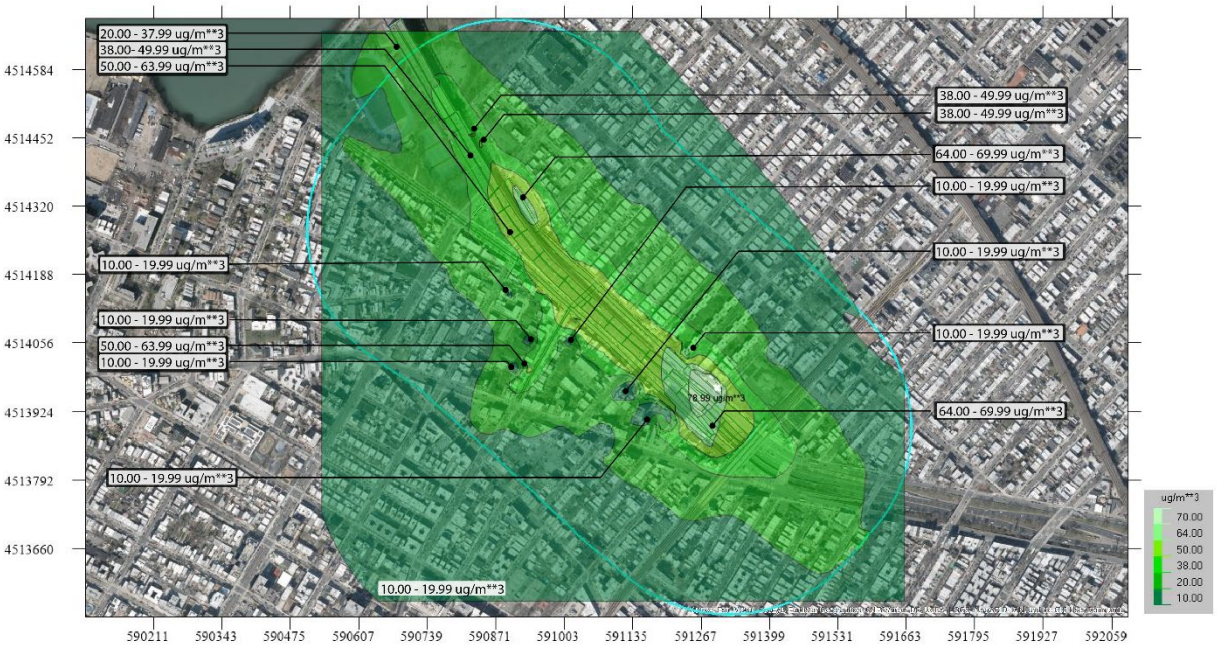


Figure 18 – 24-Hour $PM_{2.5}$ No Build Contours (µg/m³), RFK Queens Approach

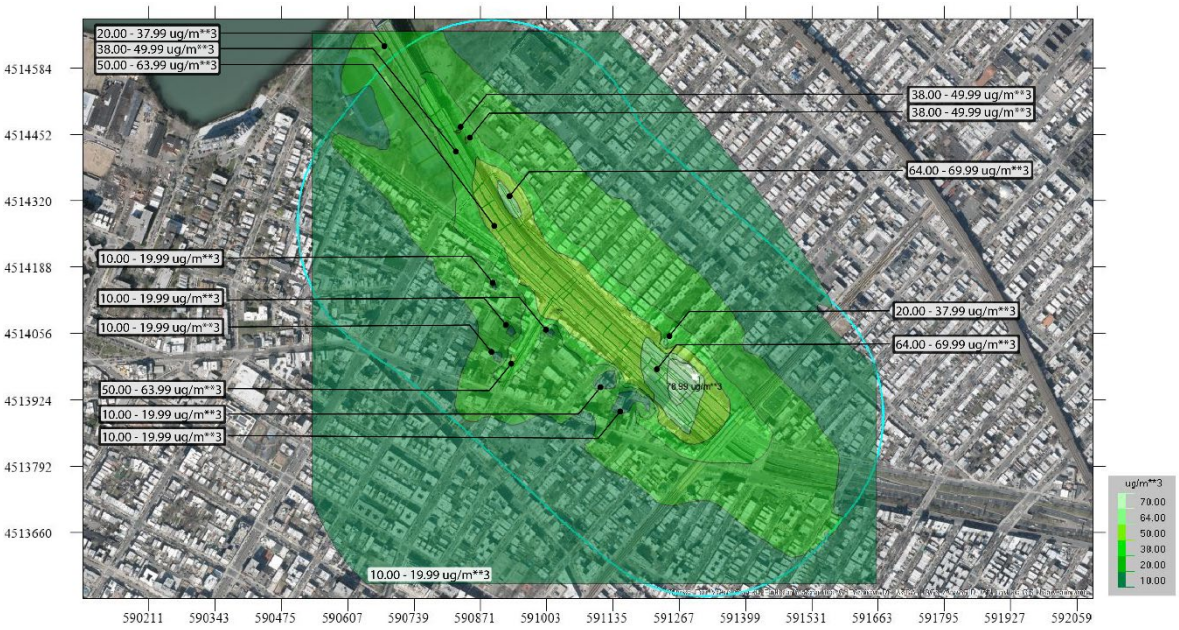


