



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.O. BOX 402

Trenton, NJ 08625-0402

Phone: (609) 292-2885

Fax: (609) 292-7695

JON S. CORZINE
Governor

MARK N. MAURIELLO
Acting Commissioner

April 1, 2009

The Honorable George Pavlou
Acting Regional Administrator
United States Environmental Protection Agency – Region 2
290 Broadway- 26th Floor
New York, New York 10007-1866

Dear Acting Regional Administrator Pavlou:

The purpose of this letter is to provide you with New Jersey's recommendations for ozone nonattainment area boundaries for the 0.075 ppm ozone National Ambient Air Quality Standard (NAAQS). Ambient air quality data indicates the entire State should be designated as not meeting the health standard. Further, USEPA analyses¹ indicate that 11 states significantly contribute to unhealthy ozone air quality in New Jersey at the old 0.08 ppm standard. New Jersey's recommendations are summarized below.

New Jersey recommends that the USEPA consider a large regional nonattainment area, including the states of Connecticut, Delaware, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia (See Factor 10 of Enclosure 1).

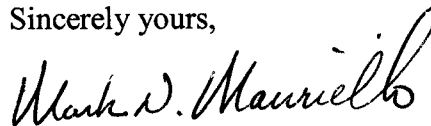
If ultimately the USEPA chooses not to embrace this regional approach, the State recommends the 0.075 ppm 8-hour ozone nonattainment area boundaries be the same as the existing 0.08 ppm 8-hour boundaries. The USEPA's traditional "Nine Factor Analysis" supports this option (See Enclosure 2).

- Designate the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment area the same as that for the 0.08 ppm 8-hour ozone standard to include Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, and Warren counties in New Jersey; and
- Designate the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) nonattainment area the same as that for the 0.08 ppm 8-hour ozone standard to include Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem counties in New Jersey.

¹ See Factor 10 of New Jersey's analysis

If you have any technical questions regarding New Jersey's analysis, please contact Chris Salmi, Assistant Director of the Division of Air Quality, at (609) 292-6711.

Sincerely yours,

A handwritten signature in black ink that reads "Mark N. Mauriello". The signature is written in a cursive style with a large, looping initial "M".

Mark N. Mauriello
Acting Commissioner

Enclosures

c: Gina McCarthy, CT DEP Commissioner
Pete Grannis, NY DEC Commissioner
John Hanger, PA DEP Acting Secretary
David Small, DE DNREC Acting Secretary
Shari T. Wilson, MD MDE Secretary
Nancy Wittenberg, Assistant Commissioner
William O'Sullivan, Director
Chris Salmi, Assistant Director
Ray Werner, USEPA Region 2

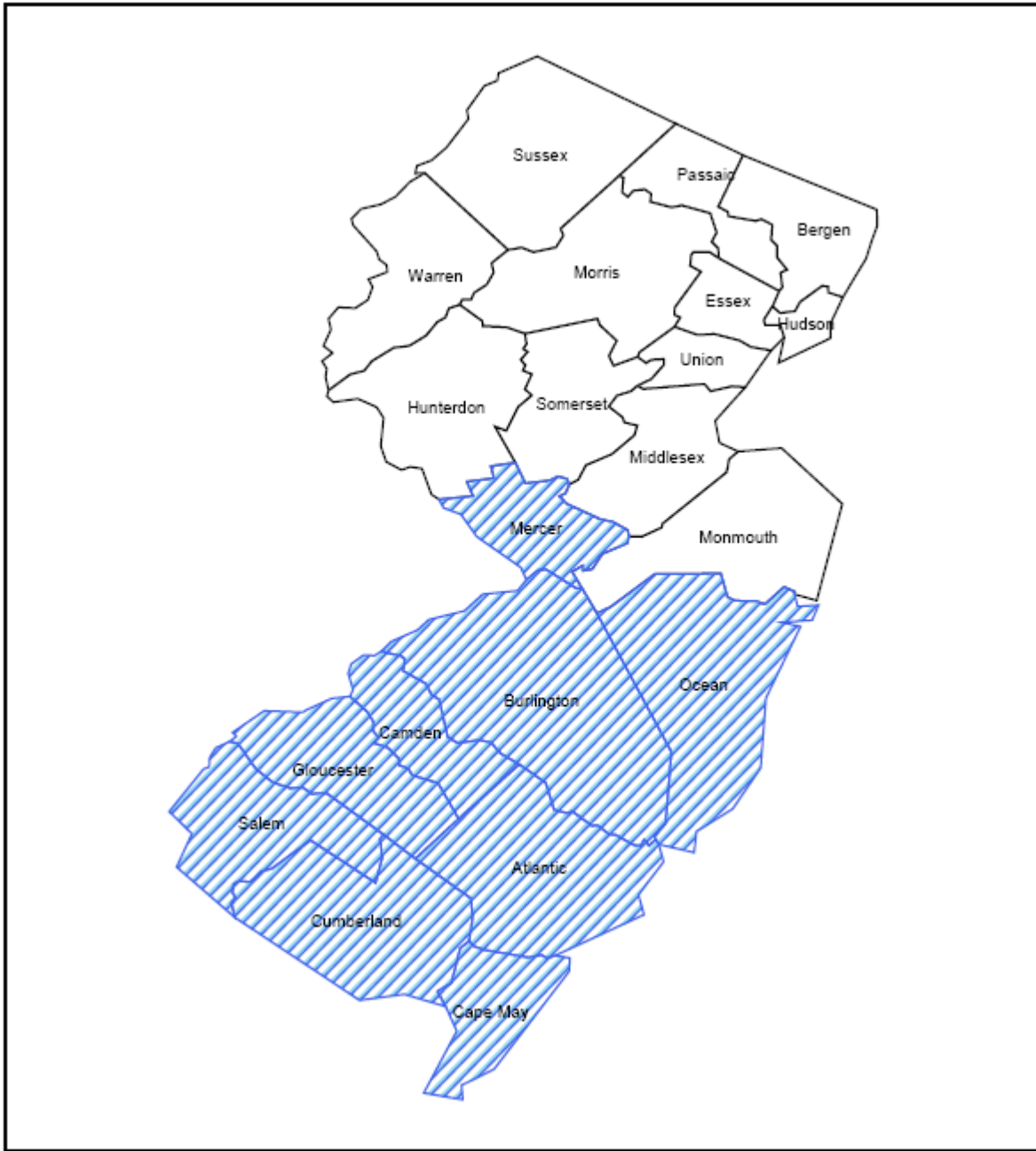
Enclosure 1

Recommended Regional 8-Hour Ozone Nonattainment Area Boundaries



Enclosure 2

Recommended New Jersey 8-Hour Ozone Nonattainment Area Boundaries



The New Jersey Portion of a NY-NJ-CT Nonattainment Area



The New Jersey Portion of a PA-NJ-DE-MD Nonattainment Area

Enclosure 3

**Designation of Nonattainment Areas in New Jersey for the
2008 Revised Ozone National Ambient Air Quality Standards**

Ten Factor Analysis

March 12, 2009

Ten Factor Analysis for the Designation of Nonattainment Areas in New Jersey for the 2008 Revised Ozone National Ambient Air Quality Standards

Introduction

The United States Environmental Protection Agency (USEPA) revised the Ozone National Ambient Air Quality Standards (NAAQS) on March 12, 2008.¹ The primary ozone standard was lowered from 0.08 parts per million (ppm) to 0.075 ppm. The secondary standard was strengthened to make it equal to the primary standard. According to Section 107(d)(1)(A) of the Federal Clean Air Act (42 U.S.C. § 7407 (d)(1)(A)), states have one year from the time the new standard is effective to submit a recommendation for designating nonattainment areas to the USEPA for consideration. The USEPA then has one year to issue the final nonattainment area designations.

