Commonwealth of Pennsylvania

DESIGNATION RECOMMENDATIONS FOR THE 2008 EIGHT-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD

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Designation Recommendations
For the 2008 Eight-Hour Ozone
National Ambient Air Quality Standard

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What is this document?

The federal Clean Air Act (CAA) provides a mechanism for states to make recommendations to the United States Environmental Protection Agency (EPA) on the designation of areas meeting and not meeting the National Ambient Air Quality Standards (NAAQS).

In this document, the Commonwealth of Pennsylvania (Commonwealth) is making recommendations to EPA concerning the designation of attainment and nonattainment areas in Pennsylvania for the ozone NAAQS revised by EPA on March 12, 2008 (73 FR 16436; March 27, 2008). The designation recommendations are based on air quality monitoring data for 2006-2008 and other available information, including ozone-forming emissions, meteorology and demographics. A full list of the recommendations by area and county and a map are contained in Appendix A.

Since EPA anticipates making final designations by March 12, 2010, using air quality monitoring data that may include 2009, the Department of Environmental Protection (DEP or Department) will continue to work with EPA during the process leading to the promulgation of the final designations.

What is ground-level ozone?

Ozone is not emitted directly to the atmosphere, but is formed by photochemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in the presence of sunlight. The long, hot, humid days of summer are particularly conducive to ozone formation, so ozone levels are of concern primarily during the months of April through September.

The primary sources of man-made VOCs and NO_x, the ozone precursors, are the evaporation of fuels and solvents (gasoline and consumer products), the combustion of fuels (motor vehicles, power plants and non-road engines), and industrial processes.

Health effects. Repeated exposure to ozone pollution may cause permanent damage to the lungs. Even when ozone is present in low levels, inhaling it triggers a variety of health problems including chest pains, coughing, nausea, throat irritation, and congestion. It can also worsen bronchitis, heart disease, emphysema, and asthma, and reduce lung capacity. Asthma is a significant and growing threat to children and adults. Ozone can aggravate asthma, causing more asthma attacks, increased use of medication, more medical treatment and more frequent visits to hospital emergency clinics.

Healthy people also experience difficulty in breathing when exposed to ozone pollution. Because ozone pollution usually forms in hot weather, anyone who spends time outdoors in the summer may be affected, particularly children, the elderly, outdoor workers and people exercising. Children are most at risk from exposure to ozone because they are active outside, playing and exercising, during the summertime when ozone levels are at

their highest. Millions of Pennsylvanians live in areas where the ozone health-based standards are exceeded.

EPA estimates that the revised standards will yield health benefits valued between $2 billion and $17 billion. Those benefits include preventing cases of bronchitis, aggravated asthma, hospital and emergency room visits, nonfatal heart attacks and premature death, among others.

Welfare effects. Ground-level ozone damages plant life and is responsible for $500 million in reduced crop production in the United States each year. Ozone interferes with the ability of plants to produce and store food, making them more susceptible to disease, insects, other pollutants, and harsh weather. It damages the foliage of trees and other plants, ruining the landscape of cities, parks and forests, and recreation areas. One of the key components of ozone -- nitrogen oxides -- contributes to fish kills and algae blooms in sensitive waterways, such as the Chesapeake Bay.

What is the NAAQS for ozone?

EPA sets the NAAQS based on its review of existing scientific knowledge about the adverse health and welfare effects. The CAA requires EPA to review and update periodically, if necessary, the NAAQS to "protect public health with an adequate margin of safety" based on the latest, best-available science. CAA § 109(d), 42 U.S.C. § 7409(d).

An ozone standard averaged over eight hours (8-hour standard) was first established in 1997, replacing a 1-hour standard to account for health impacts over longer periods. This 1997 standard, set at 0.08 parts per million (ppm), effectively became 0.084 ppm because ozone is measured out to three decimal places.

After evaluating the results of more than 1,700 new scientific studies available for this review, EPA concluded that ozone causes adverse health effects at the level of the 1997 standard and below. The more protective 2008 primary (health-based) standard is set at 0.075 ppm or 75 parts per billion (ppb). EPA also strengthened the secondary (welfare-based) 8-hour ozone standard to the level of 75 ppb, making it identical in all respects to the revised primary standard.

What is the process for designating areas?

Section 107(d)(1)(B) of the CAA requires EPA to designate areas as nonattainment, attainment or unclassifiable after promulgating a new NAAQS. 42 U.S.C. § 7407(d)(1)(B). Following promulgation of new or revised air standards, governors are given the opportunity to submit recommendations for attainment and nonattainment areas, supported by the most recent quality-assured monitoring data. EPA provides criteria for states' recommendations for designating areas.

EPA has requested that governors' recommendations for ozone attainment and nonattainment designations be submitted by March 12, 2009, one year after the promulgation of the revised NAAQS. EPA may make modifications and promulgate all or part of a Governor's recommendations. If EPA determines that a modification to the recommendation is necessary, EPA will notify the state no later than 120 days prior to promulgating the designation, and must give the state an opportunity to demonstrate why the potential modification is inappropriate.

The CAA requires EPA to make final ozone designations within two years of promulgation unless there is insufficient information. Therefore, EPA anticipates promulgating designations in March 2010, based on the most recent quality-assured data available at the time.

The anticipated schedule for the recommendations of designation and development of SIPs is as follows:

March 6, 2009	Close comment period on ozone designation recommendations
March 12, 2009	State recommendations due to EPA
November 12, 2009	EPA notifies Pennsylvania if EPA intends to modify recommendations
December 2009	EPA public comment period on draft designations
January 12, 2010	Deadline for states to submit additional information
March 12, 2010	EPA's final designations

The Department held public informational meetings in the DEP regional offices in Pittsburgh and Harrisburg on March 3, 2009 and in Norristown on March 4, 2009 to explain the proposed ozone designation recommendations. The Department accepted public comment on the proposed ozone designation recommendations through March 6, 2009. Notice of the public meetings and comment period was published in the Pennsylvania Bulletin on February 14, 2009.

The ozone State Implementation Plan (SIP) revisions, outlining how each nonattainment area will reduce pollution to meet the standards, will be due to the EPA in March 2013, three years after final designations are expected to be effective. The EPA is expected to classify areas in accordance with CAA § 107(d)(3)(E) at the same time it makes final designations; requirements and attainment dates may vary based on the severity of the problem in the area, as indicated by the area's classification.

What would be the effects of designation as nonattainment?

The CAA contains different regulatory requirements for new or modified stationary sources in areas designated as nonattainment. In addition, the "conformity" provisions of the CAA apply only in nonattainment and maintenance areas; transportation plans and federally funded actions and projects must conform to the SIP in order not to interfere with NAAQS attainment and maintenance.

However, because ground-level ozone and ozone precursor emissions are pervasive and easily transported, Congress established an Ozone Transport Region (OTR), consisting of 13 states and the District of Columbia, stretching from Northern Virginia to Maine. As a result of Pennsylvania's inclusion in the OTR, the entire Commonwealth is considered a "moderate" nonattainment area for purposes of regulating stationary sources and for the specific requirements in the OTR-related portions of the CAA. Pennsylvania has already fulfilled these requirements in its development of the SIPs for the 1-hour standard and the 1997 8-hour ozone standard. Pennsylvania has also adopted many regulations locally and statewide in order to ensure attainment and maintenance both within its borders and to help reduce its contribution to ozone pollution in downwind areas. The Commonwealth is also included in the Clean Air Interstate Rule (CAIR) currently being administered by EPA. The Commonwealth has developed maintenance plans for most of those counties that were designated as nonattainment under, and subsequently attained, the 1997 standard[1]; these plans include specific permanent and enforceable control measures. Measures in effect in a county previously designated as nonattainment will continue to stay in effect even if the area is designated as attainment for the 2008 ozone standard.

To the extent additional state measures are required to attain the new ozone NAAQS, they will be developed by Pennsylvania through a public process as the implementation plan is developed. The Commonwealth will also work with states in areas that affect and are affected by Pennsylvania's air quality to develop cost-effective measures that will not disadvantage Pennsylvania economically.

Pennsylvania's Ozone Designation Recommendations

EPA guidance for ozone designation boundaries. On December 4, 2008, the EPA issued a general guidance memorandum, "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standard." (2008 Area Designations guidance memorandum.) The guidance memorandum describes criteria that EPA suggests states examine when determining their recommended nonattainment area boundaries.

EPA recommends that a state use the statistical areas defined by the U.S. Office of Management and Budget (OMB) as a starting point for its recommendations. In addition, EPA recommends analysis of nine factors for area-specific recommendations (some of which are similar to the criteria OMB uses to establish statistical areas), particularly if the state is recommending deviations from the boundaries of the statistical areas. The nine factors are:

- Air quality data
- Emissions data (location of sources and contribution to ozone concentrations)
- Population density and degree of urbanization
- Traffic and commuting patterns
- Growth rates and patterns

[1] These counties are Erie, Mercer, Cambria, Blair, Centre, Lancaster, Berks, Tioga, Franklin; the Harrisburg-Lebanon-Carlisle area including Cumberland, Dauphin, Lebanon and Perry; the York area including Adams and York; the Allentown-Bethlehem-Easton area including Lehigh, Northampton and Carbon; the Scranton-Wilkes-Barre area including Wyoming, Luzerne, Lackawanna and Monroe.

- Meteorology
- Geography and topography
- Jurisdictional boundaries, including political boundaries, transportation planning organizations and existing nonattainment areas
- Level of control of emission sources

Discussion about statistical areas. Section 107(d)(1) of the CAA defines an area as nonattainment if it is violating the NAAQS or if it is contributing to a violation in a nearby area. 42 U.S.C. § 7407(d)(1). Ozone and ozone precursors are readily transported, so EPA believes it is important to examine emissions across a relatively broad geographic area. EPA recommends using the Core-Based Statistical Area (CBSA) or Combined Statistical Area (CSA) (which includes two or more adjacent CBSAs) associated with the violating monitor(s) as a starting point. A CBSA consists of a county or counties containing at least one urban core plus adjacent counties that have a high degree of social and economic integration with the urban core as measured by commuting ties. If a violating monitor is not located in a CBSA or CSA, EPA recommends using the boundary of the county as the starting point for defining a nonattainment area. EPA used the same conceptual approach in the designation process for the 1997 ozone NAAQS.

The OMB defines statistical areas. The criteria on which statistical areas are based are contained in a notice of decision, *Standards for Defining Metropolitan and Micropolitan Statistical Areas* (65 FR 82228, December 27, 2000). The Department based its nonattainment area boundary recommendations in this document on OMB Bulletin No. 07-01 (December 2006), containing the lists of counties in each statistical area. (The most recent update had no changes affecting Pennsylvania.) The updated list of statistical areas is available at the following website:
www.census.gov/population/www/estimates/metrodef.html

A metropolitan statistical area is a CBSA that has an urban area with a population of at least 50,000. It may or may not include outlying counties. A micropolitan statistical area is a CBSA that has an urban area with a population of at least 10,000, but less than 50,000 (with or without outlying counties). CSAs are formed automatically if two or more adjacent CBSAs have an employment interchange of 25%. If the employment interchange is between 15% and 25% between two or more adjacent CBSAs, a CSA could be formed if local opinion favors the idea. Counties or groups of counties form metropolitan divisions if they have a core population of at least 2.5 million and have commuting ties to adjacent counties.