Figure 19 – 24-Hour $PM_{2.5}$ Scenario E Contours (µg/m^3), RFK Queens Approach

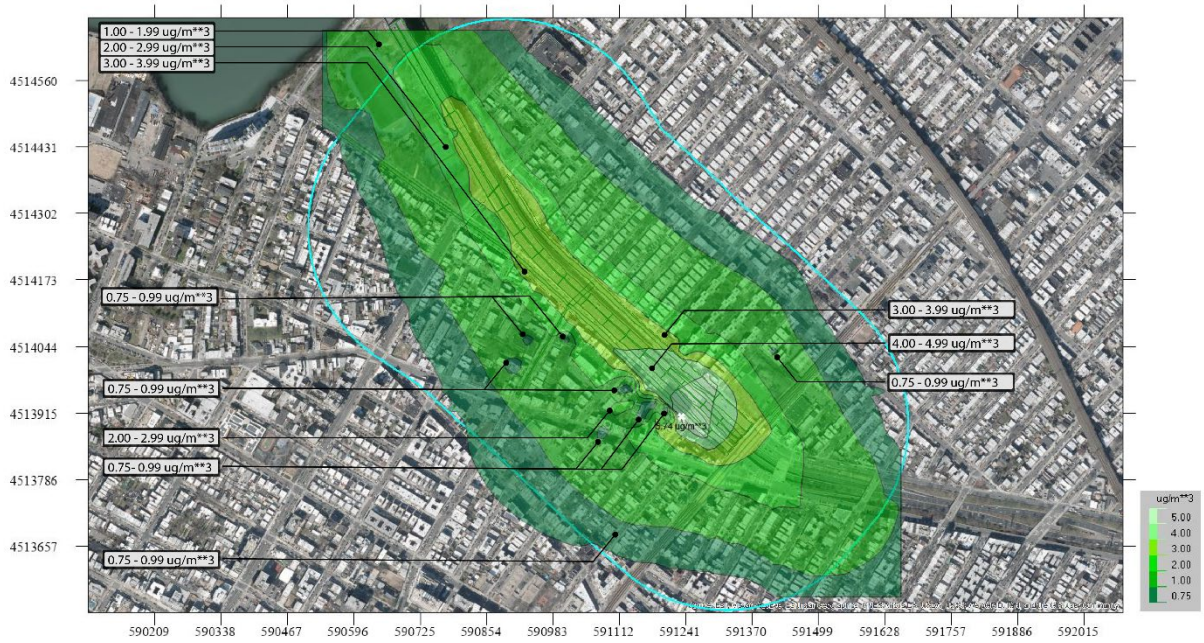
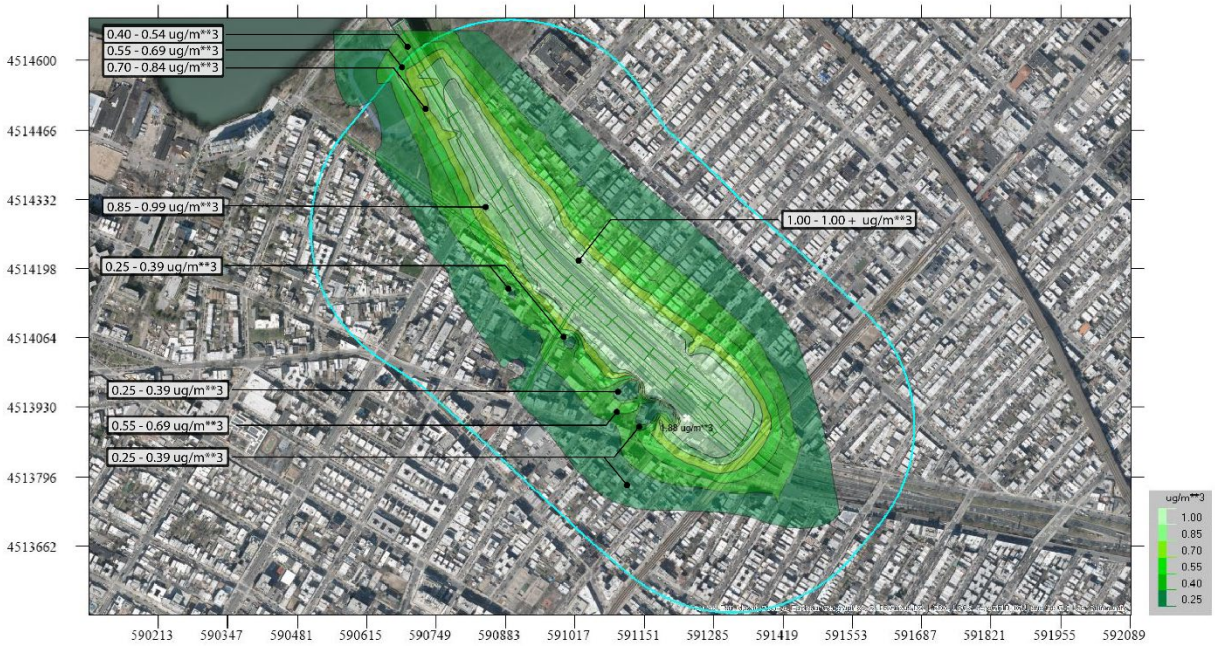