The USEPA issued guidance for determining the boundaries of ozone nonattainment areas on December 4, 2008.² The analysis is based on an evaluation the following nine factors:

- Air quality data
- Emissions data
- Population density and degree of urbanization
- Traffic and commuting patterns
- Growth rates and patterns
- Meteorology
- Geography/topography
- Jurisdictional boundaries
- Level of control of emission sources

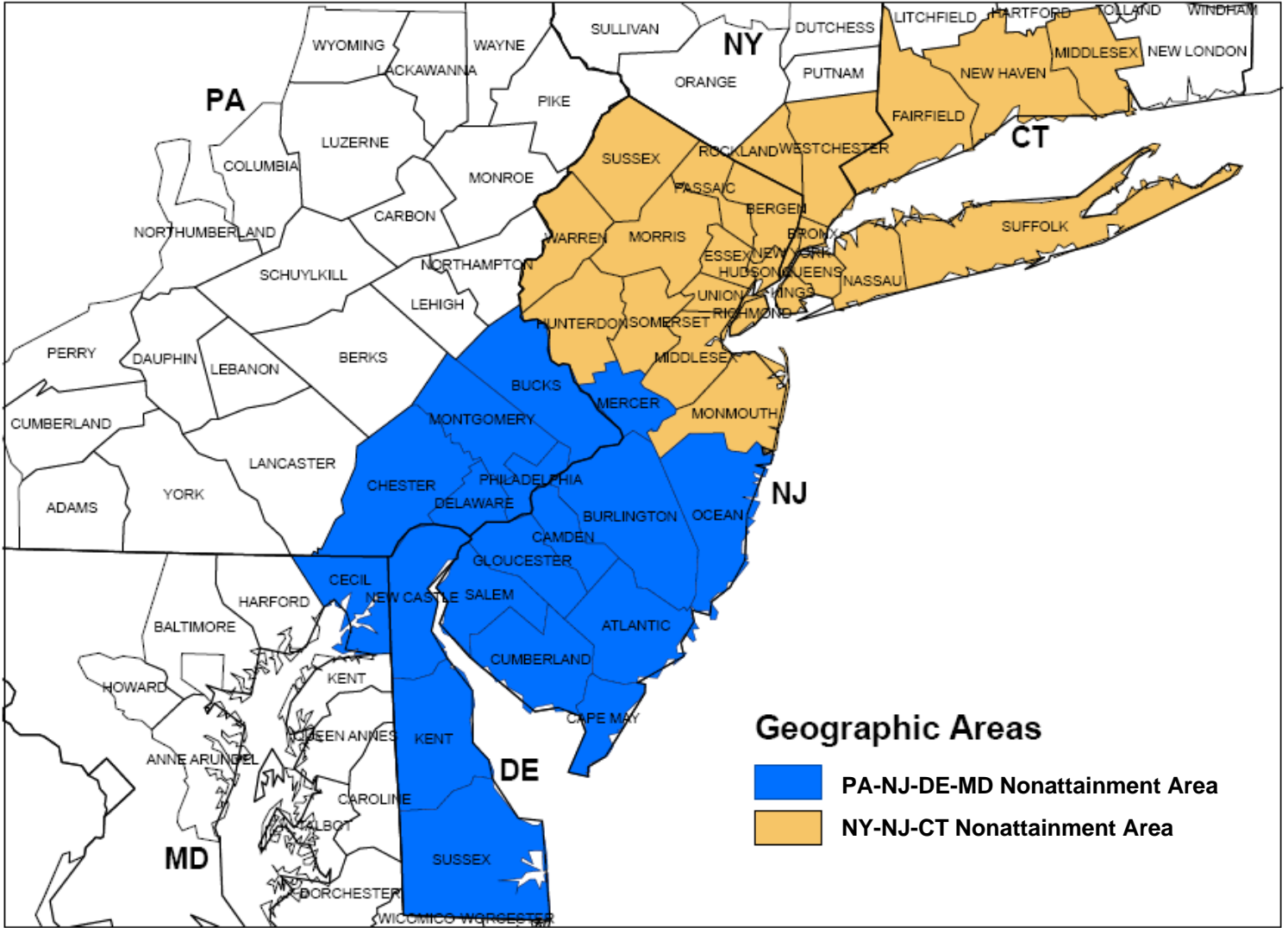
The USEPA finalized attainment/nonattainment designations for the 1997 8-hour ozone NAAQS on June 15, 2004. The entire state of New Jersey is associated with two multi-state nonattainment areas, the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment area and the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) nonattainment area. The NY-NJ-CT nonattainment area includes the New Jersey counties of: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, and Warren. The PA-NJ-DE-MD nonattainment area includes the New Jersey counties of: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem.

New Jersey considered the composition of the existing ozone nonattainment areas in its analysis to determine if there should be any changes to these areas due to current data. The NJDEP recommends that the areas designated as nonattainment areas under the 1997 8-hour ozone standard also be designated the 2008 revised ozone nonattainment areas.

¹ 73 Fed. Reg. 16436 (March 27, 2008).

² December 4, 2008 Memorandum from Robert J. Meyers on “Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards.”

New Jersey Recommendations for Designation Multi-State Ozone Nonattainment Areas



Ten Factor Analysis for Determining Nonattainment Area Boundaries in Designations for the 2008 8-Hour Ozone NAAQS

Factor 1: Air Quality Data

The air quality analysis is an examination of ozone air quality monitoring data, including the daily design value calculated for each area based on air quality data for a 3-year period. Design values for 2005-2007 and 2006-2008³ were analyzed for this factor.

Table 1-A: Ozone Design Values for the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area⁴

| County | O ₃ 2005 - 2007 Design Value (ppm) | Met NAAQS (0.075 ppm) 2005-2007? | O ₃ 2006 - 2008 Design Value (ppm) | Met NAAQS (0.075 ppm) 2006 - 2008? |
|-----------------|---|----------------------------------|---|------------------------------------|
| Fairfield, CT | 0.094 | No | 0.088 | No |
| Middlesex, CT | 0.092 | No | 0.087 | No |
| New Haven, CT | 0.093 | No | 0.088 | No |
| Bergen, NJ | 0.089* | No | Not Available | N/A |
| Essex, NJ | No Monitor | N/A | No Monitor | N/A |
| Hudson, NJ | 0.090 | No | 0.086 | No |
| Hunterdon, NJ | 0.089 | No | 0.086 | No |
| Middlesex, NJ | 0.091 | No | 0.088 | No |
| Monmouth, NJ | 0.088 | No | 0.086 | No |
| Morris, NJ | 0.086 | No | 0.086 | No |
| Passaic, NJ | 0.083 | No | 0.079 | No |
| Somerset, NJ | No Monitor | N/A | No Monitor | N/A |
| Sussex, NJ | No Monitor | N/A | No Monitor | N/A |
| Union, NJ | No Monitor | N/A | No Monitor | N/A |
| Warren, NJ | No Monitor | N/A | No Monitor | N/A |
| Bronx, NY | 0.075 | Yes | 0.076 | No |
| Kings, NY | No Monitor | N/A | No Monitor | N/A |
| Nassau, NY | No Monitor | N/A | No Monitor | N/A |
| New York, NY | Not Available | N/A | Not Available | N/A |
| Queens, NY | 0.079 | No | 0.077 | No |
| Richmond, NY | 0.089 | No | 0.081 | No |
| Rockland, NY | No Monitor | N/A | No Monitor | N/A |
| Suffolk, NY | 0.091 | No | 0.088 | No |
| Westchester, NY | 0.091 | No | 0.086 | No |

*Because a 2007 design value was not available, an average of 2005 - 2006 data is presented.