A county may appear in only one CBSA. If a county is a central county in one CBSA and an outlying county in another, it falls within the CBSA where it is a central county. If a county is an outlying county in two or more CBSAs, the county falls in the CBSA where it has the greatest employment interchange measure.

Example of a Pennsylvania statistical area. The Harrisburg-Carlisle-Lebanon CSA is comprised of two metropolitan statistical areas. Dauphin, Cumberland, and Perry counties comprise one metropolitan statistical area. All three counties have very strong

economic and commuting links with each other so that the area comprises both a core and a CBSA. Lebanon County is also a metropolitan statistical area. It is more of a stand-alone adjacent county that has a core and a separate CBSA. Although Lebanon County is not as closely associated with the first three counties, Lebanon County still has commuting patterns that allow the two metropolitan statistical areas to be added into one CSA.
A map of the OMB statistical areas is provided as Figure C-1 in Appendix C.

Discussion by factor. The Department, on behalf of the Commonwealth, has considered these factors as follows:

Air Quality.

The Commonwealth's recommendations are based on the 2008 8-hour ozone design values (using the 2006, 2007, and 2008 monitored data). Figure B-1 in Appendix B is a map of the 2008 8-hour ozone design values for all of the ozone monitors. The monitors exceeding the 75 ppb standard are displayed in red. Many of the areas that were designated nonattainment for the 1997 8-hour standard in 2005 have monitors that exceed the revised 8-hour ozone standard. Monitors in Altoona (Blair County), Johnstown (Cambria County), State College (Centre County), Tioga (Tioga County), Methodist Hill (Franklin County), and Moshannon (Clearfield County) and the Nanticoke, Wilkes-Barre, Scranton, and Peckville monitors (Luzerne and Lackawanna Counties) do not exceed the 2008 ozone standard, although they exceeded the 1997 standard when designations were made. In addition, one monitor in a county that did not exceed the 1997 8-hour standard when designations were made is in violation of the revised 8-hour ozone standard: the Montoursville monitor (in Lycoming County).

Emissions Data.

An emission inventory is an estimate of the emissions from sources in a particular area. The inventory consists of sources in four sectors: stationary point sources, stationary area sources, highway vehicle sources and nonroad sources.

Table 2 in Appendix B shows the manmade ozone precursor emissions of NOx and VOC by county. Figures B-2 and B-3 in Appendix B show the emissions of NOx and VOC by tons emitted per square mile. These emissions come from the following sources:

- "Stationary sources" (or "point" sources), which are sources for which the Department collects individual emissions-related information. Generally, stationary sources are "major" stationary sources for purposes of permitting, but may also include some smaller stationary sources.

- "Stationary area sources," which are industrial, commercial, and residential sources too small or too numerous to be handled individually, such as commercial and residential open burning, architectural and industrial maintenance coatings

application and clean-up, consumer product use, and vehicle refueling at service stations.

- "Highway vehicles," which include passenger cars and light-duty trucks, other trucks, buses and motorcycles.

- "Nonroad sources," which include a diverse collection of engines and vehicles, including outdoor power equipment, recreational vehicles, farm and construction machinery, lawn and garden equipment, industrial equipment, recreational marine vessels, commercial marine vessels, locomotives, ships, aircraft and many other engines and vehicles.

These emissions are based on the last complete three-year inventory available, for 2005, provided to EPA in 2007. Emissions of ozone precursors had decreased significantly from the prior three-year inventory prepared for 2002. Emissions are expected to be significantly less than the 2005 emissions when the next three-year inventory is prepared for 2008 (in June 2010). Further discussion of emission control measures leading to these decreases is included later in this document.

Population, Urbanization, **Traffic, Commuting, and Growth**.

These related factors are the primary determinates of the OMB's designation of metropolitan and micropolitan statistical areas; therefore, consideration of the statistical area boundary associated with the violating monitor as a starting point for the nonattainment area boundary inherently includes consideration of these factors. This approach is consistent with EPA's 2008 Area Designations guidance memorandum and with the approach used in the designation process for the 1997 ozone standard.

Although the factor of population growth is considered in this analysis, a high rate of growth does not necessarily mean a high absolute increase in emissions. For example, while Pike County has a high rate of growth, population is relatively low and, therefore, emissions are expected to remain an insignificant contribution to the New York City area. Figure B-4 shows population density by county and Figure B-5 shows population growth between 2000 and 2007.

Jurisdictional boundaries including political boundaries, transportation planning organizations and existing nonattainment areas.

Following county boundaries has a natural advantage in that county boundaries are also used by the Commonwealth's regional transportation planning organizations (which are often economic planning organizations, as well). Inventory data for non-point sources is also more accurate and available on the county level. EPA recommends that when a monitor is not located in a CBSA or CSA, the county boundary serve as the starting point for considering the extent of the nonattainment area. Regional planning organizations (metropolitan and rural planning organizations) for transportation established in Pennsylvania often, but do not always, follow OMB's statistical area framework. The

Commonwealth considers continuity of planning areas an important factor since many of the areas recommended for nonattainment for the 2008 8-hour ozone standard already have a maintenance plan, or will have an attainment plan, in place for the 1997 standard.

Meteorology and Topography.

Ozone is a photochemical pollutant, which means it needs sunlight in order to start the chemical transformation of VOCs and NOx into ozone. For this reason, meteorology plays a very important factor in the formation of ozone. Generally, there has been a reduction in the monitored ozone values from when the first 8-hour ozone designations were made until today. This reduction in ozone levels is primarily due to the NOx SIP Call. This region-wide reduction in NOx has helped to limit the level of NOx reaching into the Commonwealth from other states. This can be seen in the monitoring data as the Methodist Hill and Tioga monitors (high elevation monitors) attain the standard. However, ozone transport from other states is still occurring (see the monitoring data at the Hookstown, Florence and Greene County monitors, which are currently not attaining the standard). General wind flow through the entire Commonwealth is from west to east. Wind flow across the eastern portion of the Commonwealth is generally from southwest to northeast. Therefore, the Commonwealth continues to see transport of ozone and its precursors primarily from states to Pennsylvania's south and west.

Current Level of Emissions Control.

Because of the pervasive nature of ozone and the effects of transport of ozone and its precursors into and out of the Commonwealth, most emission controls in Pennsylvania have been adopted for areas larger than single nonattainment areas. There are exceptions, though, primarily for the Pittsburgh-Beaver Valley nonattainment area[2] and the Philadelphia nonattainment area[3]. Level of emission control is a factor for recommending nonattainment boundaries primarily in those two areas.

Highway and nonroad emissions of NOx and VOC have been declining and will continue to decline as national and state controls on new highway vehicles, and national controls on nonroad equipment and motor vehicle fuels, come into effect, and as older vehicles are replaced.

Pennsylvania and other states adopted NOx control regulations in the context of regional control programs for large industrial boilers and internal combustion engines, electric generating units, and cement plants starting in 1997. Most recently, as the result of a December 23, 2008 U.S. Court of Appeals decision, the EPA's Clean Air Interstate Rule (CAIR) covering 28 states and the District of Columbia will remain in place while EPA develops a replacement rule consistent with the Court's July 11, 2008 opinion. CAIR and its accompanying Federal Implementation Plan will govern large electric generating units in the Commonwealth in 2009. CAIR requires reductions in NOx emissions from these

[2] recommended to include Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland counties.

[3] recommended to include Bucks, Chester, Delaware, Montgomery and Philadelphia counties.

electric generating units. The federal and state New Source Review programs and standards for hazardous air pollutants also reduce emissions to provide continued improvements. Pennsylvania has also adopted statewide controls for emissions of VOCs from sources such as consumer products, solvent degreasing, portable fuel containers, and architectural and industrial maintenance coatings.

Additional discussion of the nine factors is included below.

Discussion by Area.

Recommended Nonattainment Areas

The Commonwealth is making the following ozone nonattainment area designation recommendations based upon air quality monitoring data for 2006-2008, the other information described immediately above regarding the factors in the EPA's 2008 Area Designations guidance memorandum, and any additional information described below.

Southwest Pennsylvania:

This region of Pennsylvania is dominated by relatively high terrain cut by numerous river valleys. These valleys tend to trap the precursor pollutants necessary to form ozone. During an ozone generating event, the sun begins to heat the surface in the late morning. With an abundance of NOx and VOC due to the local traffic and regional source production, the sun will react well with the air mass over the region to form ozone.

Pittsburgh-Beaver Valley Nonattainment Area:

The Pittsburgh-Beaver Valley nonattainment area for the 1997 ozone standard consists of Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland counties. The Commonwealth recommends that the Pittsburgh-Beaver Valley nonattainment area remain the same for the 2008 ozone standard.

The recommended nonattainment area boundary is the same as the boundary of the Pittsburgh metropolitan statistical area. Allegheny County has the monitor with the highest design value in this seven-county area of 86 ppb and thus exceeds the standard.

The larger Pittsburgh-New Castle CSA also includes Lawrence County, which is an adjacent single county micropolitan statistical area. The Commonwealth does not recommend including Lawrence County in the nonattainment area. This county has traditionally been a stand-alone planning area. The monitor located in Lawrence County indicates ambient air quality that attains the standard, and the county's micropolitan statistical area status indicates a lower level of social and economic ties to the Pittsburgh metropolitan area counties than counties included in the metropolitan statistical area. The monitor in Lawrence County is significantly below the standard at 71 ppb.

The counties recommended to be in the nonattainment area are included in one single transportation-planning agency as designated by the U.S. Department of Transportation (U.S. DOT) based on economic and commuting patterns. Retaining the existing boundary for this nonattainment area will allow the area to benefit from continuity of planning for the 1-hour and 1997 8-hour standard. The area has two emission control programs that pertain only to this area and not to surrounding counties: a requirement for cleaner gasoline during the ozone season and a requirement for gasoline pumps to control fumes when vehicles are refueling.

The recommended nonattainment area includes three air basins, as defined in 25 *Pa. Code* § 121.1; the Lower Beaver Valley Air Basin, the Allegheny County Air Basin and the Monongahela Valley Air Basin. These basins were developed for purposes of the sulfur compound controls outlined in 25 *Pa. Code* § 123.22, yet they represent existing local boundaries for emission controls in the areas of the Commonwealth where they exist.

Greene County Nonattainment Area:

Pennsylvania is recommending that Greene County be designated as nonattainment. Greene County is not part of any CBSA and, therefore, should be a single county nonattainment area.

Greene County contains a high elevation monitor that tracks the movement of ozone and ozone-related pollutants. The 2008 design value for this monitor was 76 ppb.

As shown in Figures B-2 and B-3, Greene County has moderate NOx emissions density and very low VOC emissions density.

Greene County is a single-county nonattainment area for the 1997 standard. A maintenance plan to maintain that standard through 2018 has been submitted and is under review by EPA. Therefore, designating Greene County a single-county nonattainment area promotes continuity of planning.

Indiana County Nonattainment Area:

A 1997 ozone nonattainment area consisted of Indiana and Clearfield counties. The Commonwealth recommends a nonattainment area for the 2008 ozone standard that is composed of only Indiana County. The Indiana County monitor exceeds the 2008 ozone standard with a design value of 76 ppb.