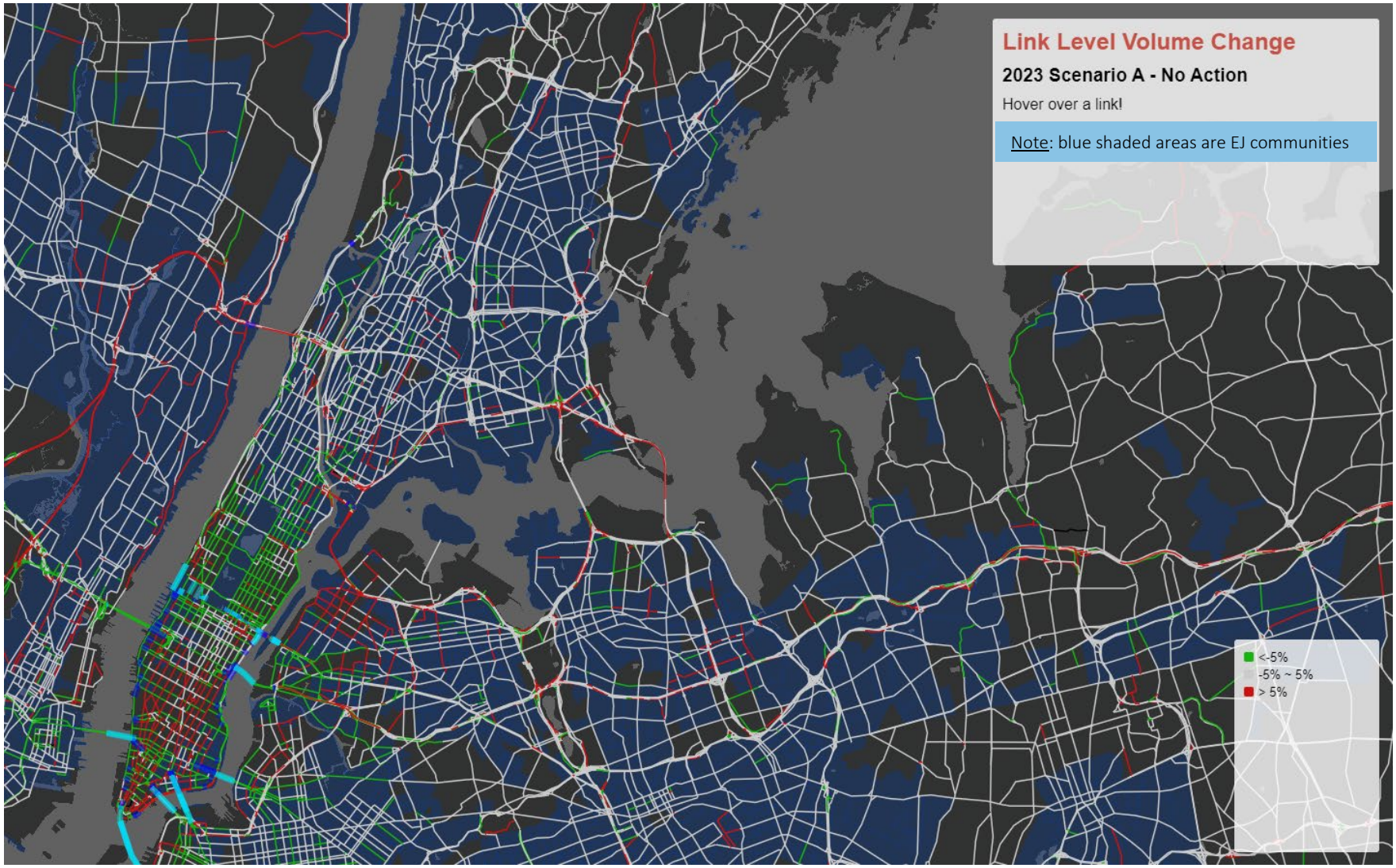
Figure 20 – Annual $PM_{2.5}$ No Build Contours (µg/m^3), RFK Queens Approach

