New York-Northern New Jersey-Long Island, NY-NJ-CT Nonattainment Area Designation for the 2008 Ozone National Ambient Air Quality Standards

The table below identifies the areas and associated counties or parts of counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA Combined Statistical Area that EPA is designating as the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 2008 ozone national ambient air quality standards (2008 NAAQS). This area is also called the New York City nonattainment area in various portions of this TSD.

In accordance with section 107(d) of the Clean Air Act, EPA must designate an area (county or part of a county) "nonattainment" if it is violating the 2008 ozone NAAQS or if it is contributing to a violation of the 2008 ozone NAAQS in a nearby area. The technical analyses supporting the boundaries for the New York-Northern New Jersey-Long Island, NY-NJ-CT Nonattainment Area is provided below.

Table 1 New York – Newark – Bridgeport, NY, NJ, CT, PA CSA and EPA's Attainment Designations for the New York-Northern New Jersey-Long Island, NY-NJ-CT (by State)

State	State's Recommendations for Counties in the CSA	EPA's Determination by County
Pennsylvania	Pike – Attainment	Pike - Attainment
New York	Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester – nonattainment in NYC area. Dutchess, Putnam, Orange - attainment in Poughkeepsie area Ulster – Attainment in Kingston area	Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester – nonattainment in NYC area. Dutchess, Putnam, Orange - attainment in Poughkeepsie area Ulster – attainment in Kingston area
Connecticut	Fairfield, New Haven - nonattainment in NYC area Litchfield – nonattainment in Greater Connecticut area Middlesex from Greater Connecticut – nonattainment in the NYC area	Fairfield, New Haven, Middlesex – nonattainment in NYC area Litchfield – nonattainment in Greater Connecticut area
New Jersey	Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union – nonattainment in the NYC area Warren (in the Allentown metro area) – nonattainment in the NYC area	Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren – nonattainment in the NYC area

The New York – Newark – Bridgeport, NY, NJ, CT, PA CSA also includes Indian country of the Shinnecock Indian Nation, which is in Suffolk County in New York State. The Shinnecock Indian Nation did not submit a designations recommendation for the 2008 ozone standards. EPA is designating this Tribe's Indian country with the same designation as Suffolk County, that is, nonattainment.