Indiana County is defined as its own micropolitan statistical area. This indicates a low level of social and economic ties to Clearfield County. The Clearfield County monitor is not exceeding the 2008 ozone standard and has a 2008 design value of 73 ppb. Clearfield County has very low emissions density, as shown in Figures B-2 and B-3 in Appendix B. In addition, emissions from sources located in Clearfield County would not be expected to have a significant impact on the Indiana County monitor because they are located

predominantly downwind of the violating monitor. As shown in Figures B-4 and B-5, Clearfield County has a low population density, and both Indiana and Clearfield counties have negative population growth trends. The two counties are also located in separate transportation planning regions.

Northwest Pennsylvania:

Youngstown-Warren-Sharon Nonattainment Area:

The Commonwealth recommends that Mercer County be designated nonattainment for the 2008 ozone standard. The monitor located in the county exceeds the standard with a design value of 80 ppb. Transport of pollutants into Mercer County is generally from the west (from the Youngstown region).

Mercer County is the only Pennsylvania county included in the Youngstown-Warren-Boardman metropolitan statistical area. Separate maintenance plans for the 1997 standard were approved for the Pennsylvania and Ohio portions of the area. The Commonwealth has no objection to Ohio's recommendation that Mercer County be included in the interstate nonattainment area, as it has been for many years.

Erie County Nonattainment Area:

The Commonwealth recommends that Erie County be designated nonattainment. The monitor located in the county exceeds the standard with a design value of 78 ppb. Erie County is a metropolitan statistical area that does not include other adjacent counties, indicating a low level of commuting and economic ties with adjacent counties.

The ozone monitor in Erie is affected by the local meteorology within Erie County. Lake Erie sits off to the north and west. This lake contributes to the lake and land breezes that develop across Erie County. The topography to the south and east of Erie helps to trap pollutants in the Erie area. Because Erie is between a lake and a mountain range, the ozone monitored in Erie is unique to this portion of the Commonwealth.

The area has consistently been designated as a single-county nonattainment area and has an approved maintenance plan for the 1997 ozone standard.

Northcentral Pennsylvania:

Williamsport Nonattainment Area:

The Commonwealth recommends that Lycoming County be designated nonattainment for the 2008 ozone standard. The monitor located in Lycoming County exceeds the 2008 ozone standard with a design value of 77 ppb. The Williamsport area was designated as attainment for the 1997 ozone standard.

The OMB defines a Williamsport metropolitan statistical area that consists of only Lycoming County. The larger Williamsport-Lock Haven CSA also includes Clinton County, which is an adjacent single county micropolitan statistical area. The Commonwealth does not recommend including Clinton County in the nonattainment area.

Clinton County's micropolitan statistical area status indicates that it has its own urban core with a relatively lower level of commuting and other social and economic ties to Lycoming County. Clinton County has very low NOx and VOC emissions densities, low population density, and a negative population growth trend.

Based on these factors, the Commonwealth concludes that it is reasonable to exclude Clinton County from the recommended nonattainment area. Clinton County is highly unlikely to contribute significantly to nonattainment in the Williamsport nonattainment area now or in the foreseeable future.

Southcentral Pennsylvania:

The region is comprised of four 1997 nonattainment areas that lie south of Blue Mountain, a mountain that marks the southern border of the Allegheny Mountains. This physical boundary influences regional wind patterns and often poses a barrier to maritime air masses originating from the Atlantic Ocean. Several broad valleys stretch across the region, mainly aligned from east to west. These valleys are separated by a mountain range to the north and west. Population, population density and population growth are relatively consistent across the region.

The Department has defined four air basins under 25 *Pa. Code* §121.1 that roughly correspond to the current and recommended ozone nonattainment areas in southcentral Pennsylvania. These include the Reading Air Basin in Berks County, the Lancaster Air Basin in Lancaster County, the Harrisburg Air Basin in Cumberland and Dauphin counties and the York Air Basin in York County.

Harrisburg-Lebanon-Carlisle Nonattainment Area:

Cumberland, Dauphin, Perry, and Lebanon counties were designated as one nonattainment area for the 1997 ozone standard and a maintenance plan for the area is in place. The Commonwealth is recommending that these counties be included in one nonattainment area for the 2008 ozone standard. The design value for the area is 79 ppb. There are two monitors in the area, with the design (highest) monitor located in Dauphin County.

The area is defined as a CSA consisting of two metropolitan statistical areas. The Harrisburg metropolitan statistical area includes Cumberland, Dauphin, and Perry counties. While Lebanon County is its own metropolitan statistical area and the transportation planning organizations are also separate, there is significant commuting between these areas. There is no monitor in Lebanon County.

Lancaster Nonattainment Area:

The Commonwealth recommends that Lancaster County be designated nonattainment for the 2008 ozone standard. It has a design value of 82 ppb. Lancaster County is a single county metropolitan statistical area based on economic, political and commuting patterns. This area is served by a single-county transportation-planning agency.

Lancaster County has low NOx and moderate VOC emissions density. The population density in Lancaster County is high with a positive growth trend.

While there are commuting ties to other metropolitan statistical areas in Southcentral Pennsylvania, Lancaster County has a political and cultural identity of its own. Designating it as a single-county nonattainment area maintains continuity of planning since the county has an approved maintenance plan for the 1997 ozone standard.

York Area:

The Commonwealth recommends including York and Adams counties in the nonattainment area for the 2008 ozone standard. The design value for this area is 80 ppb. These counties comprised one nonattainment area for the 1997 ozone standard, and the area has an approved maintenance plan for the 1997 ozone standard. Maintaining these boundaries allows for continuity of planning and is consistent with the OMB's designation of York and Adams counties as the York-Hanover-Gettysburg CSA. York and Adams are in different transportation planning organizations. However, since the Pennsylvania Department of Transportation (PennDOT) does the technical work for Adams County related to air quality, the inclusion of this county has not posed a problem in the past.

Reading Nonattainment Area:

The Commonwealth recommends that Berks County be designated as a single-county nonattainment area for the 2008 ozone standard.

The OMB defines a Reading metropolitan statistical area that consists of only Berks County. Although the OMB added Berks County to the Philadelphia CSA in 2006 because of increasing commuting ties to the larger area, Berks traditionally has its own planning functions, including its own transportation planning organization. In addition, the Reading Air Basin defined in 25 *Pa. Code* §121.1 covers portions of Berks County and no other county. Therefore, the county should not be included in the Philadelphia nonattainment area.

Note that in Figure B-1, a 2008 design value was not calculated for Berks County because of incomplete data due to several monitor relocations.[4] In particular, there was no monitoring done during June 2007, a likely time period for high ozone concentrations. However, previous design values (2005 and earlier) indicated that the county would exceed the 2008 standard. The design value for 2005 was 80 ppb.

Berks County has low VOC and NOx emissions density (see Figures B-2 and B-3). As shown in Figures B-4 and B-5, Berks County has a relatively high population density that is growing. Most of the counties adjacent to Berks County are recommended to be included in other nonattainment areas. Bordering 1997 ozone nonattainment areas include: Harrisburg-Lebanon-Carlisle area to the west, Lancaster to the southwest, the Philadelphia area to the southeast, and the Allentown-Bethlehem-Easton area to the northeast. To the extent that emissions from adjacent counties may contribute to ozone concentrations in Berks County or that emissions from Berks County contribute to ozone concentrations downwind, the contribution will be lessened by controls put in place in those separate nonattainment areas and statewide.

Berks County was designated as a single nonattainment area for the 1997 8-hour ozone standard; it subsequently attained the standard and has an approved maintenance plan in place.

Eastern Pennsylvania:

Allentown-Bethlehem-Easton Nonattainment Area:

The Commonwealth recommends designating Carbon, Lehigh and Northampton counties as one nonattainment area for the 2008 ozone standard. The recommended nonattainment area boundary is the same as the boundary for the 1997 ozone standard. The Allentown-Bethlehem-Easton area historically has strong planning and economic ties and is designated by OMB as a metropolitan statistical area.

The region is bounded on the north by Blue Mountain, providing a significant physical barrier. A broad valley runs from east to west connecting both Lehigh and Northampton counties.

Maintaining the 1997 boundary promotes continuity of planning. Lehigh and Northampton counties comprise the metropolitan transportation planning organization, while Carbon County is part of a five-county rural planning organization. However,

[4] There are two monitors in Berks County. The Kutztown monitor only operated in 2008. The Reading monitor also did not have three years of complete data because the official site location of the monitor has changed three times over the past two years. The first monitor location (under AIRS # 420110009) stopped operation on May 15, 2006 due to the lease not being renewed at the site. The monitor was moved to a temporary location (AIRS # 420110010) on May 15, 2006 and stayed there until May 31, 2007 until a more permanent location was found. A more permanent location was found and the new monitor location (AIRS # 410110011) started operating on July 1, 2007. With the monitor location changing three times over a two year span, the Department was unable to calculate a 2008 design value according to EPA guidelines.

since PennDOT does the technical work for Carbon County related to air quality, the inclusion of this county has not posed a problem in the past.

The Department's Allentown-Bethlehem-Easton Air Basin defined in 25 *Pa. Code* § 121.1 covers portions of Lehigh and Northampton counties.

Philadelphia Nonattainment Area:

The Pennsylvania portion of the existing 8-hour ozone nonattainment area consists of Bucks, Chester, Delaware, Montgomery and Philadelphia counties. The Commonwealth is recommending that these counties be designated as nonattainment for the 2008 ozone standard. The monitor with the highest design value in the five-county area is located in Bucks County and has a design value of 92 ppb.

There are no major topographic features to restrict airflow present in this region of the state. Some minor hills separate this region from the Lehigh Valley area to the north. Emissions and population density are relatively uniform across the region.

All of these counties are included in the interstate Philadelphia-Camden-Vineland CSA. The Commonwealth has no objection to these counties being included in an interstate nonattainment area as in the past.

Population density throughout the five-county area is high but shows a decreasing growth trend, with the exception of Chester County. As indicated by the area's metropolitan statistical area status, commuting and economic ties throughout the area exist. Figure B-5 (showing population growth) displays a decrease in population in Philadelphia County and an increase in the suburbs.

The transportation planning agency for the area covers the five Pennsylvania counties as well as a number of counties in New Jersey. The nonattainment area includes the Department's inner and outer Southeast Air Basins, as defined in 25 *Pa. Code* § 121.1. The five counties have been included in a Philadelphia multi-state nonattainment area since ozone designations were first made under the CAA.

There are a number of emission control strategies that clearly differentiate the five-county area from other surrounding nonattainment areas, including Berks County. These primarily arise from the area's former designation as "severe" under the 1-hour standard and include:

- a more stringent major source definition for new source review and permitting;
- a requirement for federal reformulated gasoline, as mandated by federal statute;
- a requirement for Stage II gasoline pumps;
- NOx controls for smaller sources than in other areas; and
- a more stringent vehicle emission inspection/maintenance program.

Monroe County Area:

The Commonwealth recommends that Monroe County be designated as a single county nonattainment area. The Monroe County monitor exceeds the 2008 ozone standard with a 2008 design value of 76 ppb.