Figure 21 – Annual $PM_{2.5}$ Scenario E Contours (µg/m^3), RFK Queens Approach



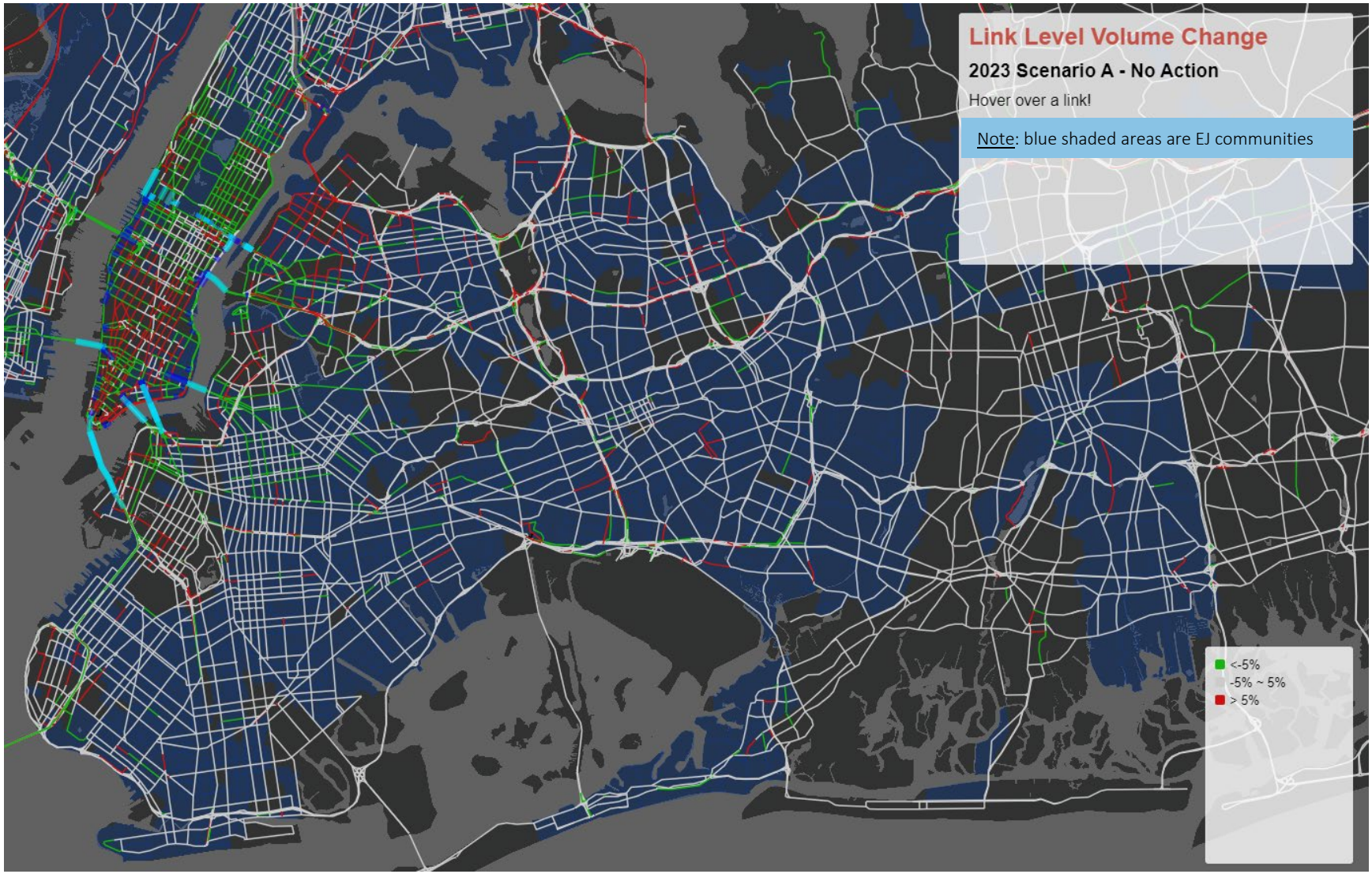
10D, Changes in Annual Average Daily Traffic (AADT)