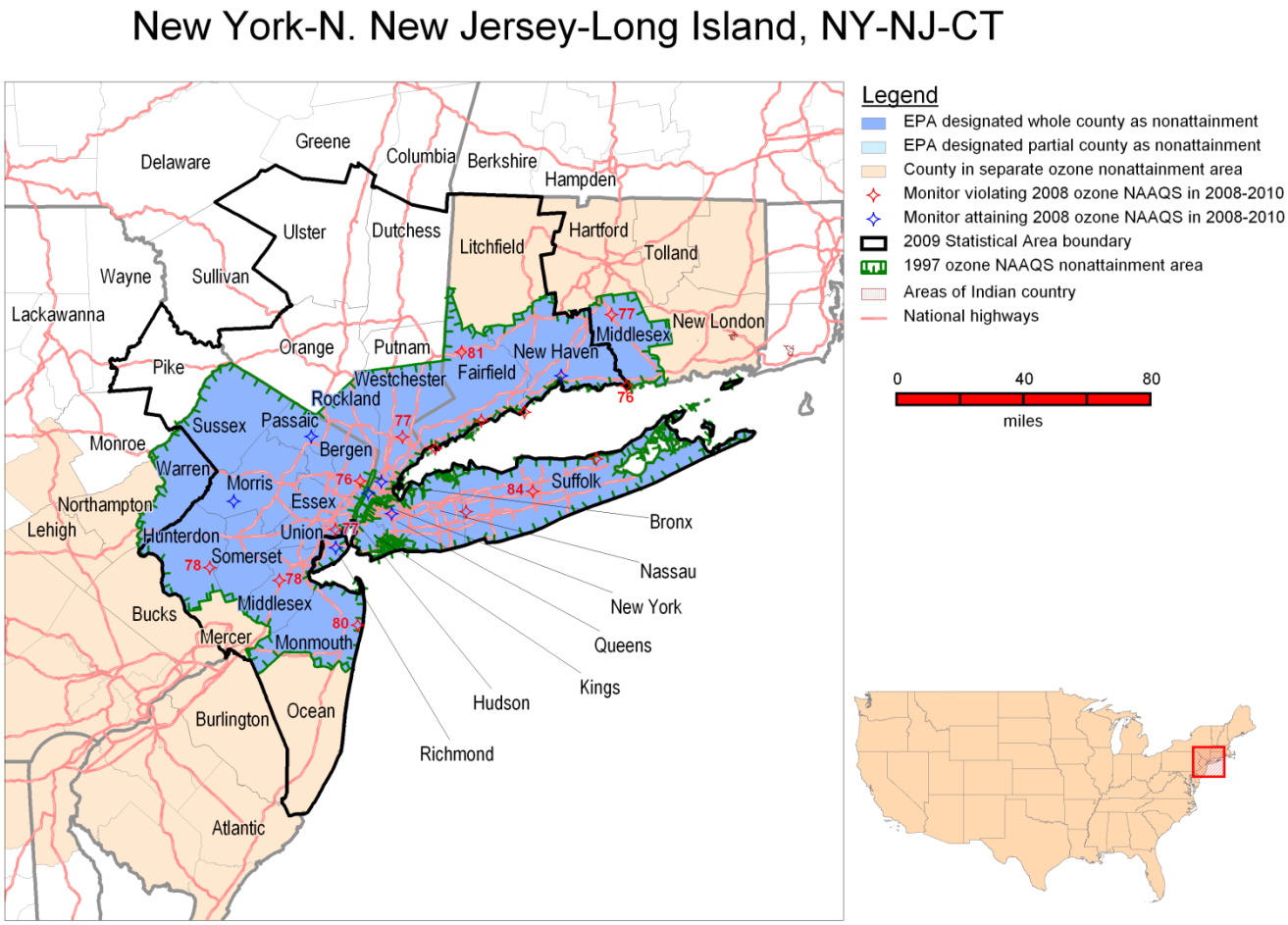

Figure 1 is a map of the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA and the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. The map provides other relevant information including the locations and design values of air quality monitors, county and other jurisdictional boundaries, as well as the CSA/CBSA boundary, existing nonattainment or maintenance boundary for 1997 ozone NAAQS, major transportation arteries.

Additional data tables follow at the end of the TSD.

Each State made recommendations regarding whether all or part of the counties located within their State should be included as part of the designated nonattainment area. The analysis below provides a state-by-state technical analysis of the basis for the nonattainment area boundaries.

Our decision relies on our analysis of whether and which monitors are violating the 2008 ozone NAAQS, based on certified air quality monitoring data from 2008-2010 and an evaluation of whether nearby areas are contributing to such violations. EPA has evaluated contributions from nearby areas

based on a weight of evidence analysis considering the factors identified below. EPA issued guidance on December 4, 2008 that identified these factors as ones EPA would consider in determining nonattainment area boundaries and recommended that states consider these factors in making their designations recommendations to EPA.[1]

1. Air quality data (including the design value calculated for each FRM or FEM monitor in the area);
2. Emissions and emissions-related data (including location of sources and population, amount of emissions and emissions controls, and urban growth patterns);
3. Meteorology (weather/transport patterns);
4. Geography and topography (mountain ranges or other basin boundaries);
5. Jurisdictional boundaries (e.g., counties, air districts, existing nonattainment areas, Indian country, metropolitan planning organizations (MPOs))

Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Because NOx and VOC emissions from a broad range of sources over a wide area typically contribute to violations of the ozone standards, EPA believes it is important to consider whether there are contributing emissions from a broad geographic area. Accordingly, EPA chose to examine the 5 factors with respect to the larger of the Combined Statistical Area (CSA) or Core Based Statistical Area (CBSA) associated with the violating monitor(s).[2] All data and information used by EPA in this evaluation are the latest available to EPA and/or provided to EPA by states or tribes.

In EPA's designations guidance for the 2008 ozone NAAQS EPA recommended examining CSA/CBSAs because certain factors used to establish CSAs and CBSAs are similar to the factors EPA is using in this technical analysis to determine if a nearby area is contributing to a violation of the 2008 ozone NAAQS. EPA used the same basic approach in the designation process for the 1997 ozone NAAQS. Where a violating monitor is not located in a CSA or CBSA, EPA's guidance recommended using the boundary of the county containing the violating monitor as the starting point for considering the nonattainment area's boundary.

[1] The December 4, 2008 guidance memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" refers to 9 factors. In this technical support document we have grouped the emissions-related factors together under the heading of "Emissions and Emissions-Related Data," which results in 5 categories of factors.

[2] Lists of CBSAs and CSAs and their geographic components are provided at www.census.gov/population/www/metroareas/metrodef.html . The lists are periodically updated by the Office of Management and Budget. EPA used the most recent update, based on 2008 population estimates, issued on December 1, 2009 (OMB Bulletin No. 10-02).

Technical Analysis for the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA

On March 12, 2009, New York State recommended that the entire counties of Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk and Westchester be designated as nonattainment for the 2008 ozone NAAQS based on air quality data from 2006-2008. New York State provided an update to the original recommendation on October 26, 2011 based on air quality data from 2008-2010. This area includes the same counties designated as nonattainment for the 1997 ozone standard. These data are from Federal Reference Method (FRM) monitors sited and operated in accordance with 40 CFR Part 58. New York also requested that EPA designate the counties of Dutchess, Putnam, Orange and Ulster Counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA as attainment.

Connecticut requested that the entire state be designated as nonattainment, with Fairfield and New Haven Counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA be kept in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area; that Middlesex County in Greater Connecticut be included in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area; but Litchfield County in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA, be designated as nonattainment in the Greater Connecticut nonattainment area.

New Jersey requested that its counties presently in the nonattainment area of New York-Northern New Jersey-Long Island, NY-NJ-CT for the 1997 ozone standard remain in a New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 2008 standard. These counties are: Bergen, Essex, Hunterdon, Middlesex, Morris, Passaic, Somerset, Sussex, and Union Counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA, plus Warren County in the Allentown metropolitan area. New Jersey also asked that Ocean and Mercer Counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA be included in the Philadelphia nonattainment area for the 2008 ozone standard, just as they were for the 1997 ozone standard designations.

Pennsylvania requested that Pike County, in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA, be designated as attainment, as they were for the 1997 ozone standard designations.