In EPA's designations for the 1997 ozone standard, Monroe County was included in the Scranton-Wilkes-Barre nonattainment area, along with Wyoming, Lackawanna, and Luzerne Counties. All of the monitors in those counties now attain the standard.

The OMB designates Monroe County as a micropolitan statistical area that is not associated with any CSA. This indicates a rather low level of economic and social ties to the Scranton-Wilkes-Barre metropolitan area (Lackawanna, Wyoming, and Luzerne) to the northwest and the Allentown-Bethlehem-Easton metropolitan area (Carbon, Lehigh, and Northampton) to the south. In examining commuting patterns, census data show that 9431 people in Monroe County travel to and from the Allentown area for work and 5457 people in Monroe County travel to and from the Scranton-Wilkes-Barre area for work. This data suggests that while Monroe County is not highly tied to either of its neighboring metropolitan areas, it is more closely associated with the Allentown-Bethlehem-Easton metropolitan area.

The monitor within Monroe County has only three years of data associated with it, so performing a long-term analysis to see how the monitored data is trending with time is difficult. The 2008 design value for that monitor, 76 ppb, is barely above the standard. Examining back trajectories of the 11 exceedance days (days when ozone concentrations are above 75 ppb identified in the three years), nine days showed low-level flow over the Allentown-Bethlehem-Easton area and only two showed low-level flow over the Scranton-Wilkes-Barre area. Figure B-6 displays these trajectories over all 11 exceedance days.

Therefore, the Commonwealth recommends designating Monroe as a single-county nonattainment area.

Highlights for Specific Areas Recommended As Attainment

Pike County:

The area does not have a monitor, but is part of the New York City CSA. Historically, the county has <u>not</u> been included as part of the New York City nonattainment area. While population in Pike County is growing, population is still very low. Pike County is now and likely to remain an insignificant contributor to New York City nonattainment. The Commonwealth, therefore, recommends that it be designated as attainment and not be included in any designation for the New York City area as nonattainment for the ozone standard.

Scranton-Wilkes-Barre Area:

As discussed above in the recommendation for Monroe County, the Scranton-Wilkes-Barre metropolitan area consists of Lackawanna, Luzerne, and Wyoming counties. The monitors in these counties are all measuring ozone levels that meet the standard. Although the previous ozone nonattainment planning area also included Monroe County, which the Commonwealth recommends be designated nonattainment, the Commonwealth has assessed the factors provided by EPA in determining nonattainment area boundaries and has concluded that Monroe County should not be grouped with the counties in the Scranton-Wilkes-Barre metropolitan area. Therefore, the Commonwealth is recommending designation of Lackawanna, Luzerne, and Wyoming counties as attainment.

Clearfield County:

The Commonwealth recommends designating Clearfield County as attainment. As discussed in the recommendation for Indiana County, the original ozone nonattainment area included Indiana and Clearfield counties. The Clearfield County monitor is in attainment of the new standard with a 2008 design value of 73 ppb. Clearfield County has very low emissions density as shown in Figures B-2 and B-3 located in Appendix B. Emissions from sources located in Clearfield County would not be expected to have a significant impact on the Indiana County monitor because they are located predominantly downwind of the violating monitor.

Clearfield County is defined as its own micropolitan statistical area. This indicates a low level of social and economic ties to Indiana County. The two counties are also located in separate transportation planning regions.

Lawrence County:

Although included in the larger Pittsburgh-New Castle CSA, Lawrence County is a single county micropolitan statistical area. The Commonwealth does not recommend including Lawrence County in the Pittsburgh-Beaver Valley nonattainment area. Lawrence County has traditionally been a stand-alone planning area. The monitor located in New Castle indicates ambient air quality that attains the standard, and the county's micropolitan statistical area status indicates a lower level of social and economic ties to the Pittsburgh metropolitan area counties than the ties of the counties included in the metropolitan statistical area.

Additional Information

Appendix A includes a table and a map that describe the recommendations for the 2008 ozone nonattainment areas, and a map of the designations for the 1997 ozone standard. The list of nonattainment and attainment areas in Table 1 includes all 67 Pennsylvania counties.

Appendices B and C include documenting data and material that address the EPA's designation criteria pertaining to air quality, emissions and population factors, as well as a map of the OMB statistical areas in Pennsylvania.

ACRONYMS AND TERMS

CAA	Clean Air Act
CSA	Combined Statistical Area
DEP	Department of Environmental Protection (Pennsylvania)
EPA	Environmental Protection Agency (United States)
NAAQS	National Ambient Air Quality Standards
NO_x	oxides of nitrogen
OMB	Office of Management and Budget (United States)
PM	particulate matter
ppb	parts per billion
SIP	State Implementation Plan
USDOT	United States Department of Transportation
VOC	volatile organic compounds

References

EPA, Final Rule, "*National Ambient Air Quality Standards for Ozone*," (73 FR 16436; March 27, 2008)

EPA, "*Boundary Guidance on Air Quality Designations for the 8-Hour Ozone National Ambient Air Quality Standards*," Memorandum from John S. Seitz, March 28, 2000.

EPA, "*Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards*," Memorandum from Robert J. Meyers, December 4, 2008.

EPA Area Designations for the 2006 24-Hour $PM_{2.5}$ NAAQS - Technical Information, Summary of 2005 NEI: http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#F-2

EPA Aerometric Information Retrieval System (AIRS), Air Quality System, http://www.epa.gov/air/data/index.html

U.S. Census Bureau, Census 2000, County-to-county worker flow files: http://www.census.gov/population/www/cen2000/commuting/index.html

U.S. Department of Commerce, Bureau of the Census, FactFinder, "*Subcounty Population Estimate Data Sets*," available from http://factfinder.census.gov, accessed January 2009

Office of Management and Budget, Notice of Decision, "*Standards for Defining Metropolitan and Micropolitan Statistical Areas*," (65 FR 82228, December 27, 2000).

Office of Management and Budget, Bulletin No. 07-01, "*Update of Statistical Area Definitions and Guidance on Their Uses*," December 18, 2006

U.S. Census Bureau, Geography Division, Cartographic Products Management Branch, Metropolitan and Micropolitan Statistical Areas Wall Maps, November 2007 http://www.census.gov/geo/www/maps/msa_maps2007/us_wall_1107.html

U.S. Census Bureau, Population Division, Updated List of Statistical Areas available at: www.census.gov/population/www/estimates/metrodef.html

APPENDIX A
Recommended Designations

Table 1: Recommended Designations in Pennsylvania

Figure A-1: Map of Recommended Designations in Pennsylvania

Figure A-2: Map of Nonattainment Areas for 1997 Standard (EPA, 2005)

TABLE 1. List of Recommended Designations

NOTE: Design Value is the 3-year average (2006-2008) of the 4th Highest Maximum for 8-Hour Ozone

Pennsylvania Areas	County Design Values	Recommended Designation
DEP's Southeast Region		
Philadelphia-Camden-Vineland PA-NJ-DE-MD Combined Statistical Area		
Bucks County	92 ppb	Nonattainment
Chester County	82 ppb	Nonattainment
Delaware County	83 ppb	Nonattainment
Montgomery County	84 ppb	Nonattainment
Philadelphia County	89 ppb	Nonattainment
DEP's Southcentral Region		
Altoona Metropolitan Statistical Area		
Blair County	72 ppb	Attainment
Harrisburg-Carlisle-Lebanon Combined Statistical Area		
Harrisburg-Carlisle Metropolitan Statistical Area		
Cumberland County	No monitor	Nonattainment
Dauphin County	79 ppb	Nonattainment
Perry County	77 ppb	Nonattainment
Lebanon Metropolitan Statistical Area		
Lebanon County	No monitor	Nonattainment
Lancaster Metropolitan Statistical Area		
Lancaster County	82 ppb	Nonattainment
Reading Metropolitan Statistical Area		
Berks County	Incomplete**	Nonattainment
York-Hanover-Gettysburg Combined Statistical Area		
York-Hanover Metropolitan Statistical Area		
York County	80 ppb	Nonattainment
Gettysburg Micropolitan Statistical Area		
Adams County	77 ppb	Nonattainment

Pennsylvania Areas	County Design Values*	Recommended Designation
Chambersburg Micropolitan Statistical Area		
Franklin County	72 ppb	Attainment
Huntingdon Micropolitan Statistical Area		
Huntingdon County	No monitor	Attainment
Remaining Counties in DEP's Southcentral Region		
Bedford County	No monitor	Attainment
Fulton County	No monitor	Attainment
Juniata County	No monitor	Attainment
Mifflin County	No monitor	Attainment
DEP's Southwest Region		
Pittsburgh-New Castle Combined Statistical Area		
Pittsburgh Metropolitan Statistical Area		
Allegheny County	86 ppb	Nonattainment
Armstrong County	80 ppb	Nonattainment
Beaver County	78 ppb	Nonattainment
Butler County (Part of DEP's Northwest Region)	No monitor	Nonattainment
Fayette County	No monitor	Nonattainment
Washington County	76 ppb	Nonattainment
Westmoreland County	76 ppb	Nonattainment
New Castle Micropolitan Statistical Area		
Lawrence County (Part of DEP's Northwest Region)	71 ppb	Attainment
Johnstown Metropolitan Statistical Area		
Cambria County	70 ppb	Attainment
Somerset Micropolitan Statistical Area		
Somerset County	No monitor	Attainment
Indiana Micropolitan Statistical Area		
Indiana County	76 ppb	Nonattainment