Figure 10D-1. Changes in 2023 Annual Average Daily Traffic (AADT): Manhattan (New York County) and the Bronx (New York City Counties)



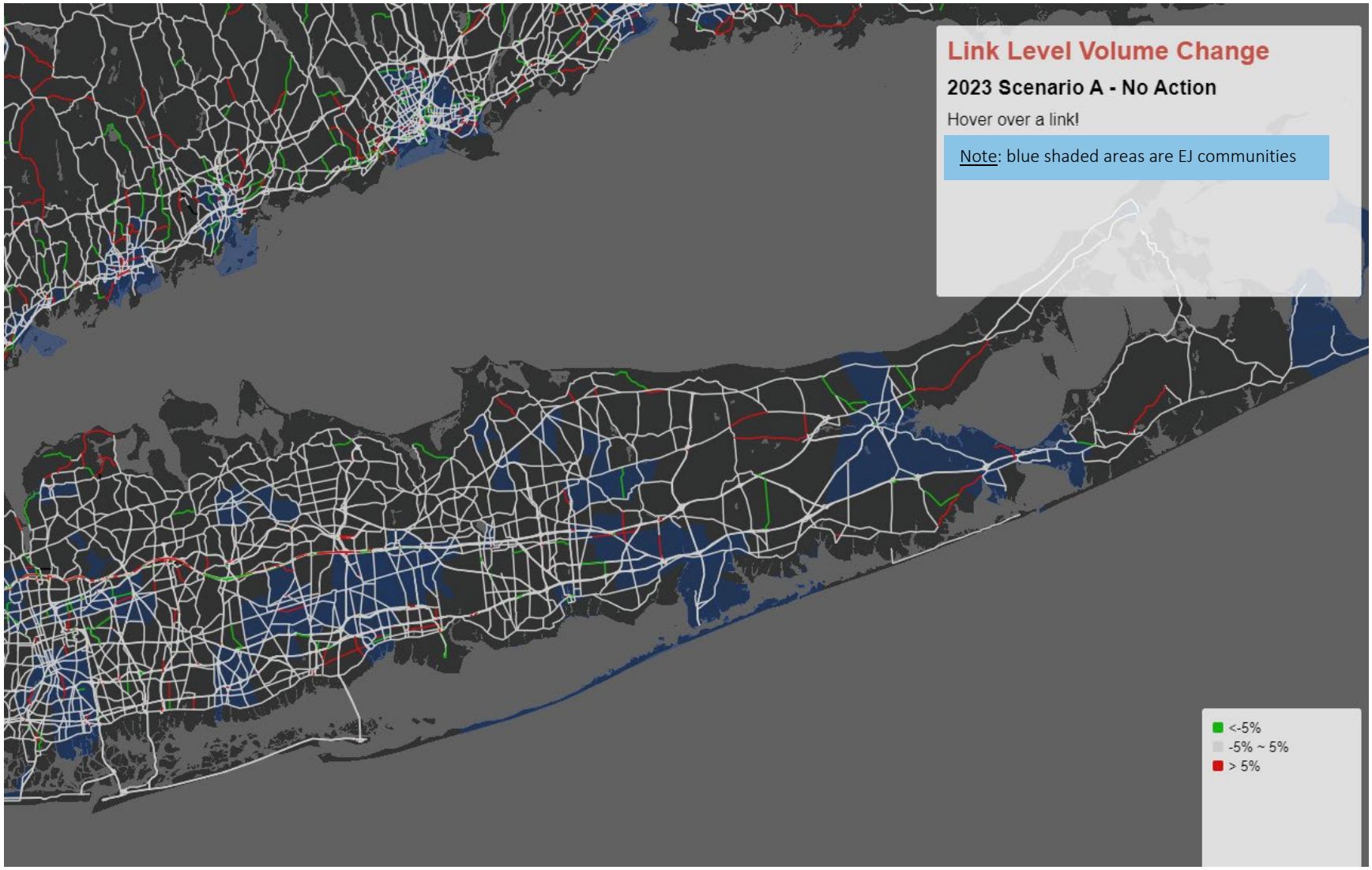
Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=yKCZZYk5P3Y&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=9.