³ The 2006-2008 design values had not been certified at the time of this analysis

⁴ Source: NJDEP Bureau of Air Monitoring and USEPA

All of the monitors in the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment area violated the new 2008 ozone NAAQS of 0.075 ppm, with the exception of Bronx, NY (for the 2005-2007 data). The highest design value in the nonattainment area is located in Fairfield, CT. The highest design value in the nonattainment area in New Jersey is located in Middlesex County. The preliminary 2006-2008 design values show an overall decrease in emissions. The most significant decrease is in Richmond County, NY (0.009 ppm). The 2006-2008 design values show decreased emissions for five of the New Jersey monitors. A 2006-2008 design value was not available for Bergen County, and the design value stayed the same for Morris County.

Table 1-B: Ozone Design Values for the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area⁵

| County | O ₃ 2005 - 2007 Design Value (ppm) | Met NAAQS (0.075 ppm) 2005-2007? | O ₃ 2006 - 2008 Design Value (ppm) | Met NAAQS (0.075 ppm) 2006 - 2008? |
|------------------|---|----------------------------------|---|------------------------------------|
| Bucks, PA | 0.092 | No | 0.092 | No |
| Chester, PA | 0.085 | No | 0.082 | No |
| Delaware, PA | 0.085 | No | 0.083 | No |
| Montgomery, PA | 0.086 | No | 0.084 | No |
| Philadelphia, PA | 0.091 | No | 0.089 | No |
| Atlantic, NJ | 0.081* | No | Not Available | N/A |
| Burlington, NJ | No Monitor | N/A | No Monitor | N/A |
| Camden, NJ | 0.089 | No | 0.087 | No |
| Cape May, NJ | No Monitor | N/A | No Monitor | N/A |
| Cumberland, NJ | 0.084 | No | 0.082 | No |
| Gloucester, NJ | 0.087 | No | 0.087 | No |
| Mercer, NJ | 0.091 | No | 0.087 | No |
| Ocean, NJ | 0.092 | No | 0.087 | No |
| Salem, NJ | No Monitor | N/A | No Monitor | N/A |
| Cecil, MD | 0.093 | No | 0.090 | No |
| Kent, DE | 0.081 | No | 0.081 | No |
| New Castle, DE | 0.083 | No | 0.080 | No |
| Sussex, DE | 0.082 | No | 0.080 | No |

*Because a 2007 design value was not available, an average of 2005 - 2006 data is presented.

All of the monitors in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) nonattainment area violated the new 2008 ozone NAAQS of 0.075 ppm. The highest design value in the nonattainment area is located in Cecil County, MD. The preliminary 2006-2008 design values show an overall decrease in emissions. The most significant decrease is the Ocean County, NJ monitor (0.005 ppm). The 2006-2008 design values show decreased emissions for four of the New Jersey monitors. A 2006-2008 design value was not available for Atlantic County, and the design value stayed the same for Gloucester County.

⁵ Source: NJDEP Bureau of Air Monitoring and USEPA

Factor 2: Emissions Data

The following tables show total estimated inventories, excluding biogenic emissions (in tons per year) for the New York-Northern New Jersey-Long Island (NY-NJ-CT) and Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) nonattainment areas. (Data Source: 2002 MANE-VU Modeling Inventory).

Table 2-A: Emissions in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| County | 2002 NO _x (tons) | Proj. 2009 NO _x (tons) | 02-09 % change | 2002 VOC (tons) | Proj. 2009 VOC (tons) | 02-09 % change |
|-----------------|--------------------------------|---|---------------------------|-----------------------|--------------------------------|---------------------------|
| Fairfield, CT | 31,712 | 22,151 | -30% | 36,184 | 26,071 | -28% |
| Middlesex, CT | 7,757 | 4,478 | -42% | 10,500 | 8,044 | -23% |
| New Haven, CT | 29,642 | 19,069 | -36% | 34,472 | 26,314 | -24% |
| Bergen, NJ | 26,840 | 16,862 | -37% | 34,703 | 24,607 | -29% |
| Essex, NJ | 24,594 | 14,123 | -43% | 24,583 | 17,659 | -28% |
| Hudson, NJ | 22,047 | 10,866 | -51% | 16,206 | 12,187 | -25% |
| Hunterdon, NJ | 6,613 | 3,942 | -40% | 9,700 | 7,508 | -23% |
| Middlesex, NJ | 26,835 | 16,704 | -38% | 33,188 | 25,357 | -24% |
| Monmouth, NJ | 17,925 | 11,291 | -37% | 26,452 | 18,756 | -29% |
| Morris, NJ | 15,708 | 9,586 | -39% | 24,046 | 17,502 | -27% |
| Passaic, NJ | 9,836 | 6,019 | -39% | 16,648 | 12,505 | -25% |
| Somerset, NJ | 10,365 | 6,535 | -37% | 15,987 | 12,078 | -24% |
| Sussex, NJ | 3,799 | 2,495 | -34% | 10,268 | 8,356 | -19% |
| Union, NJ | 18,850 | 11,746 | -38% | 22,723 | 16,941 | -25% |
| Warren, NJ | 5,250 | 3,065 | -42% | 7,825 | 6,449 | -18% |
| Bronx, NY | 16,056 | 11,101 | -31% | 23,174 | 16,771 | -28% |
| Kings, NY | 28,296 | 21,083 | -25% | 39,632 | 31,349 | -21% |
| Nassau, NY | 38,626 | 24,814 | -36% | 45,411 | 32,915 | -28% |
| New York, NY | 40,284 | 30,330 | -25% | 38,921 | 32,186 | -17% |
| Queens, NY | 42,659 | 27,580 | -35% | 42,825 | 33,996 | -21% |
| Richmond, NY | 10,099 | 7,607 | -25% | 12,388 | 10,843 | -12% |
| Rockland, NY | 14,165 | 9,072 | -36% | 9,820 | 7,293 | -26% |
| Suffolk, NY | 64,398 | 39,672 | -38% | 73,451 | 49,862 | -32% |
| Westchester, NY | 48,464 | 20,357 | -58% | 33,071 | 24,160 | -27% |

The projected NO_x emissions decrease from 34%-51% in the New Jersey counties of the New York-Northern New Jersey-Long Island nonattainment area. Projected VOC emissions decreased from 18%-29% in these counties.

Table 2-B: Emissions in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| County | 2002 NO _x (tons) | Proj. 2009 NO _x (tons) | 02-09 % change | 2002 VOC (tons) | Proj. 2009 VOC (tons) | 02-09 % change |
|------------------|--------------------------------|---|---------------------------|-----------------------|--------------------------------|-------------------------------|
| Bucks, PA | 20,195 | 14,400 | -29% | 24,491 | 20,787 | -15% |
| Chester, PA | 18,779 | 13,642 | -27% | 18,897 | 15,498 | -18% |
| Delaware, PA | 23,838 | 20,642 | -13% | 18,264 | 15,199 | -17% |
| Montgomery, PA | 25,341 | 17,906 | -29% | 31,587 | 26,162 | -17% |
| Philadelphia, PA | 31,157 | 24,315 | -22% | 38,022 | 31,477 | -17% |
| Atlantic, NJ | 8,331 | 5,719 | -31% | 16,026 | 12,247 | -24% |
| Burlington, NJ | 18,522 | 12,233 | -34% | 19,915 | 14,860 | -25% |
| Camden, NJ | 15,372 | 9,201 | -40% | 17,377 | 12,882 | -26% |
| Cape May, NJ | 8,118 | 7,291 | -10% | 10,882 | 9,141 | -16% |
| Cumberland, NJ | 6,971 | 5,919 | -15% | 8,450 | 6,782 | -20% |
| Gloucester, NJ | 14,515 | 9,494 | -35% | 16,892 | 14,409 | -15% |
| Mercer, NJ | 25,520 | 9,957 | -61% | 13,627 | 9,829 | -28% |
| Ocean, NJ | 10,421 | 7,300 | -30% | 28,313 | 21,383 | -24% |
| Salem, NJ | 6,622 | 4,964 | -25% | 5,066 | 4,122 | -19% |
| Cecil, MD | 5,037 | 2,841 | -44% | 6,523 | 5,320 | -18% |
| Kent, DE | 10,336 | 8,554 | -17% | 6,772 | 5,490 | -19% |
| New Castle, DE | 31,544 | 23,104 | -27% | 21,148 | 16,180 | -23% |
| Sussex, DE | 16,883 | 18,001 | 7% | 13,200 | 10,438 | -21% |

The projected NO_x emissions decreased from 10%-61% in the New Jersey counties in the Philadelphia-Wilmington-Atlantic City nonattainment area. Projected VOC emissions decrease from 15%-25% in these counties.