This multi-factor analysis is not needed for the following areas where the states have asked EPA to designate areas as nonattainment in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 2008 ozone standard:
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk and Westchester in New York;
Bergen, Essex, Hunterdon, Middlesex, Morris, Passaic, Somerset, Sussex, and Union Counties in New Jersey; and
Fairfield and New Haven Counties in Connecticut.
For these counties, EPA will approve the states' request as these counties are remaining in the same area as for the 1997 ozone standard designations, they are in the New York – Newark – Bridgeport, NY-NJ-CT-PA CSA and based on the reasoning that EPA will approve states' requests for areas to be nonattainment within their states. EPA has received no comments that these areas should be attainment for the 2008 ozone standard designations.

EPA will also approve Warren County in New Jersey as nonattainment in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 2008 ozone standard as requested by New Jersey. Since the rest of its metropolitan area is in Pennsylvania and will be designated as attainment, there is no effect of New Jersey's request on other states' attainment designations, so EPA will concur with New Jersey's request for nonattainment. EPA did not receive any comments recommending that Warren County should be designated as attainment.

The multi-factor analysis will deal with the following counties:
New York's Dutchess, Orange, Putnam and Ulster Counties, New Jersey's Ocean and Mercer Counties, Connecticut's Litchfield and Middlesex Counties, and Pennsylvania's Pike County.

Factor Assessment

Factor 1: Air Quality Data

For this factor, we considered 8-hour ozone design values (in ppm) for air quality monitors in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA based on data for the 2008-2010 period (i.e., the 2010 design value, or DV), which are the most recent years with fully-certified air quality data. A monitor's DV is the metric or statistic that indicates whether that monitor attains a specified air quality standard. The 2008 ozone NAAQS is met when the annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years is 0.075 ppm or less. A DV is only valid if minimum data completeness criteria are met. See 40 CFR part 50 Appendix P. Where several monitors are located in a county (or a designated nonattainment area or maintenance area), the DV for the county or area is determined by the monitor with the highest level.

The 2010 DVs for the ozone NAAQS for the counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA and nearby surrounding area are listed below. Design values over the 2008 ozone NAAQS are also marked on the map at Figure 1.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	2010 8-hour Ozone DV (ppb)
Bergen, NJ	Yes	76
Bronx, NY	Yes	72
Dutchess, NY	No	75
Essex, NJ	Yes	--
Fairfield, CT	Yes	81
Hudson, NJ	Yes	77
Hunterdon, NJ	Yes	78
Kings, NY	Yes	--
Litchfield, CT	Yes – in the Greater Connecticut area	--
Mercer, NJ	Yes – see Philadelphia TSD	78
Middlesex, CT	Yes	77
Middlesex, NJ	Yes	78

Monmouth, NJ	Yes	80
Morris, NJ	Yes	75
Nassau, NY	Yes	--
New Haven, CT	Yes	76
New York, NY	Yes	73
Ocean, NJ	Yes – see Philadelphia TSD	81
Orange, NY	No	73
Passaic, NJ	Yes	74
Pike, PA	No	--
Putnam, NY	No	75
Queens, NY	Yes	74
Richmond, NY	Yes	75
Rockland, NY	Yes	--
Somerset, NJ	Yes	--
Suffolk, NY	Yes	84
Sussex, NJ	Yes	--
Union, NJ	Yes	--
Warren, NJ	Yes	--
Westchester, NY	Yes	77

Suffolk and Westchester counties located in the NY State portion of the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA have monitors with 2010 DVs above the level of the 2008 ozone NAAQS. Both of these counties are currently part of the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 1997 ozone NAAQS. These areas must be designated nonattainment for the 2008 ozone NAAQS.

No other counties in the New York State portion of the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA are violating the 2008 ozone standard, including those counties adjoining the New York – Newark – Bridgeport, NY, NJ, CT CSA. All of Connecticut's counties with monitors have violations of the ozone standard and are proposed to be designated as nonattainment. New Jersey's is not requesting any of its counties to be designated as attainment, so this factor is not relevant.

Counties without a monitor or with a monitor meeting the 2008 ozone NAAQS in the New York portion of the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA may need to be included as part of the 2008 NAAQS nonattainment area because they are contributing to a violation of the standard in another county. Connecticut requested that Litchfield County be designated as nonattainment, but placed outside the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area for the 2008 ozone standard. For these counties, we will analyze contribution in the remaining four factors.

Ocean and Mercer Counties in New Jersey and Middlesex County in Connecticut were requested by their states to be included in the nonattainment areas upwind of them, not in the metropolitan areas they are assigned to. The evaluation of Ocean and Mercer Counties is described in more detail in the Philadelphia area TSD. The evaluation of Middlesex County, Connecticut will continue in the remaining four factors.

New York's Dutchess, Putnam, Orange and Ulster Counties have no violations of the new 2008 ozone standard. Pike County, Pennsylvania, does not have an ozone monitor, but the nearest counties upwind of Pike County, to its west and southwest, do not violate the 2008 ozone standard. Evaluation of these counties will continue in the remaining four factors.

Factor 2: Emissions and Emissions-Related Data

EPA evaluated emissions of ozone precursors (NO_x and VOC) and other emissions-related data that provide information on areas contributing to violating monitors, based on data from the following sources:

Emissions Data

EPA evaluated county-level emission data for NO_x and VOC derived from the 2008 National Emissions Inventory (NEI), version 1.5. This is the most recently available NEI. (See http://www.epa.gov/ttn/chief/net/2008inventory.html) Significant emissions levels in a nearby area indicate the potential for the area to contribute to observed violations. We will also consider any additional information we receive on changes to emissions levels that are not reflected in recent inventories. These changes include emissions reductions due to permanent and enforceable emissions controls that will be in place before final designations are issued and emissions increases due to new sources.