Figure 10D-2. Changes in 2023 Annual Average Daily Traffic (AADT): Brooklyn (Kings County) and Queens (New York City Counties)



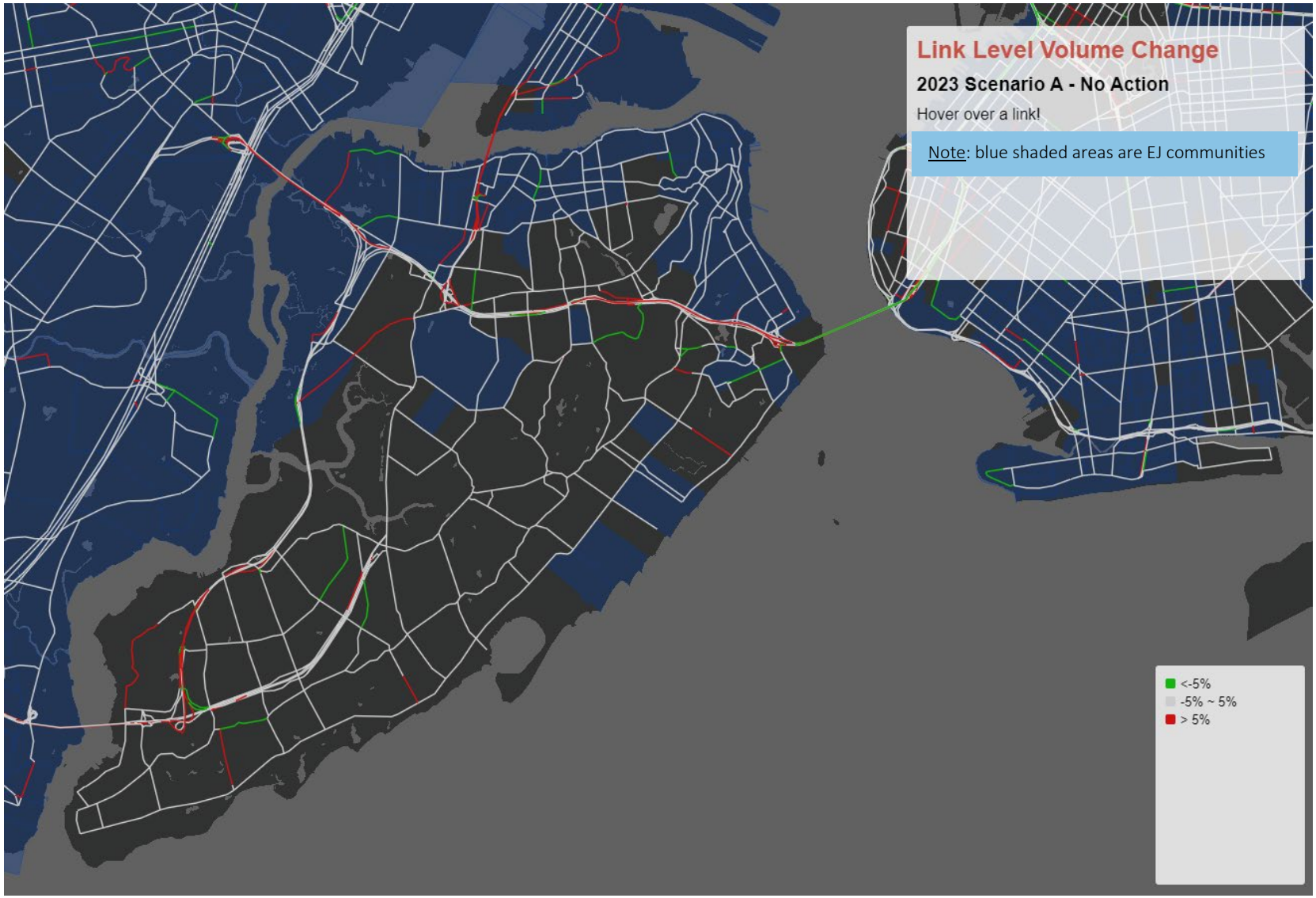
Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=RB5JY0lA7As&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=10.