Location of Sources:

The following tables show the number of NO_x and VOC reporting facilities in each county in New Jersey. The information was gathered from the USEPA AirData system, and is from the 2002 National Emission Inventory (NEI).⁶

Table 2-C: NO_x and VOC Facilities in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| County | Number of Facilities | Percent of Total Facilities (in NJ) | Pollutant Emissions (tpy) | | Percent of Total (NJ Emissions) | |
|---------------|----------------------|-------------------------------------|---------------------------|-------|---------------------------------|-------|
| | | | NO _x | VOC | NO _x | VOC |
| Bergen, NJ | 60 | 9.04 | 956 | 650 | 1.86 | 4.54 |
| Essex, NJ | 52 | 7.83 | 2,102 | 579 | 4.09 | 4.04 |
| Hudson, NJ | 37 | 5.57 | 9,783 | 1,375 | 19.04 | 9.59 |
| Hunterdon, NJ | 13 | 1.96 | 491 | 135 | 0.95 | 0.94 |
| Middlesex, NJ | 108 | 16.27 | 3,576 | 3,333 | 6.96 | 23.26 |
| Monmouth, NJ | 18 | 2.71 | 240 | 150 | 0.47 | 1.05 |
| Morris, NJ | 37 | 5.57 | 283 | 236 | 0.55 | 1.64 |
| Passaic, NJ | 29 | 4.37 | 122 | 232 | 0.24 | 1.62 |
| Somerset, NJ | 28 | 4.22 | 307 | 180 | 0.60 | 1.26 |
| Sussex, NJ | 6 | 0.90 | 38.5 | 36.2 | 0.07 | 0.25 |
| Union, NJ | 60 | 9.04 | 3,885 | 2,842 | 7.56 | 19.84 |
| Warren, NJ | 11 | 1.66 | 525 | 471 | 1.02 | 3.29 |

The largest number of NO_x and VOC reporting facilities in New Jersey in the NY-NJ-CT nonattainment area are in Middlesex County (108), while the smallest number of facilities is in Sussex County (6). The county with the highest percentage of reported NO_x emissions is Hudson. The county with the highest percentage of reported VOC emissions is Middlesex, followed closely by Union. The county with the lowest percentage of reported NO_x and VOC emissions is Sussex.

⁶ <http://www.epa.gov/air/data/geosel.html> (accessed 1/22/09)

Table 2-D: NO_x and VOC Facilities in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| County | Number of Facilities | Percent of Total Facilities (in NJ) | Pollutant Emissions (tpy) | | Percent of Total (NJ Emissions) | |
|----------------|----------------------|-------------------------------------|---------------------------|-------|---------------------------------|-------|
| | | | NO _x | VOC | NO _x | VOC |
| Atlantic, NJ | 13 | 1.96 | 129 | 44.8 | 0.25 | 0.31 |
| Burlington, NJ | 35 | 5.27 | 1,263 | 595 | 2.46 | 4.15 |
| Camden, NJ | 35 | 5.27 | 783 | 355 | 1.52 | 2.48 |
| Cape May, NJ | 8 | 1.20 | 3,819 | 38.7 | 7.43 | 0.27 |
| Cumberland, NJ | 21 | 3.16 | 1,761 | 91.9 | 3.43 | 0.64 |
| Gloucester, NJ | 33 | 4.97 | 4,642 | 2,627 | 9.03 | 15.82 |
| Mercer, NJ | 28 | 4.22 | 13,029 | 251 | 25.35 | 1.75 |
| Ocean, NJ | 17 | 2.56 | 395 | 59.5 | 0.77 | 0.42 |
| Salem, NJ | 15 | 2.26 | 3,263 | 405 | 6.35 | 2.83 |

The largest number of NO_x and VOC reporting facilities in New Jersey in the PA-NJ-DE-MD nonattainment area are located in Burlington and Camden counties (both have 35 facilities), followed closely by Gloucester (33 facilities) and Mercer (28 facilities). The county with the highest percentage of reported NO_x emissions is Mercer. The county with the highest percentage of reported VOC emissions is Gloucester. The county with the lowest percentage of both NO_x and VOC emissions is Atlantic, followed by Ocean.

Factor 3: Population/Population Density⁷

Table 3-A: 2007 Population/Population Density in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| County | 2007 Population | 2007 Population Density (population per sq mi) |
|-----------------|------------------------|---|
| Fairfield, CT | 895,015 | 1,430 |
| Middlesex, CT | 164,150 | 445 |
| New Haven, CT | 845,494 | 1,396 |
| Bergen, NJ | 895,744 | 3,825 |
| Essex, NJ | 776,087 | 6,146 |
| Hudson, NJ | 598,160 | 12,812 |
| Hunterdon, NJ | 129,348 | 301 |
| Middlesex, NJ | 788,629 | 2,546 |
| Monmouth, NJ | 642,030 | 1,360 |
| Morris, NJ | 488,475 | 1,042 |
| Passaic, NJ | 492,115 | 2,656 |
| Somerset, NJ | 323,552 | 1,062 |
| Sussex, NJ | 151,478 | 291 |
| Union, NJ | 524,658 | 5,080 |
| Warren, NJ | 109,737 | 307 |
| Bronx, NY | 1,373,659 | 32,683 |
| Kings, NY | 2,528,050 | 35,803 |
| Nassau, NY | 1,306,533 | 4,557 |
| New York, NY | 1,620,867 | 70,595 |
| Queens, NY | 2,270,338 | 20,783 |
| Richmond, NY | 481,613 | 8,236 |
| Rockland, NY | 296,483 | 1,702 |
| Suffolk, NY | 1,453,229 | 1,593 |
| Westchester, NY | 951,325 | 2,198 |

The top three counties with the highest population in this nonattainment area are Kings, Queens, and New York counties. The top three counties with the highest population density in the nonattainment area are New York, Kings, and Bronx counties. The top three New Jersey counties with the highest population in the nonattainment area are Bergen, Middlesex, and Essex. The top three New Jersey counties with the highest population density in the nonattainment area are Hudson, Essex and Union. The population densities of the remaining New Jersey counties in the nonattainment area are significantly lower. The three counties with the lowest population in the nonattainment area are Warren, Hunterdon, and Sussex counties in New Jersey. The three counties with the lowest population density in the nonattainment area are Sussex, Hunterdon, and Warren counties in New Jersey.

⁷ Data Source for 2007 Population and Population Density: U.S. Census Bureau and New Jersey Department of Labor and Workforce Development (US Census Data Accessed 1/2/09, Dept. of Labor Data Accessed 1/5/09)

Table 3-B: 2007 Population/Population Density in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| County | 2007 Population | 2007 Population Density (population per sq mi) |
|------------------|------------------------|---|
| Bucks, PA | 621,144 | 1,023 |
| Chester, PA | 486,345 | 643 |
| Delaware, PA | 554,399 | 3,010 |
| Montgomery, PA | 776,172 | 1,607 |
| Philadelphia, PA | 1,449,634 | 10,731 |
| Atlantic, NJ | 270,644 | 482 |
| Burlington, NJ | 446,817 | 555 |
| Camden, NJ | 513,769 | 2,311 |
| Cape May, NJ | 96,422 | 378 |
| Cumberland, NJ | 155,544 | 318 |
| Gloucester, NJ | 285,753 | 880 |
| Mercer, NJ | 365,449 | 1,618 |
| Ocean, NJ | 565,493 | 889 |
| Salem, NJ | 66,016 | 195 |
| Cecil, MD | 99,695 | 286 |
| Kent, DE | 152,255 | 258 |
| New Castle, DE | 528,218 | 1,239 |
| Sussex, DE | 184,291 | 197 |

The county of Philadelphia has the highest population and population density in the nonattainment area. This indicates the likelihood of population-based emissions to contribute to monitored violations.