Population density and degree of urbanization

EPA evaluated the population and vehicle use characteristics and trends of the area as indicators of the probable location and magnitude of non-point source emissions. These include ozone-creating emissions from on-road and off-road vehicles and engines, consumer products, residential fuel combustion, and consumer services. Areas of dense population or commercial development are an indicator of area source and mobile source NO_x and VOC emissions that may contribute to ozone formation. Rapid population or VMT growth (see below) in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that the associated area source and mobile source emissions may be appropriate to include in the nonattainment area. Table 5 shows the population, population density, and population growth information for each county in the area.

Sources: U.S. Census Bureau population estimates for 2010 as of August 4, 2011 (http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_PL_GCTPL2.STO5&prodType=table).

EPA has assembled data into a chart that ranks the counties in and around the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA for the following statistics:
Emissions of nitrogen oxides (NOx), volatile organic compounds (VOCs); population, vehicle miles traveled (VMT), emissions density for NOx and VOC, population density, VMT density, VMT percentage growth, population growth and percentage population growth.

Table_2 Rankings of Counties in and Around the New York – Newark – Bridgeport, NY-NJ-CT-PA CSA

Rank	Nox Emissions	VOC Emissions	Population	VMT	Rank	Nox Density	VOC Density	Pop Density	VMT Density	Rank	% VMT Growth	Pop Growth	Percent Pop Grov
1	Suffolk	Suffolk	Kings	Suffolk	1	New York	New York	New York	New York	1	Wayne	Suffolk	Pike
2	Hudson	Queens	Queens	Nassau	2	Hudson	Kings	Kings	Bronx	2	Pike	Ocean	Monroe
3	Queens	Kings	New York	Hartford	3	Kings	Bronx	Bronx	Kings	3	New Haven	Middlesex	Ocean
4	New York	New York	Suffolk	Westchester	4	Queens	Queens	Queens	Queens	4	Hartford	Bronx	Lehigh
5	Kings	Nassau	Bronx	Bergen	5	Bronx	Hudson	Hudson	Hudson	5	Lackawanna	New York	Northampton
6	Fairfield	Westchester	Nassau	Fairfield	6	Union	Richmond	Richmond	Union	6	Fairfield	Kings	Wayne
7	Nassau	Bronx	Westchester	Middlesex	7	Essex	Union	Essex	Essex	7	Monroe	New Haven	**Orange**
8	Essex	Fairfield	Fairfield	New Haven	8	Richmond	Nassau	Union	Nassau	8	Lehigh	Lehigh	Atlantic
9	Middlesex	Bergen	Bergen	Queens	9	Bergen	Essex	Nassau	Bergen	9	Bucks	Hartford	Middlesex
10	New Haven	Middlesex	Hartford	Monmouth	10	Nassau	Bergen	Bergen	Richmond	10	Hampden	Fairfield	Somerset
11	Hartford	Bucks	New Haven	Morris	11	Middlesex	Middlesex	Middlesex	Middlesex	11	Berkshire	Northampton	Rockland
12	Union	Hartford	Middlesex	Bucks	12	Northampton	Westchester	Passaic	Westchester	12	Hudson	Monroe	Burlington
13	Bergen	New Haven	Essex	Essex	13	Mercer	Suffolk	Westchester	Suffolk	13	Union	**Orange**	**Dutchess**
14	Westchester	Ocean	Hudson	Burlington	14	Westchester	Passaic	Mercer	Passaic	14	Essex	Bucks	New London
15	Bucks	Monmouth	Monmouth	Kings	15	Fairfield	Rockland	Rockland	Mercer	15	Bergen	Hudson	Middlesex
16	Northampton	Essex	Bucks	Bronx	16	Suffolk	Mercer	Fairfield	Monmouth	16	Middlesex	Somerset	Warren
17	Monmouth	Morris	Ocean	**Orange**	17	Passaic	Lehigh	Suffolk	Rockland	17	Passaic	Rockland	Suffolk
18	**Orange**	Union	Union	Union	18	New Haven	Fairfield	New Haven	Fairfield	18	Mercer	Burlington	New Haven
19	Morris	**Orange**	Passaic	New York	19	Rockland	Bucks	Monmouth	New Haven	19	Monmouth	Westchester	Richmond
20	Bronx	Burlington	Morris	Ocean	20	Lehigh	Monmouth	Hartford	Morris	20	Morris	Richmond	Hunterdon
21	Lehigh	Hampden	Richmond	Hampden	21	Monmouth	Morris	Somerset	**Putnam**	21	Somerset	Atlantic	Bronx
22	Burlington	Lehigh	Hampden	Mercer	22	Bucks	New Haven	Morris	Hartford	22	Burlington	Morris	Hartford
23	Ocean	Hudson	Burlington	Somerset	23	Hartford	Somerset	Bucks	Somerset	23	Northampton	Bergen	Fairfield
24	Mercer	Atlantic	**Orange**	New London	24	Morris	Hartford	Lehigh	Lehigh	24	Ocean	**Dutchess**	Bucks
25	Hampden	Richmond	Mercer	Lehigh	25	Somerset	Ocean	Northampton	Bucks	25	Atlantic	Mercer	Hudson
26	Richmond	**Dutchess**	Lehigh	Passaic	26	Hampden	Northampton	Ocean	Hampden	26	Hunterdon	New London	Morris
27	New London	Passaic	Somerset	Atlantic	27	Lackawanna	**Putnam**	Hampden	Burlington	27	Warren	Union	Mercer
28	Somerset	New London	Rockland	**Dutchess**	28	**Putnam**	Hampden	Burlington	Northampton	28	Sussex	Monmouth	Litchfield
29	Passaic	Somerset	Northampton	**Putnam**	29	**Orange**	Atlantic	Lackawanna	Ocean	29	Washington	Pike	**Putnam**
30	Lackawanna	Northampton	**Dutchess**	Rockland	30	Burlington	**Orange**	Atlantic	**Orange**	30	New York	Passaic	Sullivan
31	Rockland	Rockland	Atlantic	Hudson	31	Ocean	Burlington	**Orange**	Atlantic	31	Bronx	Middlesex	New York
32	Atlantic	Mercer	New London	Ulster	32	Warren	Lackawanna	Middlesex	Hunterdon	32	Kings	Litchfield	Westchester
33	**Dutchess**	Monroe	Lackawanna	Northampton	33	New London	Middlesex	**Putnam**	Lackawanna	33	Queens	Hampden	Union
34	Monroe	Lackawanna	Litchfield	Lackawanna	34	Middlesex	New London	New London	Warren	34	Nassau	Hunterdon	Sussex
35	Ulster	Ulster	Ulster	Berkshire	35	Hunterdon	Monroe	Washington	New London	35	Richmond	Warren	Ulster
36	Berkshire	Wayne	Monroe	Hunterdon	36	Atlantic	Washington	**Dutchess**	Middlesex	36	Westchester	Wayne	Kings
37	Hunterdon	Berkshire	Middlesex	Richmond	37	Monroe	**Dutchess**	Warren	**Dutchess**	37	Suffolk	Sussex	Bergen
38	Middlesex	Litchfield	Sussex	Monroe	38	Washington	Warren	Hunterdon	Washington	38	Rockland	Ulster	Monmouth
39	Warren	**Putnam**	Berkshire	Warren	39	**Dutchess**	Hunterdon	Sussex	Monroe	39	**Putnam**	**Putnam**	Passaic
40	Greene	Middlesex	Hunterdon	Middlesex	40	Sussex	Sussex	Monroe	Sussex	40	**Orange**	Nassau	Hampden
41	**Putnam**	Sussex	Washington	Sussex	41	Greene	Wayne	Litchfield	Berkshire	41	New London	Sullivan	Washington
42	Litchfield	Sullivan	Warren	Litchfield	42	Pike	Pike	Ulster	Ulster	42	**Dutchess**	Washington	Greene
43	Sussex	Hunterdon	**Putnam**	Washington	43	Berkshire	Berkshire	Berkshire	Litchfield	43	Ulster	Lackawanna	Lackawanna
44	Pike	Pike	Sullivan	Columbia	44	Ulster	Litchfield	Pike	Pike	44	Columbia	Greene	Nassau
45	Washington	Washington	Columbia	Greene	45	Litchfield	Ulster	Columbia	Columbia	45	Greene	Queens	Queens
46	Wayne	Warren	Pike	Sullivan	46	Columbia	Columbia	Sullivan	Greene	46	Sullivan	Columbia	Columbia
47	Columbia	Columbia	Wayne	Pike	47	Wayne	Sullivan	Greene	Wayne	47	Delaware	Delaware	Delaware
48	Sullivan	Delaware	Greene	Wayne	48	Sullivan	Greene	Wayne	Sullivan	48	Litchfield	Berkshire	Essex
49	Delaware	Greene	Delaware	Delaware	49	Delaware	Delaware	Delaware	Delaware	49	Middlesex	Essex	Berkshire