Figure 10D-3. Changes in 2023 Annual Average Daily Traffic (AADT): Nassau and Suffolk Counties (Long Island Counties, New York)



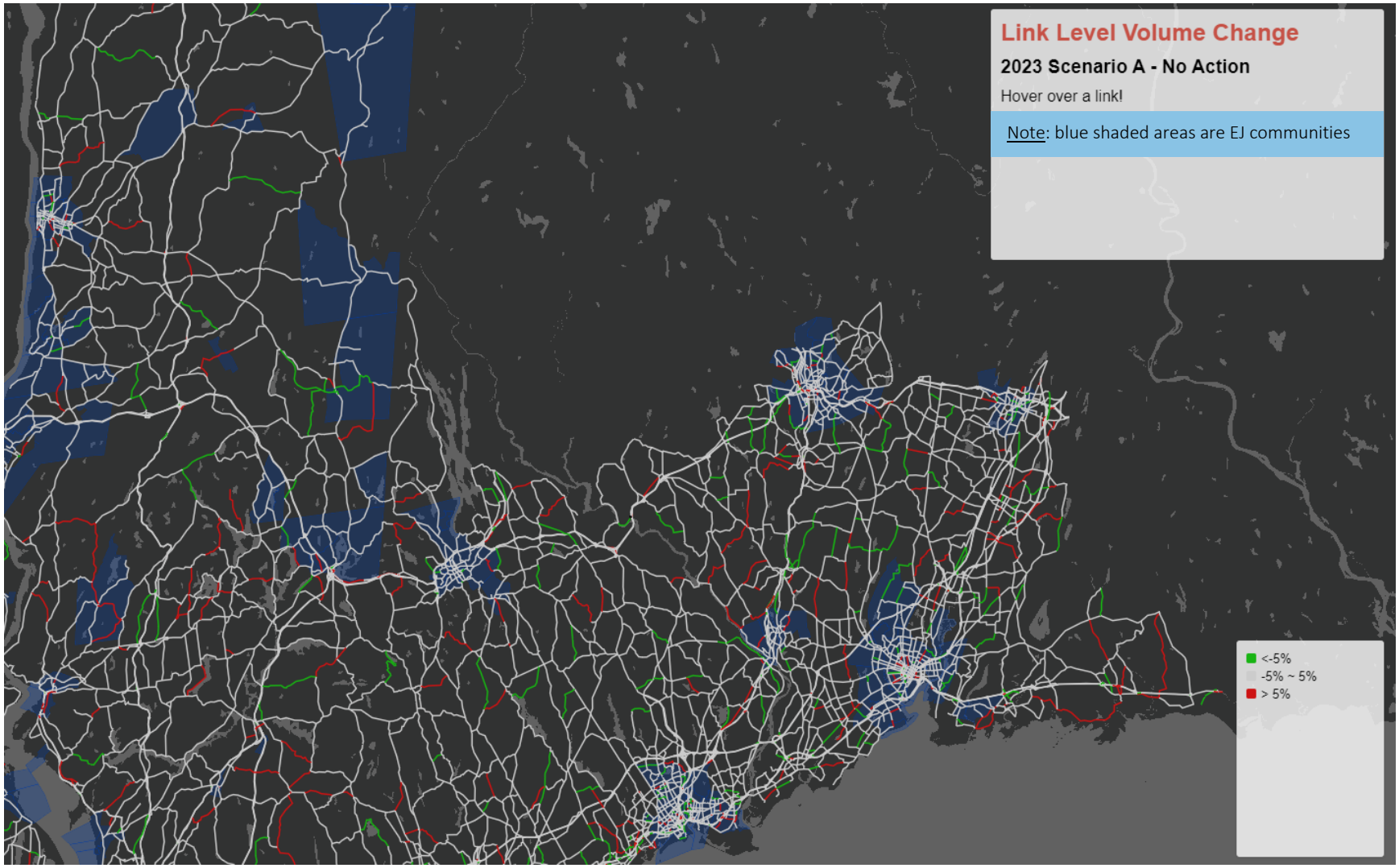
Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=S3tDxZ1gxZw&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=11.