To a much lesser extent, Camden County is also more urbanized than the majority of the remaining counties in the Philadelphia-Wilmington-Atlantic City nonattainment area. The top three New Jersey counties with the highest population in the nonattainment area are Ocean, Camden, and Burlington. The top three New Jersey counties with the highest population density in the nonattainment area are Camden, Mercer, and Ocean. The three counties with the lowest population in the nonattainment area are Salem and Cape May counties in New Jersey and Cecil County in Maryland. The three counties with the lowest population density in the nonattainment area are Sussex and Kent counties in Delaware and Cecil County in Maryland.

Factor 4: Traffic and Commuting Patterns⁸

The total Vehicle Miles Traveled (VMT) for 2005 is provided for each county in millions of miles. The analysis of this factor looks at the number of commuters who drive to major counties within the metropolitan area and counties with the highest violation monitors.

New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

Table 4-A shows the commuting patterns to the major counties in the nonattainment area, as well as the New Jersey counties with the highest monitored design values (Hudson and Middlesex). The largest number of commuters to the New Jersey counties in the New York-Northern New Jersey-Long Island nonattainment area are from counties in the New York City area.

Table 4-B shows the number of commuters from the New York counties in the nonattainment area to the New Jersey counties in the nonattainment area. The three highest numbers of commuters to New Jersey counties in the nonattainment area from New York counties in the nonattainment area are from New York, Kings, and Rockland counties. The top two New Jersey counties with the highest number of commuters from New York counties in the nonattainment area are Bergen and Hudson. The remaining New Jersey counties in the nonattainment area have a significantly lower number of commuters from the New York counties in the nonattainment area. The two New Jersey counties with the lowest number of commuters from the New York counties in the nonattainment area are Sussex and Hunterdon counties.

The county with the highest VMT in the nonattainment area is Suffolk County, NY. The two New Jersey counties with the highest VMT in the nonattainment area are Middlesex and Bergen counties.

Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

Table 4-C shows commuting patterns to the major counties in the nonattainment area, as well as the New Jersey counties with the highest monitored design values (Ocean and Mercer) were evaluated.

⁸ Factor 4 Data sources:

2005 VMT Data: USEPA, http://www.epa.gov/ttn/naaqs/pm/docs/2005_vmt_county_level.xls (Accessed 1/14/09);

2000 US Census Journey to Work Data:
<http://www.census.gov/population/www/cen2000/commuting/index.html> (Accessed 1/14/09)

USEPA, "Where People Work": http://www.epa.gov/ttn/naaqs/ozone/areas/misc/work_us.htm (Accessed 1/14/09)

The highest number of commuters to a New Jersey county from a county in another state in the nonattainment area is from Bucks County, PA to Mercer County, NJ. There are also a large number of commuters from Bucks County, PA to Burlington and Middlesex counties.

A smaller, but still significant, number of commuters travel from Philadelphia County, PA to Camden County, NJ. Philadelphia also has a large number of commuters to Burlington County, NJ.

Table 4-D shows the number of commuters from the Pennsylvania counties in the nonattainment area to the New Jersey counties in the nonattainment area. The two highest numbers of commuters to New Jersey counties in the nonattainment area are from Bucks and Philadelphia counties. The top three New Jersey counties with the highest number of commuters from Pennsylvania counties in the nonattainment area are Mercer, Camden and Burlington. The three New Jersey counties with the lowest number of commuters from Pennsylvania counties in the nonattainment area are Ocean, Cumberland, and Salem counties. Cape May County also has a low number of commuters from the Pennsylvania counties in the nonattainment area.

Philadelphia County, PA has the highest VMT in the nonattainment area, followed by Monmouth County, NJ.

Based on review of the commuting pattern data from both nonattainment areas, there is not a significant pattern of commuting between the New York-Northern New Jersey-Long Island nonattainment area and the Philadelphia-Wilmington-Atlantic City nonattainment area.

Table 4-A: Commuting Patterns in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| County | VMT (Millions) | #Commuters to New York, NY | #Commuters to Bronx, NY | # Commuters to Hudson, NJ | #Commuters to Middlesex, NJ | #Commuters to New Haven, CT |
|-----------------|----------------|----------------------------|-------------------------|---------------------------|-----------------------------|-----------------------------|
| Fairfield, CT | 7,648.71 | 24,831 | 1,258 | 344 | 71 | 21,900 |
| Middlesex, CT | 1,786.21 | 158 | 5 | 6 | 17 | 12,833 |
| New Haven, CT | 6,947.70 | 1,584 | 183 | 11 | 40 | 290,098 |
| Bergen, NJ | 9,123.92 | 61,253 | 5,353 | 25,444 | 4,149 | 74 |
| Essex, NJ | 5,611.09 | 28,076 | 782 | 16,193 | 9,717 | 10 |
| Hudson, NJ | 2,543.18 | 58,423 | 1,214 | 121,352 | 5,476 | 23 |
| Hunterdon, NJ | 928.70 | 1,176 | 7 | 581 | 4,133 | 0 |
| Middlesex, NJ | 8,014.09 | 25,765 | 355 | 8,706 | 201,811 | 51 |
| Monmouth, NJ | 6,229.76 | 22,425 | 313 | 6,165 | 30,146 | 32 |
| Morris, NJ | 5,397.82 | 11,516 | 268 | 4,806 | 4,263 | 15 |
| Passaic, NJ | 3,302.32 | 8,402 | 473 | 6,468 | 2,216 | 5 |
| Somerset, NJ | 2,702.02 | 6,243 | 87 | 2,203 | 26,794 | 14 |
| Sussex, NJ | 888.93 | 1,449 | 94 | 1,137 | 734 | 13 |
| Union, NJ | 4,704.31 | 16,305 | 417 | 8,251 | 26,504 | 11 |
| Warren, NJ | 1,342.37 | 562 | 5 | 311 | 1,366 | 0 |
| Bronx, NY | 4,720.60 | 159,664 | 168,903 | 2,515 | 518 | 56 |
| Kings, NY | 4,899.46 | 341,155 | 11,365 | 2,927 | 1,759 | 112 |
| Nassau, NY | 11,919.85 | 94,485 | 6,274 | 1,653 | 345 | 90 |
| New York, NY | 4,378.20 | 631,132 | 20,775 | 5,541 | 1,847 | 178 |
| Queens, NY | 7,838.83 | 346,268 | 18,373 | 4,215 | 1,182 | 138 |
| Richmond, NY | 2,002.10 | 53,249 | 1,095 | 3,017 | 2,929 | 11 |
| Rockland, NY | 2,731.10 | 17,025 | 6,245 | 1,007 | 300 | 56 |
| Suffolk, NY | 19,814.88 | 41,121 | 2,614 | 624 | 157 | 113 |
| Westchester, NY | 9,166.01 | 79,643 | 27,053 | 1,131 | 236 | 343 |