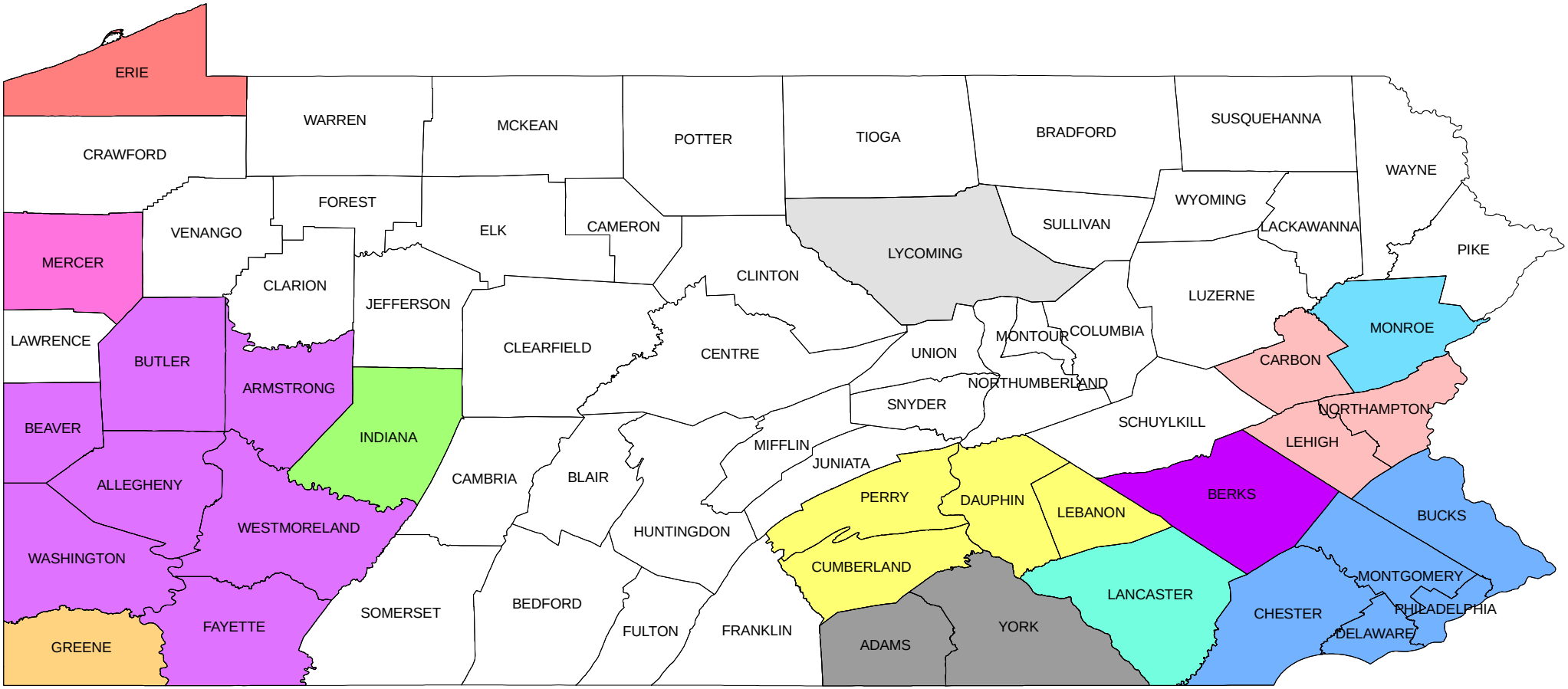
Pennsylvania Areas	County Design Values*	Recommended Designation
Remaining Counties in DEP's Southwest Region		
Greene County	76 ppb	Nonattainment
DEPs Northwest Region		
Erie Metropolitan Statistical Area		
Erie County	78 ppb	Nonattainment
Youngstown-Warren-Boardman Metropolitan Statistical Area		
Mercer County	80 ppb	Nonattainment
Meadville Micropolitan Statistical Area		
Crawford County	No monitor	Attainment
St. Marys Micropolitan Statistical Area		
Elk County	No monitor	Attainment
Bradford Micropolitan Statistical Area		
McKean County	No monitor	Attainment
Oil City Micropolitan Statistical Area		
Venango County	No monitor	Attainment
Warren Micropolitan Statistical Area		
Warren County	No monitor	Attainment
Remaining Counties in DEP's Northwest Region		
Clarion County	No monitor	Attainment
Jefferson County	No monitor	Attainment
Forest County	No monitor	Attainment
DEP's Northcentral Region		
State College Metropolitan Statistical Area		
Centre County	75 ppb	Attainment

Pennsylvania Areas	County Design Values*	Recommended Designation
Williamsport-Lock Haven Combined Statistical Area		
Williamsport Metropolitan Statistical Area		
Lycoming County	77 ppb	Nonattainment
Lock Haven Micropolitan Statistical Area		
Clinton County	No monitor	Attainment
Bloomsburg-Berwick Micropolitan Statistical Area		
Columbia County	No monitor	Attainment
Montour County	No monitor	Attainment
DuBois Micropolitan Statistical Area		
Clearfield County	73 ppb	Attainment
Sunbury-Lewisburg-Selinsgrove Combined SA		
Lewisburg Micropolitan Statistical Area		
Union County	No monitor	Attainment
Selinsgrove Micropolitan Statistical Area		
Snyder County	No monitor	Attainment
Sunbury Micropolitan Statistical Area		
Northumberland County	No monitor	Attainment
Remaining Counties in Northcentral Region		
Bradford County	No monitor	Attainment
Cameron County	No monitor	Attainment
Potter County	No monitor	Attainment
Sullivan County	No monitor	Attainment
Tioga County	73 ppb	Attainment
DEP's Northeast Region		
Allentown-Bethlehem-Easton Metropolitan Statistical Area		
Carbon County	No monitor	Nonattainment
Lehigh County	80 ppb	Nonattainment
Northampton County	78 ppb	Nonattainment

Pennsylvania Areas	County Design Values*	Recommended Designation
Scranton-Wilkes-Barre-Hazleton Metropolitan Statistical Area		
Lackawanna County	74 ppb	Attainment
Luzerne County	75 ppb	Attainment
Wyoming County	No monitor	Attainment
New York-Newark-Edison Metropolitan Statistical Area		
Pike County	No monitor	Attainment
East Stroudsburg Micropolitan Statistical Area		
Monroe County	76	Nonattainment
Remaining Counties in Northeast Region		
Schuylkill County	No monitor	Attainment
Susquehanna County	No monitor	Attainment
Wayne County	No monitor	Attainment

** EPA expects three years of complete data to designate attainment areas.

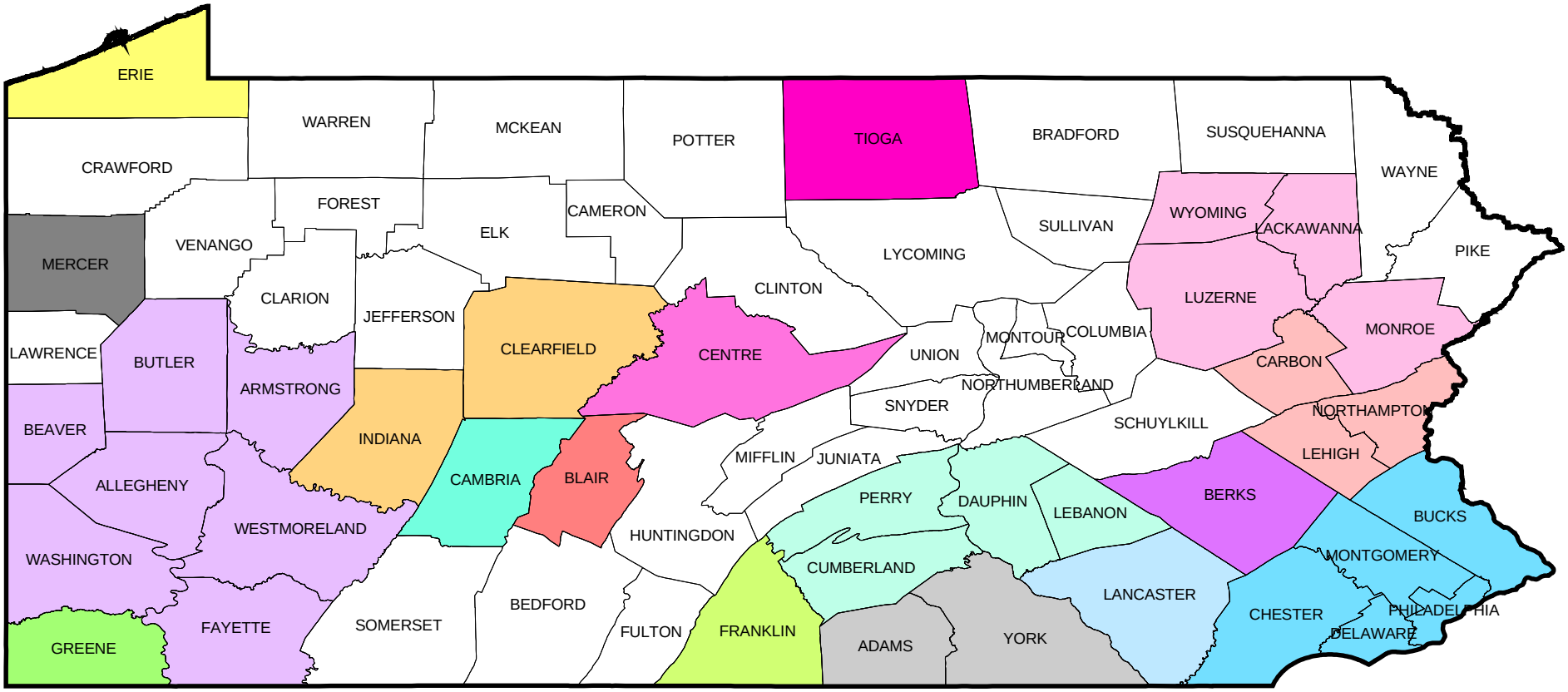
Figure A-1
Recommended 8-Hour Ozone Nonattainment Areas



Proposed 8-Hour Ozone Designation Areas

- Allentown-Bethlehem-Easton
- Erie
- Greene
- Harrisburg-Lebanon-Carlisle
- Indiana
- Lancaster
- Monroe
- Philadelphia
- Pittsburgh-Beaver Valley
- Reading
- Youngstown-Warren-Sharon
- Williamsport
- York

Figure A-2
Original Designation of the 8-Hour Ozone Standard for PA
Based on the 1997 standard (EPA, 2005)



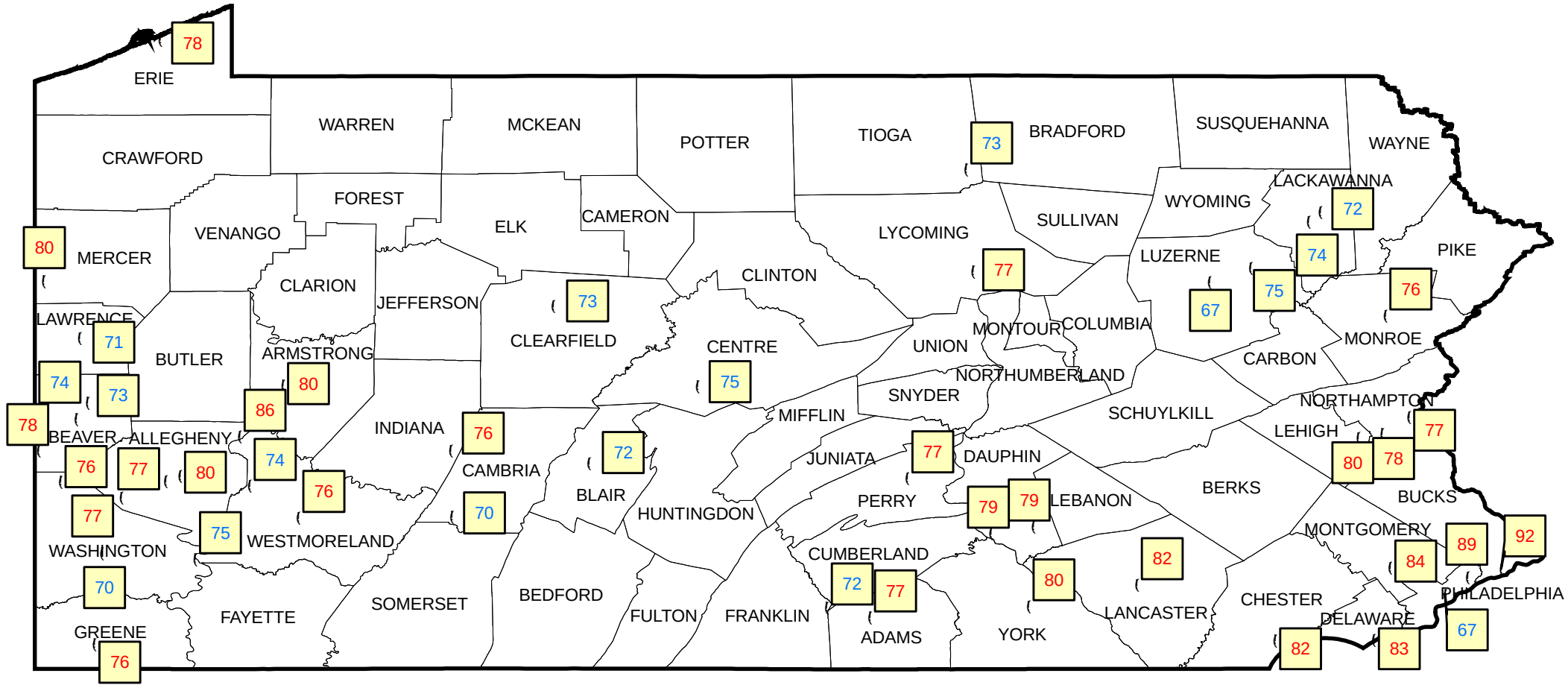
Nonattainment Areas

- Allentown-Bethlehem-Easton
- Altoona
- Clearfield-Indiana
- Erie
- Franklin Co
- Greene Co
- Harrisburg-Lebanon-Carlisle
- Johnstown
- Lancaster
- Philadelphia-Wilmington-Atlantic City
- Pittsburgh-Beaver Valley
- Reading
- Scranton-Wilkes-Barre
- State College
- Tioga Co
- York
- Youngstown-Warren-Sharon