Figure 10D-4. Changes in 2023 Annual Average Daily Traffic (AADT): Staten Island (Richmond County, New York)



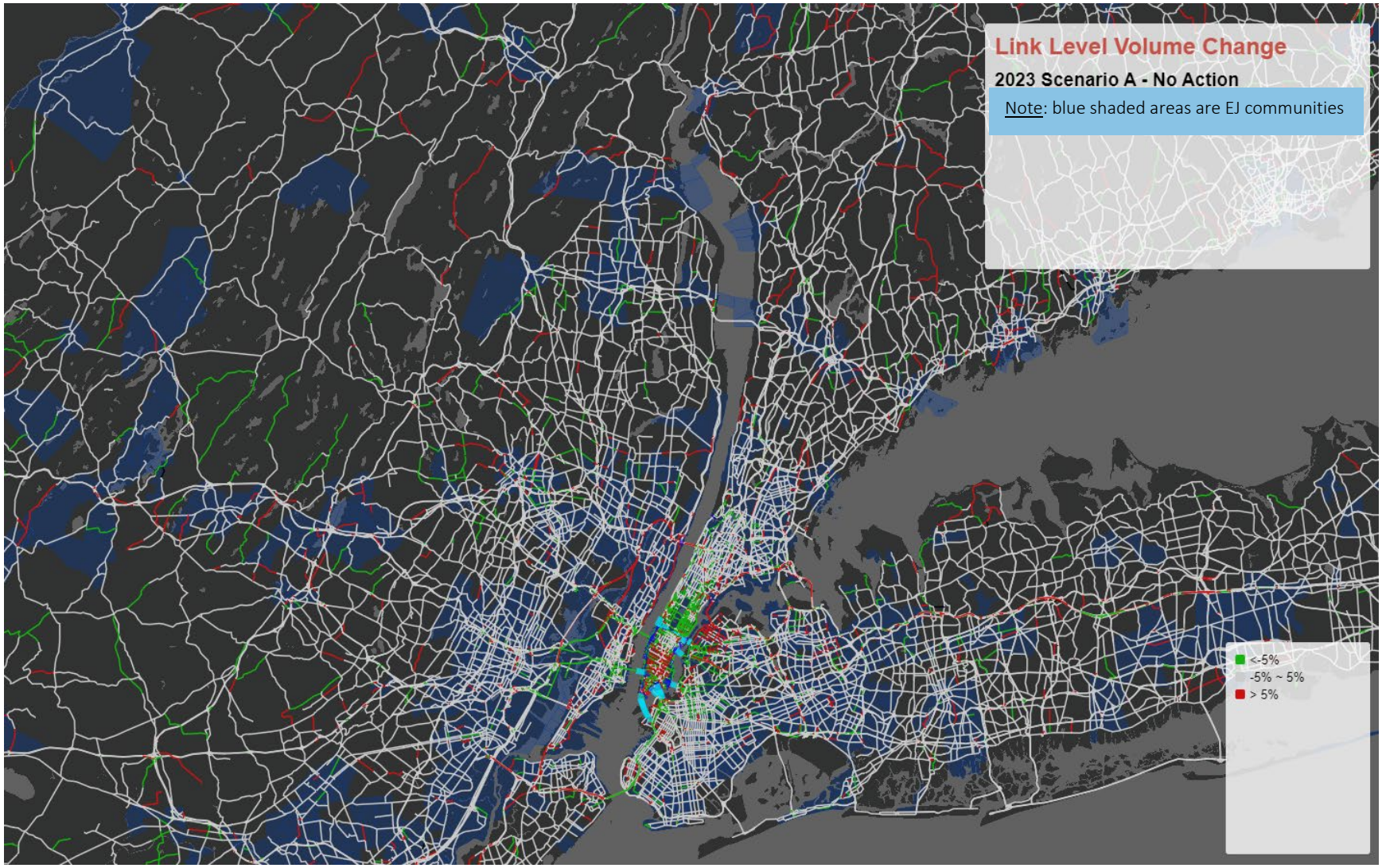
Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=Kzb9mV1OqCc&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=12.

Figure 10D-5. Changes in 2023 Annual Average Daily Traffic (AADT): Westchester and Putnam Counties (New York Counties North of NYC)



Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=1XEnARhsYr0&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=13.

Figure 10D-6. Changes in 2023 Annual Average Daily Traffic (AADT): Rockland, Bergen, and Hudson Counties (New Jersey Counties)



Note: An audio description of this figure is available at the following location: https://www.youtube.com/watch?v=TEcbVV-WJtY&list=PLZHkn788ZQJPEY5zv-dr2gzkzMQFMgb_2&index=14.