As noted in Table 1, four states requested that several counties be excluded from the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. Table 2 is helpful for evaluating the request that EPA exclude these counties from the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area: In New York, Dutchess, Putnam, Orange and Ulster, and in Pennsylvania, Pike County, and in Connecticut, Litchfield County.

Table 2 lists the counties in and around the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA, rank ordered for several factors that EPA uses to determine the appropriateness of contributing to the nonattainment of the ozone standard in the nonattainment area.

As seen in this table, Dutchess, Putnam, Orange, Litchfield, Pike and Ulster Counties are more commonly ranked with counties outside the New York – Newark – Bridgeport CSA than with the counties in the core of the CSA. This is particularly obvious when factors such as emissions, population and vehicle miles traveled are compared using density of these factors per square miles. For example, Rockland County is a small county within, but on the edge of, the NYC nonattainment area. However,

when the density per square mile of its emissions, population and vehicle miles traveled are compared with other counties', it is clear that Rockland is more densely settled and is more like Westchester, which has a violating monitor as well as the other nearby counties in the existing New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area, since Rockland County has more emissions and traffic per square mile than the counties adjoining it on the outer edge of the CSA.

Some of these counties have higher emissions and traffic than counties in the core of the New York – Newark – Bridgeport, NY-NJ-CT-PA CSA, but when the ***density*** of the emissions, population and vehicle miles traveled is evaluated, as in Table 2, these counties are found near the bottom of the list and are have lower values by density compared to areas in the core of the CSA.

Emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC)

County	State Recommended Nonattainment?	NO_x (tpy)	VOC (tpy)
Suffolk, NY	Yes	39,737	55,566
Hudson, NJ	Yes	32,087	11,073
Queens, NY	Yes	31,661	47,240
New York, NY	Yes	30,058	45,066
Kings, NY	Yes	26,731	47,212
Fairfield, CT	Yes	24,983	22,700
Nassau, NY	Yes	24,574	37,235
Essex, NJ	Yes	22,235	15,376
Middlesex, NJ	Yes	20,820	21,598
New Haven, CT	Yes	20,789	19,705
Union, NJ	Yes	19,833	14,042
Bergen, NJ	Yes	19,221	22,310
Westchester, NY	Yes	18,692	27,906
Monmouth, NJ	Yes	13,910	16,492
Orange, NY	No	12,423	13,320
Morris, NJ	Yes	11,963	15,282
Bronx, NY	Yes	11,643	26,550
Ocean, NJ	Yes – see Philadelphia TSD	9,909	19,572
Mercer, NJ	Yes – see Philadelphia TSD	9,909	8,160

Richmond, NY	Yes	9,273	10,254
Somerset, NJ	Yes	7,379	8,712
Passaic, NJ	Yes	7,270	9,687
Rockland, NY	Yes	6,529	8,375
Dutchess, NY	No	5,900	9,922
Hunterdon, NJ	Yes	4,558	4,626
Middlesex, CT	Yes	4,484	5,130
Warren, NJ	Yes	4,483	3,925
Putnam, NY	No	3,736	5,428
Litchfield, CT	Yes – Greater Connecticut area	3,429	6,115
Sussex, NJ	Yes	3,132	4,892
Pike, PA	No	2,793	4,489
	Area wide:	464,148	567,960

Population information

County	State Recommended Nonattainment?	2010 Population	2010 Population Density (1000 pop/sq mi)	Absolute change in population (2000-2010)	Population % change (2000-2010)
New York, NY	Yes	1,585,873	69.56	45,263	+3%
Kings, NY	Yes	2,504,700	37.11	38,943	+2%
Bronx, NY	Yes	1,385,108	32.36	51,389	+4%
Queens, NY	Yes	2,230,722	20.24	539	0%
Hudson, NJ	Yes	634,266	11.79	24,782	+4%
Richmond, NY	Yes	468,730	7.52	23,318	+5%
Essex, NJ	Yes	783,969	6.06	(8,350)	-1%
Union, NJ	Yes	536,499	5.09	13,359	+3%
Nassau, NY	Yes	1,339,532	4.31	3,459	0%
Bergen, NJ	Yes	905,116	3.73	19,636	+2%
Middlesex, NJ	Yes	809,858	2.55	57,056	+8%
Passaic, NJ	Yes	501,226	2.55	10,402	+2%
Westchester, NY	Yes				+3%

		949,113	1.99	23,442	
Mercer, NJ	Yes – see Philadelphia TSD	366,513	1.60	14,979	+4%
Rockland, NY	Yes	311,687	1.56	24,278	+8%
Fairfield, CT	Yes	916,829	1.41	32,348	+4%
Suffolk, NY	Yes	1,493,350	1.39	69,686	+5%
New Haven, CT	Yes	862,477	1.39	37,492	+5%
Monmouth, NJ	Yes	630,380	1.30	13,290	+2%
Somerset, NJ	Yes	323,444	1.06	24,558	+8%
Morris, NJ	Yes	492,276	1.02	20,928	+4%
Ocean, NJ	Yes – see Philadelphia TSD	576,567	0.76	62,913	+12%
Orange, NY	No	372,813	0.45	29,694	+9%
Middlesex, CT	Yes	165,676	0.43	10,061	+6%
Putnam, NY	No	99,710	0.41	3,643	+4%
Dutchess, NY	No	297,488	0.36	16,521	+6%
Warren, NJ	Yes	108,692	0.30	5,745	+6%
Hunterdon, NJ	Yes	128,349	0.29	5,807	+5%
Sussex, NJ	Yes	149,265	0.28	4,655	+3%
Litchfield, CT	Yes – see Greater Connecticut	189,927	0.20	7,313	+4%
Pike, PA	No	57,369	0.10	10,759	+23%
	Area wide:	22,177,524	1.84	697,908	+3%

While Dutchess, Orange and Pike Counties are increasing in population faster than many other counties in the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA, this fact is overwhelmed by the other data in Table 2 that show these areas emissions and traffic are not contributing to nonattainment in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area as much as other counties nearer the violating monitors. Overall, these factors show that Dutchess, Putnam, Orange, Ulster, Pike and Litchfield Counties are not like the core counties of the New York City area.

Ocean and Mercer Counties have emissions fairly typical of counties in the CSA, but the location of these counties and where they are relative to emissions that affect them are more important factors.

Traffic and commuting pattern

EPA evaluated the commuting patterns of residents in the area, as well as the total Vehicle Miles Traveled (VMT) for each county. In combination with the population/population density data and the

location of main transportation arteries (see above), this information helps identify the probable location of non-point source emissions. A county with high VMT and/or a high number of commuters is generally an integral part of an urban area and indicates the presence of motor vehicle emissions that may contribute to ozone formation. Rapid population or VMT growth in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that the associated area source and mobile source emissions may be appropriate to include in the nonattainment area. Table 4 shows traffic and commuting pattern data, including total 2005 VMT and 10-year VMT growth, number of commuters in each county who drive to another county within the area, the percent of total commuters in each county who commute to other counties within the area, and the total vehicle miles traveled (VMT) for each county.