APPENDIX B:
Supporting Documentation

Figure B-1: 2008 8-Hour Design Values
Figure B-2: NOx Emissions Density by County
Figure B-3: VOC Emissions Density by County
Figure B-4: Population Density by County
Figure B-5: Population Growth by County
Figure B-6: 2006 Trajectories
Table 2: Emissions in Tons per Year for 2005 by County

Figure B-1
2008 8-Hour Ozone Design Values

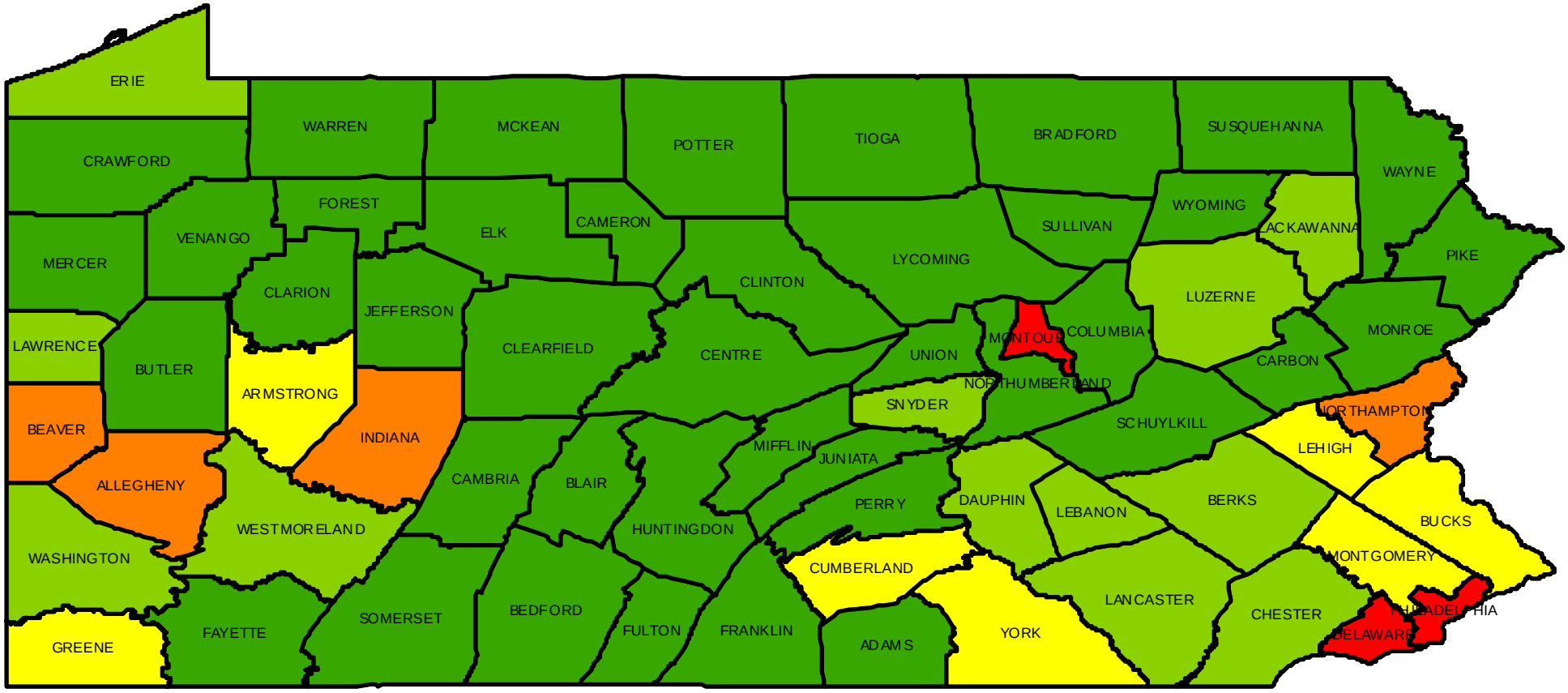


Appearing in Red - 2008 8-Hour Ozone Design Values Above the Revised Standard of 75 ppb

Appearing in Blue - 2008 8-Hour Ozone Design Values At or Below the Revised Standard of 75 ppb

Figure B-2
NOx Emissions Density Map by County

Emissions Based on 2005 NEI Data

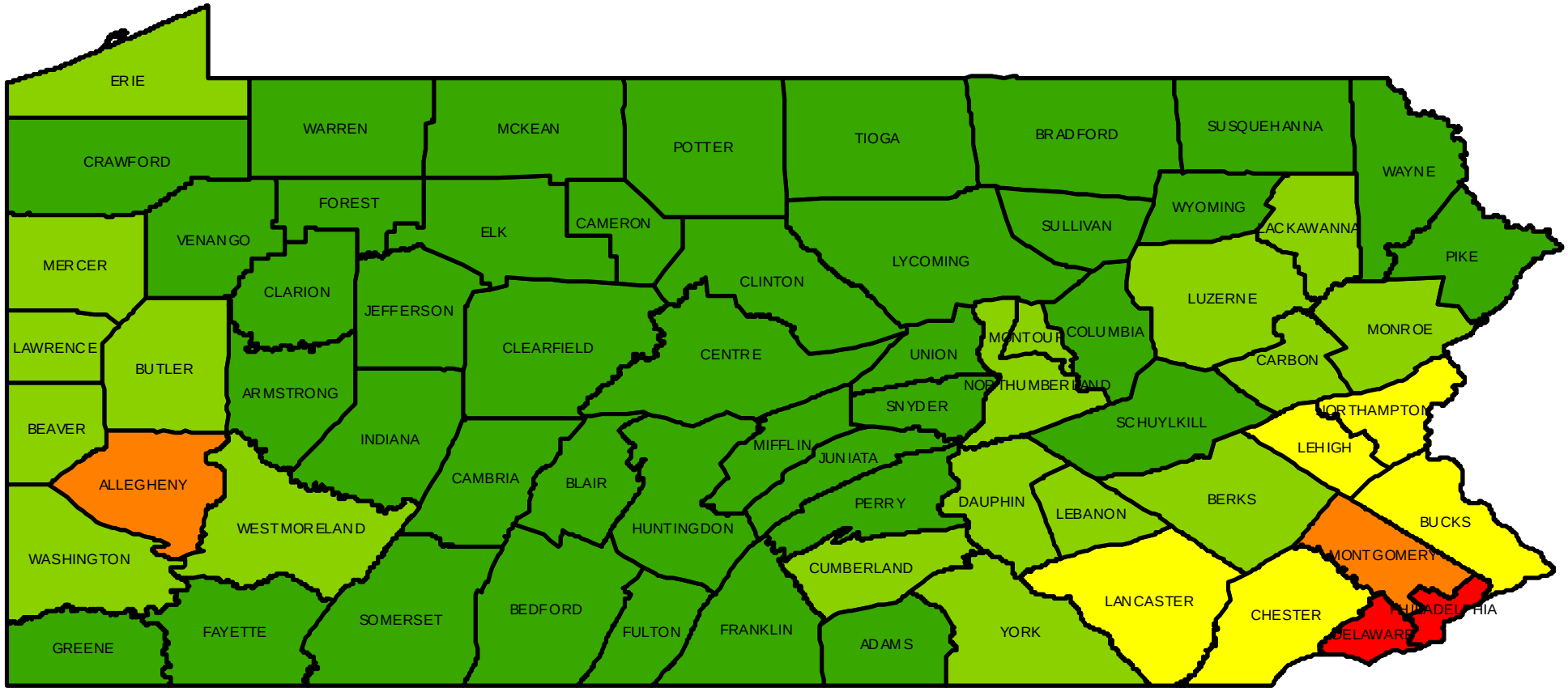


NOx Emissions Density (tons per year per square mile)

0 - 10 | 10 - 25 | 25 - 50 | 50 - 100 | 100 - 300

Figure B-3
VOC Emissions Density Map by County

Emissions Based on 2005 NEI Data



VOC Emissions Density (tons per year per square mile)