Table 4-B: Commuters from the New York Counties in the NY-NJ-CT Nonattainment Area to the New Jersey Counties in the NY-NJ-CT Nonattainment Area

| | | New Jersey Counties in the NY-NJ-CT Nonattainment Area | | | | | | | | | | | Total |
|--|-------------|--|---------------|---------------|------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|---------------|
| | | Bergen | Essex | Hudson | Hunterdon | Middlesex | Monmouth | Morris | Passaic | Somerset | Sussex | Union | |
| New York Counties in the NY-NJ-CT Nonattainment Area | Bronx | 4,366 | 1,141 | 2,515 | 23 | 518 | 69 | 328 | 569 | 146 | 30 | 586 | 10,291 |
| | Kings | 3,345 | 2,341 | 5,927 | 76 | 1,759 | 579 | 812 | 579 | 515 | 37 | 1,567 | 17,537 |
| | Nassau | 1,337 | 426 | 1,653 | 5 | 345 | 88 | 235 | 207 | 76 | 4 | 187 | 4,563 |
| | New York | 7,258 | 2,876 | 5,541 | 106 | 1,847 | 291 | 1,413 | 940 | 442 | 219 | 967 | 21,900 |
| | Queens | 4,275 | 1,944 | 4,215 | 10 | 1,182 | 253 | 613 | 677 | 253 | 10 | 780 | 14,212 |
| | Richmond | 1,081 | 1,621 | 3,017 | 73 | 2,929 | 586 | 589 | 343 | 582 | 48 | 1,486 | 12,355 |
| | Rockland | 12,687 | 866 | 1,007 | 17 | 300 | 38 | 867 | 1,141 | 118 | 14 | 350 | 17,405 |
| | Suffolk | 564 | 338 | 624 | 7 | 157 | 87 | 146 | 102 | 69 | 33 | 180 | 2,307 |
| | Westchester | 3,221 | 614 | 1,131 | 11 | 236 | 52 | 362 | 400 | 93 | 12 | 327 | 6,459 |
| | Total | 38,134 | 12,167 | 25,630 | 328 | 9,273 | 2,043 | 5,365 | 4,958 | 2,294 | 407 | 6,430 | |

Table 4-C: Commuting Patterns in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| County | VMT (Millions) | #Commuters to Philadelphia, PA | #Commuters to Delaware, PA | #Commuters to Mercer, NJ | # Commuters to Ocean, NJ | #Commuters to New Castle, DE |
|------------------|----------------|--------------------------------|----------------------------|--------------------------|--------------------------|------------------------------|
| Bucks, PA | 5,249.59 | 31,892 | 2,754 | 20,812 | 220 | 493 |
| Chester, PA | 4,414.36 | 10,568 | 17,870 | 222 | 23 | 12,976 |
| Delaware, PA | 4,011.35 | 48,151 | 137,988 | 345 | 10 | 9,002 |
| Montgomery, PA | 7,526.57 | 54,576 | 11,758 | 1,298 | 13 | 1,201 |
| Philadelphia, PA | 6,499.46 | 429,667 | 21,802 | 1,676 | 86 | 1,856 |
| Atlantic, NJ | 3,234.23 | 1,359 | 314 | 274 | 822 | 175 |
| Burlington, NJ | 4,901.56 | 17,661 | 1,771 | 17,158 | 2,042 | 597 |
| Camden, NJ | 4,668.91 | 32,961 | 3,232 | 2,472 | 359 | 1,286 |
| Cape May, NJ | 909.22 | 711 | 24 | 124 | 98 | 109 |
| Cumberland, NJ | 1,264.16 | 618 | 105 | 64 | 21 | 171 |
| Gloucester, NJ | 2,621.22 | 13,778 | 3,179 | 764 | 227 | 1,662 |
| Mercer, NJ | 2,667.73 | 1,574 | 244 | 112,449 | 667 | 139 |
| Ocean, NJ | 3,366.62 | 491 | 118 | 5,865 | 120,741 | 45 |
| Salem, NJ | 1,012.51 | 615 | 486 | 126 | 6 | 3,258 |
| Cecil, MD | 1,192.63 | 254 | 373 | 7 | 8 | 14,059 |
| Kent, DE | 1,435.19 | 37 | 125 | 10 | 0 | 6,058 |
| New Castle, DE | 5,674.40 | 5,386 | 8,150 | 78 | 13 | 209,742 |
| Sussex, DE | 1,842.40 | 131 | 61 | 12 | 30 | 1,119 |

Table 4-D: Commuters from the Pennsylvania Counties in the PA-NJ-DE-MD Nonattainment Area to the New Jersey Counties in the PA-NJ-DE-MD Nonattainment Area

| New Jersey Counties in the PA-NJ-DE-MD Nonattainment Area | | | | | | | | | | | |
|---|---------------------|--------------|---------------|---------------|------------|------------|--------------|---------------|------------|------------|---------------|
| Pennsylvania Counties in the PA-NJ-DE-MD Nonattainment Area | | Atlantic | Burlington | Camden | Cape May | Cumberland | Gloucester | Mercer | Ocean | Salem | Total |
| | Bucks | 172 | 4,250 | 2,039 | 54 | 42 | 362 | 20,812 | 220 | 37 | 27,988 |
| | Chester | 73 | 426 | 539 | 81 | 24 | 411 | 222 | 23 | 155 | 1,954 |
| | Delaware | 231 | 1,306 | 2,287 | 118 | 103 | 1,251 | 345 | 10 | 245 | 5,896 |
| | Montgomery | 181 | 1,559 | 1,844 | 95 | 66 | 405 | 1,298 | 13 | 59 | 5,520 |
| | Philadelphia | 831 | 5,087 | 7,196 | 324 | 140 | 1,502 | 1,676 | 86 | 84 | 16,926 |
| | Total | 1,488 | 12,628 | 13,905 | 672 | 375 | 3,931 | 24,353 | 352 | 580 | |

Factor 5: Expected Growth⁹

The following tables show an analysis of population growth from 2000-2007 and VMT growth from 1996-2005.

New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

Based upon analysis of this factor, Somerset County was identified as experiencing the highest recent growth in the nonattainment area (from 2006-2007). The three New Jersey counties with the highest population growth from 2000-2007 were Somerset, Warren, and Hunterdon. Essex and Hudson counties experienced a slight reduction in population growth for both 2006-2007 and 2000-2007.

Middlesex, Morris, Bergen, and Warren counties experienced significant VMT growth from 1996-2005, while Hudson, Hunterdon, and Sussex counties experienced a significant reduction in VMT.

⁹Factor 5 Data Sources:

Census Data: US Census Bureau – <http://www.census.gov> and New Jersey Dept. of Labor:

<http://lwd.dol.state.nj.us/labor/lpa/dmograph/est/mcd/density.htm> (accessed 1/2/09);
1996 VMT Data: USEPA;

2005 VMT Data: USEPA, http://www.epa.gov/ttn/naaqs/pm/docs/2005_vmt_county_level.xls (Accessed 1/14/09);

Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

Based upon analysis of this factor, Gloucester County has been identified as the New Jersey county in the nonattainment area experiencing the highest recent growth (from 2006-2007). Cape May County experienced a slight decrease in population. The top three New Jersey counties with the highest growth from 2000-2007 were Gloucester, Ocean, and Atlantic.

Burlington, Atlantic, and Salem counties experienced significant growth in VMT from 1996-2005 in comparison to the remainder of counties in the nonattainment area. Mercer and Ocean counties experienced a low to moderate reduction in VMT.