Table 4. Traffic and Commuting Patterns.

Dutchess, Orange, Putnam, Ulster, Pike and Litchfield Counties are on the edge of the New York – Newark – Bridgeport CSA and have a large number of commuters transiting into the core of the New York – Newark – Bridgeport CSA. However, the number of commuters is less than counties in the core of the CSA that the states requested that EPA designate as the NYC nonattainment area, and previous nonattainment areas, e.g., carbon monoxide and particulate matter, which are strongly affected by mobile sources, have not included these outlying counties in the past NYC nonattainment areas. Based on data from the U.S. Census Bureau estimates for 2000, County-to-County Worker Flow found at http://www.census.gov/hhes/commuting/data/commuting.html used here.

Vehicle data and commuting patterns

County	State Recommended Nonattainment?	2008 VMT (million miles)	Number commuting to or within any violating counties	% commuting to or within any violating counties
Suffolk, NY	Yes	18,230	495,594	74%
Nassau, NY	Yes	10,908	57,742	9%
Westchester, NY	Yes	8,309	291,504	69%
Bergen, NJ	Yes	8,037	284,046	67%
Fairfield, CT	Yes	7,803	378,743	90%
Middlesex, NJ	Yes	7,494	247,103	68%
New Haven, CT	Yes	7,248	353,015	91%
Queens, NY	Yes	7,179	30,638	3%
Monmouth, NJ	Yes	6,066	234,477	80%
Morris, NJ	Yes	5,495	25,593	11%
Essex, NJ	Yes	4,941	48,882	15%
Kings, NY	Yes	4,511	21,196	2%
Bronx, NY	Yes	4,339	39,805	10%

Orange, NY	No	4,180	14,509	10%
Union, NJ	Yes	4,143	45,149	19%
New York, NY	Yes	4,007	30,750	4%
Ocean, NJ	Yes – see Philadelphia TSD	3,834	182,776	87%
Mercer, NJ	Yes – see Philadelphia TSD	3,306	142,459	87%
Somerset, NJ	Yes	3,116	43,474	29%
Passaic, NJ	Yes	2,877	64,487	31%
Dutchess, NY	No	2,830	18,155	14%
Putnam, NY	No	2,786	23,996	50%
Rockland, NY	Yes	2,486	26,607	20%
Hudson, NJ	Yes	2,241	156,937	59%
Hunterdon, NJ	Yes	1,889	36,829	59%
Richmond, NY	Yes	1,835	8,793	5%
Warren, NJ	Yes	1,530	9,290	18%
Middlesex, CT	Yes	1,394	60,254	75%
Sussex, NJ	Yes	1,305	7,652	11%
Litchfield, CT	Yes – see Greater Connecticut	1,258	25,872	28%
Pike, PA	No	689	1,127	6%
	Area wide:	146,267	3,407,454	36%

Ocean and Mercer Counties have more commuters that work in their own county or travel to the rest of the Philadelphia CSA than to the New York City CSA as seen in the 2000 County-to-County Worker Flow.

Factor 3: Meteorology (weather/transport patterns)

EPA evaluated available meteorological data to help determine how meteorological conditions, such as weather, transport patterns and stagnation conditions, would affect the fate and transport of precursor emissions contributing to ozone formation. This report uses the 32-year average summer surface-level wind direction for the design value county and for the counties in the Poughkeepsie area.

The prevailing winds during the ozone season have a strong southwesterly component, indicating that the counties in and north of the Poughkeepsie area do not, almost all cases, affect the air quality at the peak monitors in Connecticut, Westchester County and on Long Island. The location of the

Poughkeepsie area counties outside the line of high ozone concentrations along the northeast corridor of major cities is additional evidence that the Poughkeepsie area counties are not part of the ozone problem in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. We are also using these wind roses for surrounding counties.

Summer COUNTY	STATE	NNE	ENE	ESE	SSE	**SSW**	WSW	WNW	NNW
Dutchess	NY	0.12	0.06	0.07	0.10	**0.24**	0.18	0.12	0.11
Putnam	NY	0.10	0.10	0.07	0.08	**0.22**	0.19	0.13	0.11
Ulster	NY	0.11	0.06	0.04	0.19	**0.21**	0.09	0.19	0.10
Orange	NY	0.11	0.11	0.06	0.09	**0.23**	0.16	0.14	0.11

Litchfield County is on the northern edge of the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA and is in the prevailing downwind direction from the core counties and violating monitors in the CSA.

Middlesex County in Connecticut is a violating county east and northeast of the core counties of the CSA, which has the second highest 2010 design values in Connecticut outside the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA. Previously, Middlesex County had the highest design value in Connecticut during the last round of ozone nonattainment designations. For that reason, Connecticut requested that Middlesex County be included in a New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. This time, Connecticut wants to continue with the previous designation, but the higher design value county staying with the upwind nonattainment area is also a good reason.

Pike County is west, and generally upwind of, the central core counties of the New York – Newark – Bridgeport, NY, NJ, CT, PA area.

Factor 4: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might affect the airshed and, therefore, the distribution of ozone over the area.

While the New York – Newark – Bridgeport, NY, NJ, CT, PA CSA does have some variation in topography, and land use, as well as many water bodies separating its constituent parts, there are no geographical or topographical barriers significantly limiting air pollution transport within its air shed. Therefore, this factor did not play a significant role in this evaluation.