0 - 10 | 10 - 25 | 25 - 50 | 50 - 100 | 100 - 300

Figure B-4
Population Density Map by County

Population Based on 2007 US Census Results

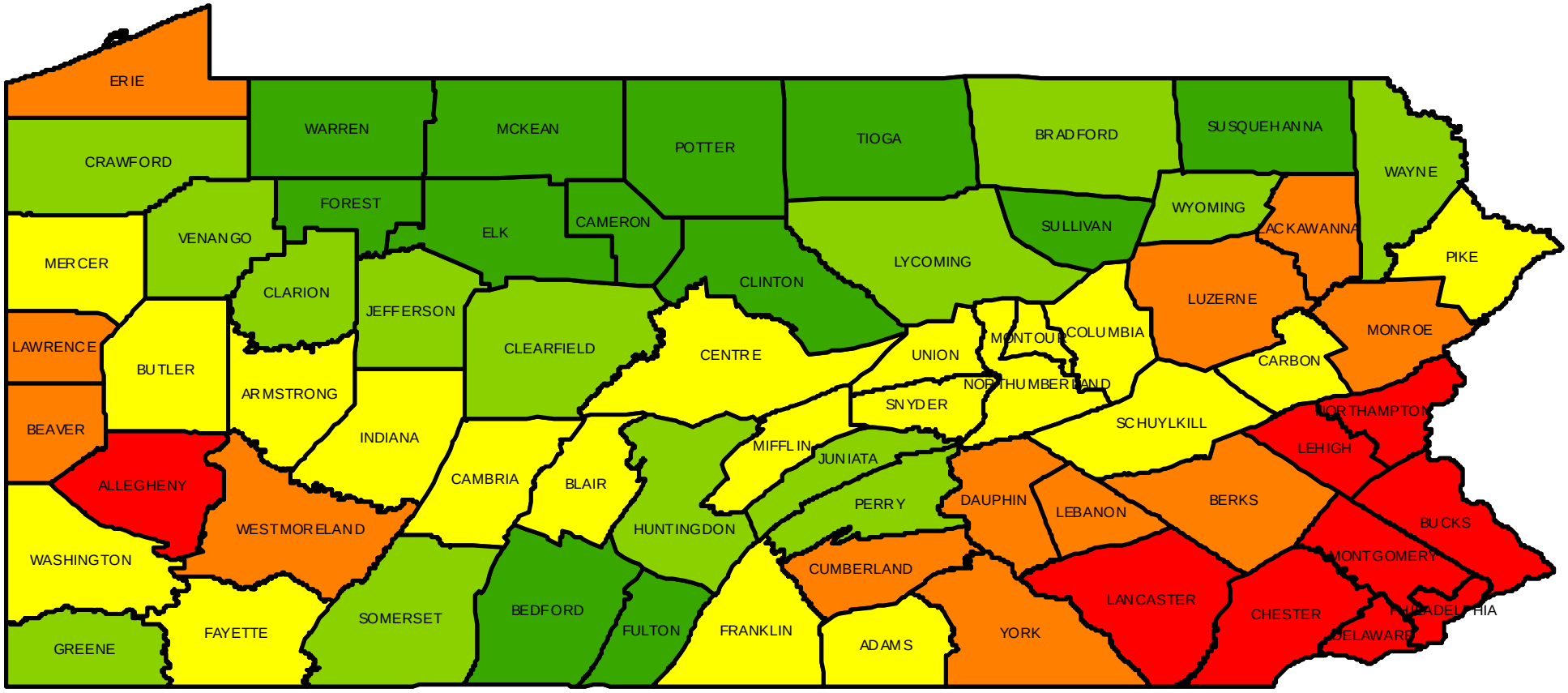
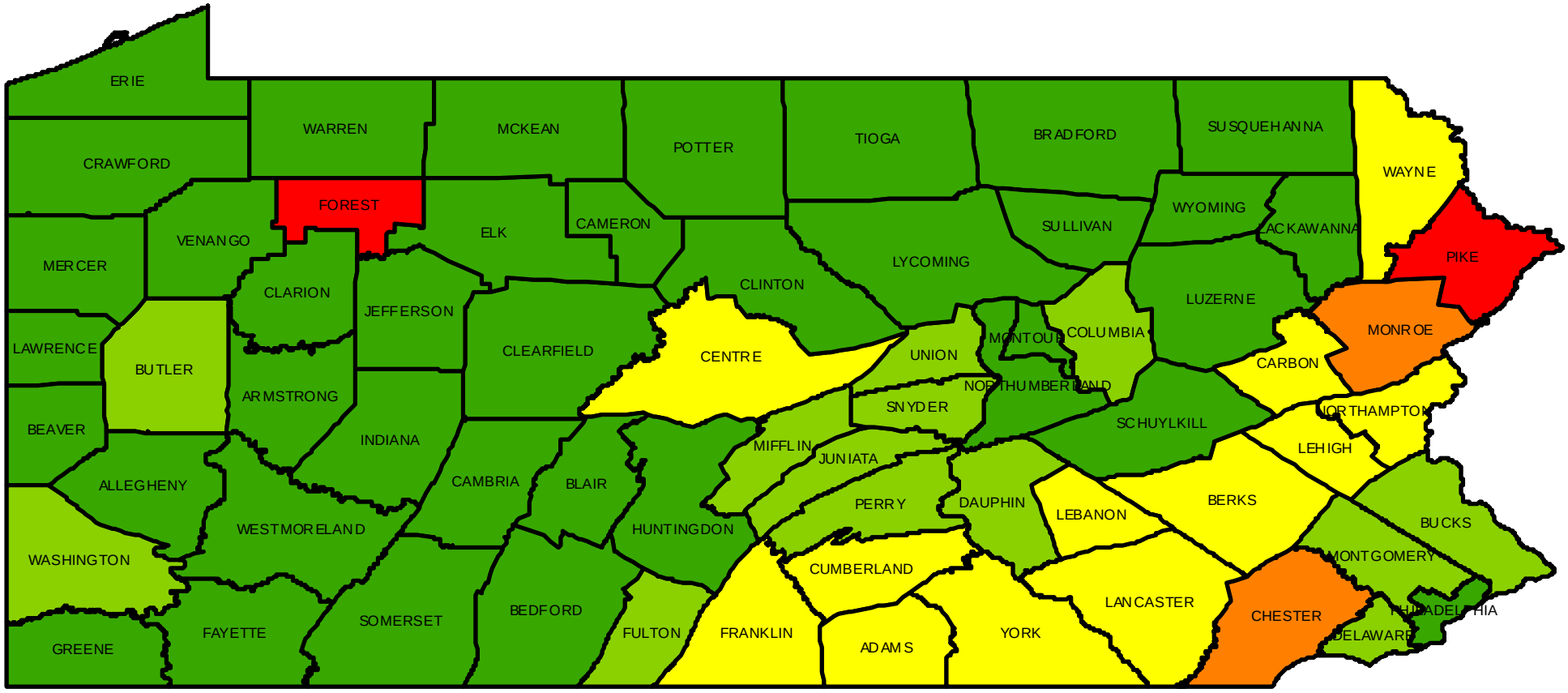


Figure B-5
Population Growth Map by County

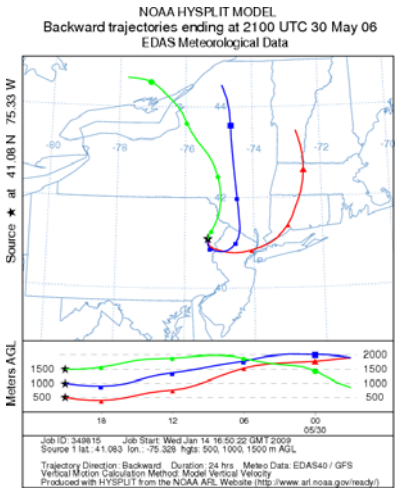
Population Trends Based on 2000 and 2007 US Census Results



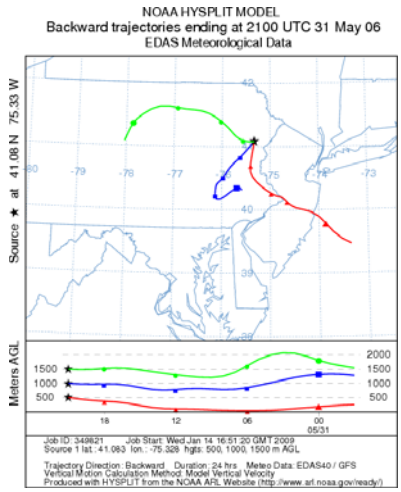
Population Growth (% Change: 2000 to 2007)

-12% - 0% | 0% - 5% | 5% - 10% | 10% - 20% | Above 20%

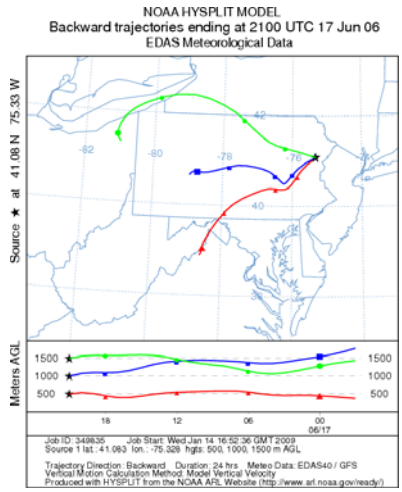
Figure B-6
2006 Trajectories
Total of 5 Exceedances
(Marked by Date and Maximum 8-hour Ozone Concentration)



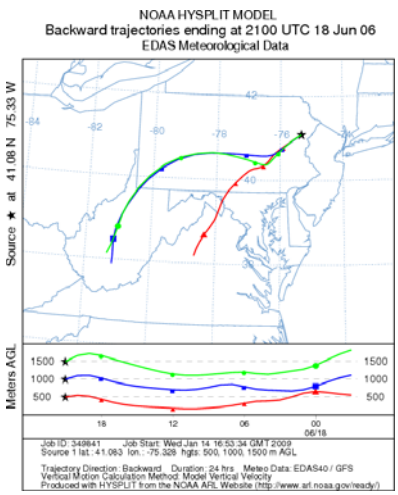
May 30 – 82 ppb



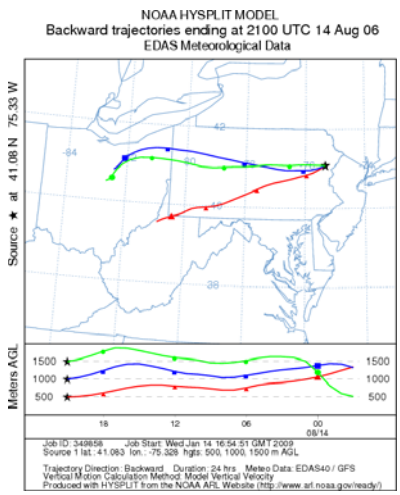
May 31 – 76 ppb



June 17 – 82 ppb

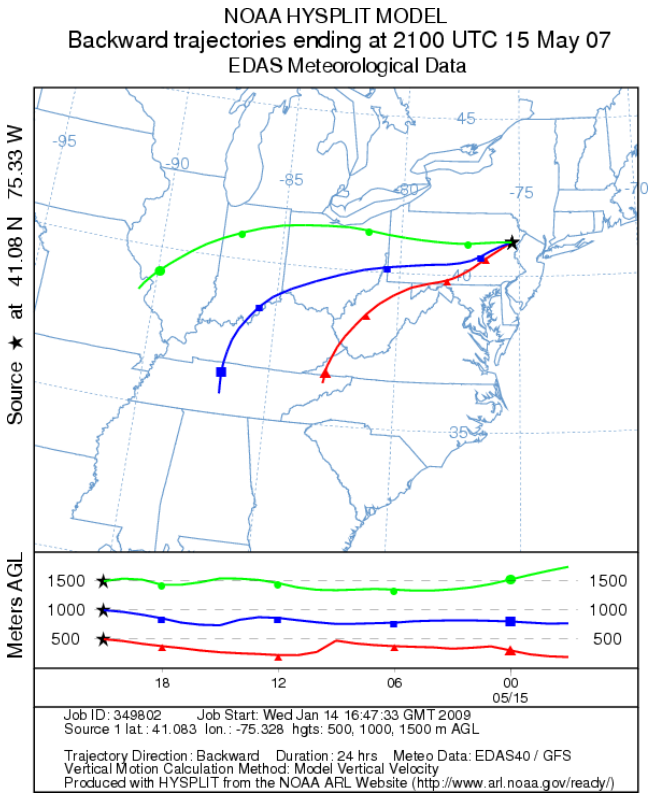


June 18 – 77 ppb

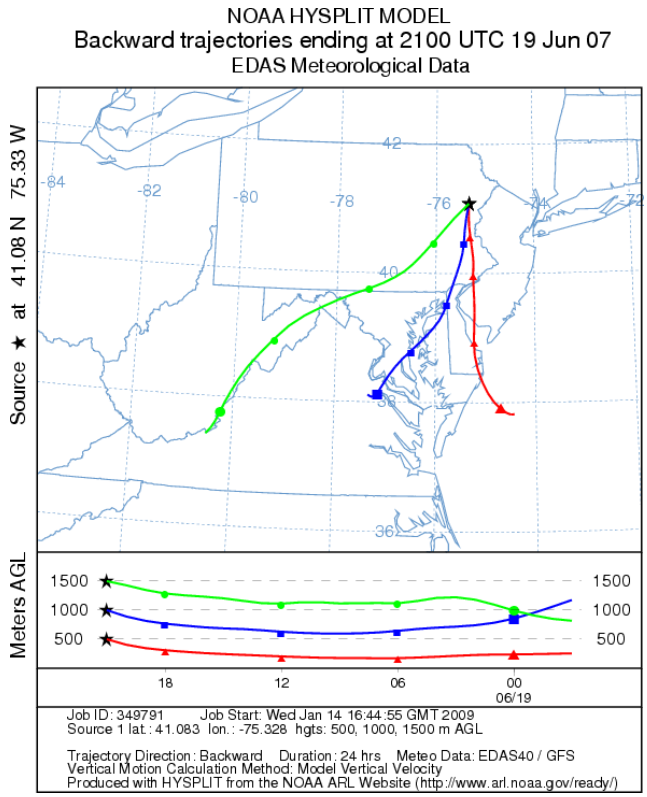


August 14 – 77 ppb

Figure B-6
2007 Trajectories
Total of 2 Exceedances
(Marked by Date and Maximum 8-hour Ozone Concentration)