Table 5-A: Expected Growth of Population and VMT in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| County | 2000 Population | 2006 Population | 2007 Population | Percent Growth (2006-2007) | Percent Growth (2000-2007) | VMT 1996 (Millions) | VMT 2005 (Millions) | Percent VMT Growth (1996-2005) |
|-----------------|------------------------|------------------------|------------------------|-----------------------------------|-----------------------------------|----------------------------|----------------------------|---------------------------------------|
| Fairfield, CT | 882,567 | 893,987 | 895,015 | 0.1% | 1.41% | 7,233 | 7,649 | 5.75% |
| Middlesex, CT | 155,071 | 163,372 | 164,150 | 0.5% | 5.85% | 1,298 | 1,786 | 37.61% |
| New Haven, CT | 824,008 | 843,441 | 845,494 | 0.2% | 2.61% | 6,275 | 6,948 | 10.72% |
| Bergen, NJ | 884,118 | 893,217 | 895,744 | 0.3% | 1.31% | 5,993 | 9,124 | 52.24% |
| Essex, NJ | 792,305 | 778,333 | 776,087 | -0.3% | -2.05% | 5,643 | 5,611 | -0.57% |
| Hudson, NJ | 608,975 | 599,755 | 598,160 | -0.3% | -1.78% | 4,012 | 2,543 | -36.61% |
| Hunterdon, NJ | 121,989 | 129,197 | 129,348 | 0.1% | 6.03% | 1,413 | 929 | -34.27% |
| Middlesex, NJ | 750,162 | 783,371 | 788,629 | 0.7% | 5.13% | 5,073 | 8,014 | 57.98% |
| Monmouth, NJ | 615,301 | 641,309 | 642,030 | 0.1% | 4.34% | 4,407 | 6,230 | 41.36% |
| Morris, NJ | 470,212 | 487,371 | 488,475 | 0.2% | 3.88% | 3,531 | 5,398 | 52.87% |
| Passaic, NJ | 490,377 | 491,956 | 492,115 | 0.0% | 0.35% | 3,102 | 3,302 | 6.46% |
| Somerset, NJ | 297,490 | 320,070 | 323,552 | 1.1% | 8.76% | 2,097 | 2,702 | 28.85% |
| Sussex, NJ | 144,170 | 151,165 | 151,478 | 0.2% | 5.07% | 1,306 | 889 | -31.93% |
| Union, NJ | 522,541 | 524,816 | 524,658 | 0.0% | 0.41% | 3,582 | 4,704 | 31.33% |
| Warren, NJ | 102,433 | 109,431 | 109,737 | 0.3% | 7.13% | 896 | 1,342 | 49.82% |
| Bronx, NY | 1,332,650 | 1,371,353 | 1,373,659 | 0.2% | 3.08% | 6,329 | 4,721 | -25.41% |
| Kings, NY | 2,465,326 | 2,523,047 | 2,528,050 | 0.2% | 2.54% | 12,100 | 4,899 | -59.51% |
| Nassau, NY | 1,334,544 | 1,312,756 | 1,306,533 | -0.5% | -2.10% | 6,800 | 11,920 | 75.29% |
| New York, NY | 1,537,195 | 1,612,630 | 1,620,867 | 0.5% | 5.44% | 7,824 | 4,378 | -44.04% |
| Queens, NY | 2,229,379 | 2,264,661 | 2,270,338 | 0.3% | 1.84% | 10,261 | 7,839 | -23.61% |
| Richmond, NY | 443,728 | 478,876 | 481,613 | 0.6% | 8.54% | 1,995 | 2,002 | 0.36% |
| Rockland, NY | 286,753 | 295,927 | 296,483 | 0.2% | 3.39% | 1,406 | 2,731 | 94.25% |
| Suffolk, NY | 1,419,369 | 1,456,783 | 1,453,229 | -0.2% | 2.39% | 6,913 | 19,815 | 186.63% |
| Westchester, NY | 923,459 | 948,080 | 951,325 | 0.3% | 3.02% | 4,895 | 9,166 | 87.25% |

Table 5-B: Expected Growth of Population and VMT in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| County | 2000 Population | 2006 Population | 2007 Population | Percent Growth (2006-2007) | Percent Growth (2000-2007) | VMT 1996 (Millions) | VMT 2005 (Millions) | Percent VMT Growth 1996-2005 |
|------------------|-----------------|-----------------|-----------------|----------------------------|----------------------------|---------------------|---------------------|------------------------------|
| Bucks, PA | 597,635 | 619,407 | 621,144 | 0.3% | 3.93% | 3,818 | 5,250 | 37.50% |
| Chester, PA | 433,501 | 486,345 | 478,990 | -1.5% | 10.49% | 3,105 | 4,414 | 42.17% |
| Delaware, PA | 550,864 | 553,732 | 554,399 | 0.1% | 0.64% | 3,638 | 4,011 | 10.26% |
| Montgomery, PA | 750,097 | 773,866 | 776,172 | 0.3% | 3.48% | 4,818 | 7,527 | 56.22% |
| Philadelphia, PA | 1,517,550 | 1,453,212 | 1,449,634 | -0.2% | -4.48% | 10,420 | 6,499 | -37.63% |
| Atlantic, NJ | 252,552 | 269,924 | 270,644 | 0.3% | 7.16% | 2,223 | 3,234 | 45.49% |
| Burlington, NJ | 423,391 | 447,552 | 446,817 | -0.2% | 5.53% | 3,299 | 4,902 | 48.58% |
| Camden, NJ | 508,932 | 513,510 | 513,769 | 0.1% | 0.95% | 4,102 | 4,669 | 13.82% |
| Cape May, NJ | 102,326 | 97,613 | 96,422 | -1.2% | -5.77% | 673 | 909 | 35.10% |
| Cumberland, NJ | 146,438 | 154,175 | 155,544 | 0.9% | 6.22% | 1,096 | 1,264 | 15.34% |
| Gloucester, NJ | 254,673 | 281,314 | 285,753 | 1.6% | 12.20% | 2,055 | 2,621 | 27.55% |
| Mercer, NJ | 350,761 | 364,649 | 365,449 | 0.2% | 4.19% | 3,343 | 2,668 | -20.20% |
| Ocean, NJ | 510,916 | 561,505 | 565,493 | 0.7% | 10.68% | 3,624 | 3,367 | -7.10% |
| Salem, NJ | 64,285 | 65,842 | 66,016 | 0.3% | 2.69% | 691 | 1,013 | 46.53% |
| Cecil, MD | 85,951 | 98,674 | 99,695 | 1.0% | 15.99% | 1,035 | 1,193 | 15.23% |
| Kent, DE | 126,697 | 147,973 | 152,255 | 2.9% | 20.17% | 1,371 | 1,435 | 4.68% |
| New Castle, DE | 500,265 | 524,735 | 528,218 | 0.7% | 5.59% | 4,687 | 5,674 | 21.07% |
| Sussex, DE | 156,638 | 180,039 | 184,291 | 2.4% | 17.65% | 1,586 | 1,842 | 16.17% |

Factor 6: Meteorology

This factor did not play a significant role in the decision making process for either nonattainment area. “Climatic Data for the United States”, prepared by NOAA and dated November 1998 was analyzed for this factor. The data analyzed is a summary of annual climatic wind data for the years 1930-1996.

Table 6-A: Prevailing Wind Direction in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| Location | County | Prevailing Wind Direction | Mean Wind Speed (mph) | Peak Gust (mph) |
|-----------------------------------|---------------|----------------------------------|------------------------------|------------------------|
| Bridgeport, CT | Fairfield | WSW | 12 | 69 |
| Newark, NJ | Essex | NW | 10 | 83 |
| Islip, NY | Suffolk | WNW | 9 | N/A |
| Central Park, NY | New York | NW | 8 | 64 |
| JFK Airport, NY | Queens | S | 12 | 71 |
| LaGuardia Airport, NY | Queens | NE | 13 | 77 |
| Suffolk County Air Force Base, NY | Suffolk | SW | 9 | 76 |

Based on an analysis of this factor, the prevailing wind direction in the New York-Northern New Jersey-Long Island nonattainment area is predominantly from the northwest and southwest.

Table 6-B: Prevailing Wind Direction in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| Location | County | Prevailing Wind Direction | Mean Wind Speed (mph) | Peak Gust (mph) |
|----------------------------|---------------|----------------------------------|------------------------------|------------------------|
| Philadelphia, PA | Philadelphia | SW | 10 | 69 |
| Atlantic City Airport, NJ | Atlantic | WNW | 10 | 81 |
| Trenton, NJ | Mercer | S | 9 | 64 |
| McGuire Air Force Base, NJ | Burlington | WNW | 7 | 87 |
| Dover Air Force Base, DE | Kent | SSW | 7 | 85 |
| Wilmington, DE | New Castle | WNW | 9 | 56 |

Based on an analysis of this factor, the prevailing wind direction in the Philadelphia-Wilmington-Atlantic City nonattainment area is from the northwest and southwest.