Factor 5: Jurisdictional boundaries

Once the general areas to be included in the nonattainment area were determined, EPA considered existing jurisdictional boundaries for the purposes of providing a clearly defined legal boundary and carrying out the air quality planning and enforcement functions for nonattainment areas. Examples of jurisdictional boundaries include existing/prior nonattainment areas for ozone or other urban-scale pollutants, counties, air districts, townships, metropolitan planning organizations, state lines, urban growth boundary, etc. Where existing jurisdictional boundaries are not adequate to describe the nonattainment area, other clearly defined and permanent landmarks or geographic coordinates were considered.

Dutchess, Putnam, Orange, Ulster, Pike, Ocean, Mercer and Litchfield Counties have previously been designated as separate from the New York-Northern New Jersey-Long Island, NY-NJ-CT eight-hour nonattainment area for the 1997 ozone standard and the states have requested that EPA continue those affiliations.

The states have asked that EPA include all the counties previously included in the nonattainment area for the 1997 eight-hour ozone standard, including Warren and Middlesex (CT) counties, in the New York City nonattanment area for the 2008 eight-hour ozone standard.

Connecticut requested that EPA retain the boundaries for its nonattainment areas to be the same as for the 1997 ozone standard designations, which moved Middlesex County into the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. The boundaries of the one-hour ozone nonattainment areas in Connecticut are different from the eight-hour designation for the 1997 ozone standard. Not keeping the same eight-hour standard designations would mean three sets of nonattainment area boundaries. Connecticut wants to "avoid unnecessary confusion among Connecticut's regulated community and the general public that may otherwise result from having three distinct nonattainment area boundaries within Connecticut for the 2008 8-hour ozone NAAQS." EPA has determined that this is the most important factor for determining which nonattainment area Connecticut's counties are to be in which Connecticut nonattainment area. This factor would be important to the Litchfield area as well, since it is a recent addition to the New York – Newark – Bridgeport CSA and placing it in the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area would be a new boundary, different from the nonattainment area boundary for the 1997 ozone standard nonattainment area.

Dutchess, Putnam and Orange Counties are not part of the same transportation planning organization as much of the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. Dutchess, Putnam and Ulster Counties are part of the Poughkeepise-Newburgh Transportation Management Area. Dutchess, Putnam and Orange Counties are the Poughkeepsie 1997 ozone nonattainment area and Ulster County was not part of the Poughkeepsie area. This also supports keeping the Poughkeepsie area and Ulster County as separate from the New York City area, even if they are part of the New York City-based CSA.

Pike County is not part of the transportation planning area for areas in New York, New Jersey or Connecticut, but is part of the Northeast Pennsylvania Rural Transportation Planning Organization with four other rural Pennsylvania counties.

The New York-Northern New Jersey-Long Island, NY-NJ-CT area also includes the Indian country of the Shinnecock Indian Nation. As defined at 18 U.S.C. 1151, "Indian country" refers to: "(a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same." EPA recognizes the sovereignty of tribal governments, and has attempted to take the desires of the tribes into account in establishing appropriate nonattainment area boundaries. In this case, the Shinnecock Indian Nation's Indian country is being designated nonattainment as part of the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area.

Conclusions

Based on the assessment of factors described above, EPA has concluded that no counties in New York State meet the requirements for being added to the previously existing New York – Northern New Jersey – Long Island, NY, NJ, CT ozone nonattainment area, which will have the same boundaries as the area designated for the 2008 eight-hour ozone standard. The nonattainment area requested by the states includes all counties with violating monitors and the counties with the highest emissions densities in the New York – Newark – Bridgeport CSA.

Four counties, Dutchess, Putnam and Orange in the Poughkeepsie Area, and Ulster County, are included in the New York – Newark – Bridgeport CSA, but the density of these areas' emissions and vehicle usages are not of the level of the other counties in the CSA that are in New York's proposed New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. These four counties and Litchfield County are generally not upwind of the proposed New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area. The downwind peak monitors are northeast and east of the center of the nonattainment area: on Long Island, in Westchester County and in Connecticut. And the four counties are north of the peak ozone areas. Thus, EPA will continue with these four counties outside the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area as they have much less influence on ozone in the nonattainment area than counties in the nonattainment area.

Ocean and Mercer Counties are affected more strongly by emissions from counties in the Philadelphia area than the New York area, so they should be part of the Philadelphia area. They are also part of the present Philadelphia nonattainment area. Details are in the Philadelphia TSD.

Middlesex County, Connecticut was part of the previous New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area as a county downwind of the NYC area because of its higher ozone design values than the rest of Connecticut and will remain so based on EPA's analysis.

Pike County is generally upwind of the nonattaining monitors in New Jersey, New York and Connecticut, but its small emissions density and distance from the violating counties makes Pike County not a likely contributor of much ozone to the New York-Northern New Jersey-Long Island, NY-NJ-CT area. These factors, combined with the lack of violating monitors in nearby Pennsylvania and western New Jersey, support Pennsylvania's request for Pike County to remain separate from the New York-Northern New Jersey-Long Island, NY-NJ-CT nonattainment area.

Air quality data and the analysis of the factors in this report support New York, New Jersey, Connecticut and Pennsylvania's requests that the boundaries from the 1997 ozone NAAQS are appropriate for the nonattainment boundaries of the New York-Northern New Jersey-Long Island, NY-NJ-CT eight-hour ozone nonattainment area for the 2008 ozone standard.