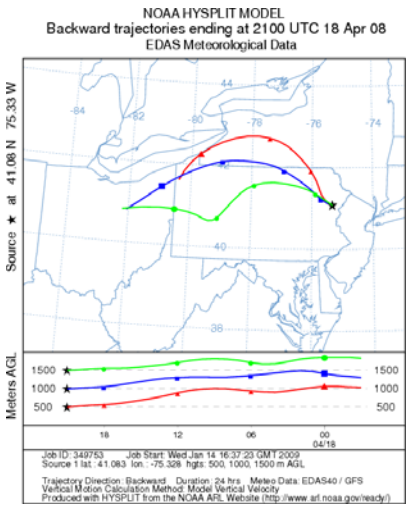


May 15 – 78 ppb

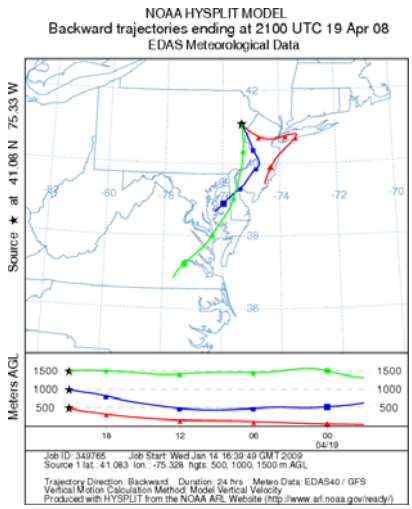


June 19 – 86 ppb

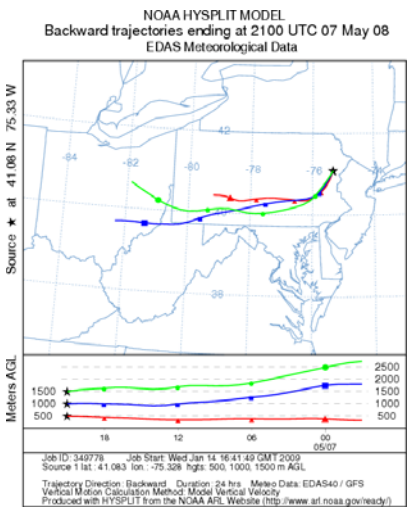
Figure B-6
2008 Trajectories
Total of 4 Exceedances
(Marked by Date and Maximum 8-hour Ozone Concentration)



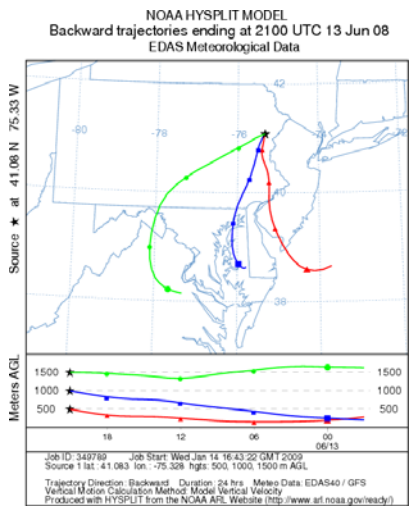
April 18 – 76 ppb



April 19 – 92 ppb



May 7 – 76 ppb



June 13 – 93 ppb

TABLE 2. Emissions by County in Tons Per Year for 2005

County	VOC	NOX
Adams Co	4660	2825
Allegheny Co	46690	63290
Armstrong Co	3417	20352
Beaver Co	7424	33400
Bedford Co	4092	4534
Berks Co	19117	18086
Blair Co	5222	5016
Bradford Co	5097	2332
Bucks Co	26241	16792
Butler Co	8805	7549
Cambria Co	5363	6177
Cameron Co	1721	291
Carbon Co	4271	2913
Centre Co	6017	6651
Chester Co	19666	16507
Clarion Co	3272	3203
Clearfield Co	4636	11279
Clinton Co	3474	2886
Columbia Co	3664	2647
Crawford Co	5829	6015
Cumberland Co	9939	14454
Dauphin Co	12569	12548
Delaware Co	20250	32904
Elk Co	2732	2982
Erie Co	16332	12075
Fayette Co	5377	4064
Forest Co	2537	879
Franklin Co	6972	5470
Fulton Co	1442	1801
Greene Co	2642	20374
Huntingdon Co	3247	2526
Indiana Co	4693	42777
Jefferson Co	2694	2999
Juniata Co	1499	1807
Lackawanna Co	8753	6660
Lancaster Co	26407	16396
Lawrence Co	4234	9001
Lebanon Co	5924	5876
Lehigh Co	13369	11503
Luzerne Co	14098	10387
Lycoming Co	7534	4290
McKean Co	3494	3254
Mercer Co	7028	6010
Mifflin Co	2333	2695

Monroe Co	8575	5245
Montgomery Co	37216	23306
Montour Co	2038	14007
Northampton Co	10960	24620
Northumberland Co	5275	3442
Perry Co	2278	2515
Philadelphia Co	35230	38733
Pike Co	3985	2353
Potter Co	1728	1951
Schuylkill Co	6873	6219
Snyder Co	2856	4434
Somerset Co	5591	4654
Sullivan Co	2006	307
Susquehanna Co	4488	2067
Tioga Co	2917	2009
Union Co	3062	1989
Venango Co	3476	2757
Warren Co	3467	2390
Washington Co	9297	16311
Wayne Co	5086	1533
Westmoreland Co	15073	16655
Wyoming Co	2714	1693
York Co	18478	32214

APPENDIX C:
Additional Documentation

Figure C-1: 2007 Combined Statistical Areas of Pennsylania (U.S. Census, November 2007)

Figure C-1

Combined Statistical Areas of PA
(November, 2007)

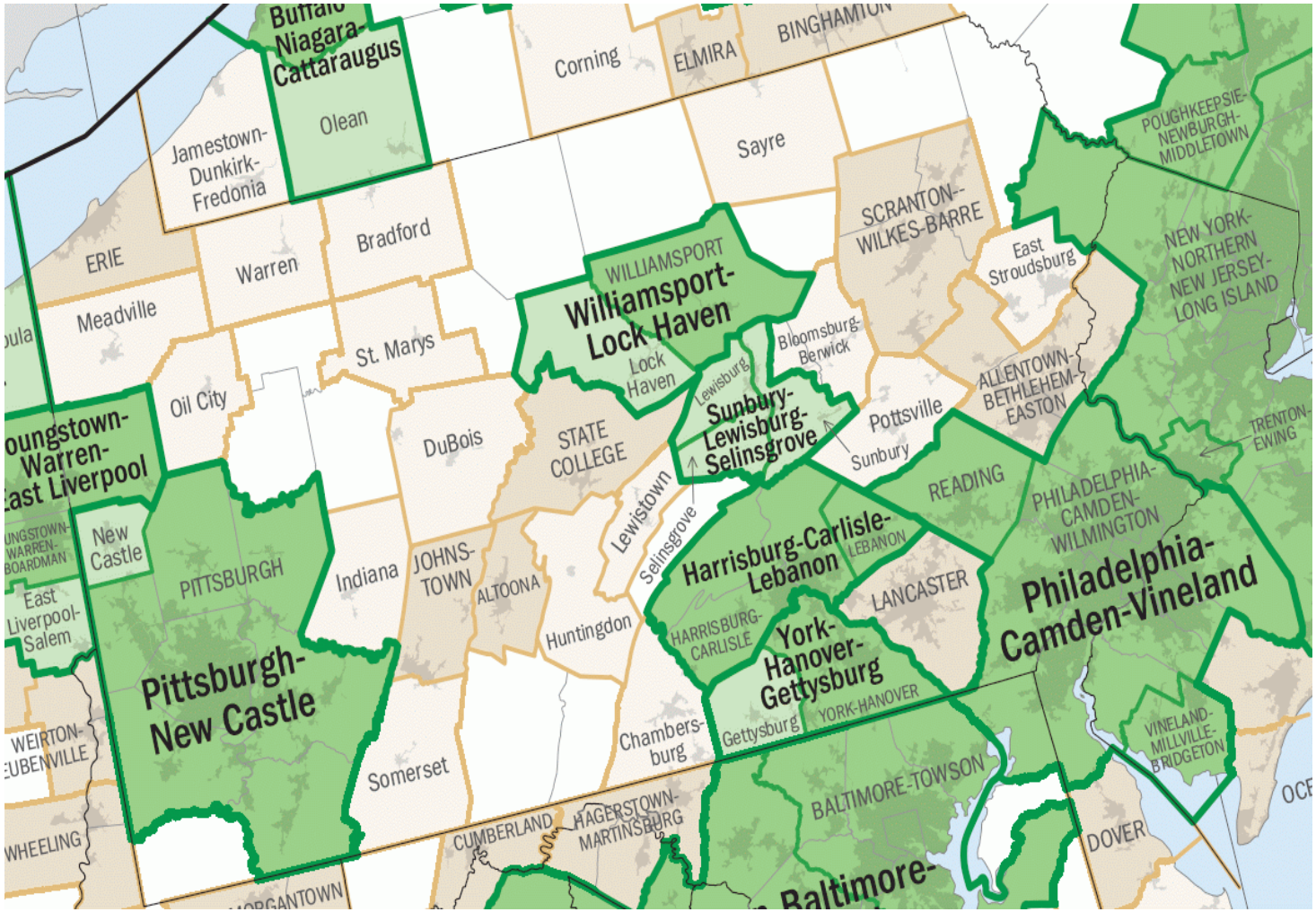


Image Extracted from US Census website at http://ftp2.census.gov/geo/maps/metroarea/us_wall/Nov2007/cbsa_csa_us_1107.pdf