Factor 7: Geography/Topography

There are no geographical or topographical boundaries limiting air movements within the airshed in the areas.

Factor 8: Jurisdictional Boundaries

The current jurisdictional boundaries for the 1997 8-hour ozone standard nonattainment areas are adequate for the new 2008 ozone NAAQS nonattainment areas. The areas include:

For the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment area, Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, and Warren counties in New Jersey; Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, and Westchester counties in New York; and Fairfield, Middlesex, and New Haven counties in Connecticut.

For the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area, Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem counties in New Jersey; Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania; Kent, New Castle, and Sussex counties in Delaware; and Cecil County in Maryland.

Factor 9: Level of Control of Emission Sources

This factor did not play a significant role in the decision making process. Emissions of NO_x and VOC will continue to decrease because of State and Federal efforts that include Ozone Reasonably Available Control Technology (RACT) Rules and the Federal Clean Air Interstate Rule (CAIR).

Additionally, New Jersey's PM_{2.5} statewide RACT rules are in the process of being updated which will result in additional reductions of direct PM_{2.5} and its precursors, SO₂ and NO_x, from major source categories. New Jersey is also relying upon the USEPA to provide sufficient emission reductions from upwind sources in order to bring the multi-state nonattainment areas into attainment with the 2008 ozone health standards and maintain them. Emissions from upwind states are discussed further in Factor 10.

Factor 10: Modeling of Regional Ozone Transport

Modeling conducted by the USEPA as a part of the Clean Air Interstate Rule (CAIR) in 2005 demonstrates that ozone transport constitutes a large portion of projected nonattainment in most eastern areas in 2010.¹⁰ Tables 10-A and 10-B show the CAIR results for the counties that were modeled in the New York-Northern New Jersey-Long Island (NY-NJ-CT) and Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Areas.

Table 10-A: Percent Contribution to 8-Hour Ozone Nonattainment due to Transport from Upwind States in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area

| 2010 Base Nonattainment Counties | 2010 Base 8-Hour Ozone (ppb) | Percent of 8-Hour Ozone due to Transport |
|---|-------------------------------------|---|
| Fairfield, CT | 92 | 80% |
| Middlesex, CT | 90 | 93% |
| New Haven, CT | 91 | 95% |
| Bergen, NJ | 86 | 38% |
| Hunterdon, NJ | 89 | 26% |
| Middlesex, NJ | 92 | 62% |
| Monmouth, NJ | 86 | 65% |
| Morris, NJ | 86 | 63% |
| Richmond, NY | 87 | 55% |
| Suffolk, NY | 91 | 52% |
| Westchester, NY | 85 | 56% |

Greater than 50% of ozone is due to transport in 9 of the 11 modeled counties in the New York-Northern New Jersey-Long Island nonattainment area.

¹⁰ Technical Support Document for the Final Clean Air Interstate Rule – Air Quality Modeling. USEPA. March 2005.

Table 10-B: Percent Contribution to 8-Hour Ozone Nonattainment due to Transport from Upwind States in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area

| 2010 Base Nonattainment Counties | 2010 Base 8-Hour Ozone (ppb) | Percent of 8-Hour Ozone due to Transport |
|---|-------------------------------------|---|
| Bucks, PA | 94 | 35% |
| Chester, PA | 85 | 39% |
| Montgomery, PA | 88 | 47% |
| Philadelphia, PA | 90 | 55% |
| Camden, NJ | 91 | 57% |
| Gloucester, NJ | 91 | 62% |
| Mercer, NJ | 95 | 36% |
| Ocean, NJ | 100 | 82% |
| Cecil, MD | 89 | 35% |
| New Castle, DE | 85 | 37% |

Greater than 50% of ozone is due to transport in 4 of the 10 modeled counties in the Philadelphia-Wilmington-Atlantic City nonattainment area. The modeled county in the nonattainment area with the highest percentage of ozone due to transport is Ocean County, NJ (82%).

The CAIR modeling conducted by the USEPA also included information on the upwind areas contributing to downwind nonattainment in the Ozone Transport Region (OTR) counties. Tables 10-C and 10-D summarize the information from the CAIR modeling (Table VI-5).

Table 10-C: Upwind States That Make a Significant Contribution to 8-Hour Ozone in Each Modeled Downwind Nonattainment County in the New York-Northern New Jersey-Long Island (NY-NJ-CT) Nonattainment Area¹¹

| Downwind County | Upwind States | | | | | | | | | |
|------------------------|----------------------|-----------|-----------|----|----|----|----|----|----|----|
| Fairfield, CT | MD/ DC | NJ | NY | OH | PA | VA | WV | | | |
| Middlesex, CT | MA | NJ | NJ | OH | PA | VA | | | | |
| New Haven, CT | MD/ DC | NJ | NY | OH | PA | VA | WV | | | |
| Bergen, NJ | MD/ DC | MI | OH | PA | VA | WV | | | | |
| Hunterdon, NJ | DE | MD/ DC | OH | PA | VA | WV | | | | |
| Middlesex, NJ | DE | MD/ DC | MI | NY | OH | PA | VA | WV | | |
| Monmouth, NJ | DE | MD/ DC | MI | NY | OH | PA | VA | WV | | |
| Morris, NJ | DE | MD/ DC | MI | NY | OH | PA | VA | WV | | |
| Richmond, NY | MD/ DC | MI | NJ | PA | VA | WV | | | | |
| Suffolk, NY | CT | DE | MD/ DC | MI | NC | NJ | OH | PA | VA | WV |
| Westchester, NY | MD/ DC | NJ | OH | PA | VA | WV | | | | |

Note: Upwind States are listed alphabetically and not according to order of influence.

The CAIR modeling demonstrates that the counties in the New York-Northern New Jersey-Long Island nonattainment area are influenced by several states outside of the nonattainment area. Some of the upwind states are located outside of the OTR, which shows that ozone transport is an issue on a broad regional scale.

¹¹ Based on several contribution metrics evaluated by the USEPA to show the magnitude of the contribution, the frequency of the contributions, and the relative amount of the total contribution.

Table 10-D: Upwind States That Make a Significant Contribution to 8-Hour Ozone in Each Modeled Downwind Nonattainment County in the Philadelphia-Wilmington-Atlantic City (PA-NJ-DE-MD) Nonattainment Area¹²

| Downwind County | Upwind States | | | | | | | | | |
|------------------|---------------|-----------|----|----|----|----|----|----|--|--|
| Bucks, PA | DE | MD/ DC | MI | NJ | OH | VA | WV | | | |
| Chester, PA | DE | MD/ DC | MI | NJ | OH | VA | WV | | | |
| Montgomery, PA | DE | MD/ DC | NJ | OH | WV | | | | | |
| Philadelphia, PA | DE | MD/ DC | MI | NJ | OH | VA | WV | | | |
| Camden, NJ | DE | MD/ DC | MI | OH | PA | VA | WV | | | |
| Gloucester, NJ | DE | MD/ DC | MI | OH | PA | VA | WV | | | |
| Mercer, NJ | DE | MD/ DC | MI | NY | OH | PA | VA | WV | | |
| Ocean, NJ | DE | MD/ DC | MI | NY | OH | PA | VA | WV | | |
| Cecil, MD | MI | OH | PA | VA | WV | | | | | |
| New Castle, DE | MD/ DC | MI | NC | OH | PA | VA | WV | | | |

Note: Upwind States are listed alphabetically and not according to order of influence.

The CAIR modeling demonstrates that the counties in the Philadelphia-Wilmington-Atlantic City nonattainment area are influenced by several states outside of the nonattainment area. Some of the upwind states are located outside of the OTR, which shows that ozone transport is an issue on a broad regional scale.

¹² Based on several contribution metrics evaluated by the USEPA to show the magnitude of the contribution, the frequency of the contributions, and the relative amount of the total contribution.