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# Recommended Nonattainment Boundaries in Illinois for the PM2.5 National Ambient Air Quality Standard

Introduction

In July 1997, the U.S. Environmental Protection Agency (U.S. EPA) revised the National Ambient Air Quality Standard (NAAQS) for particulate matter by establishing a new standard for airborne particles smaller than 2.5 microns in aerodynamic diameter. In this action, U.S. EPA established two forms of the PM2.5 standard: an annual standard set at a level of 15 micrograms per cubic meter, and a 24-hour standard set at a level of 65 micrograms per cubic meter. In the same action, U.S. EPA also retained the existing PM10 standards. Following promulgation of a new or revised air quality standard, the Clean Air Act (CAA) requires the Governor to recommend initial designations of the attainment status for all areas in the State. Areas can be classified as ***nonattainment*** (does not meet, or contributes to a nearby area that does not meet the NAAQS), ***attainment*** (meets the NAAQS), or ***unclassifiable*** (cannot be classified based on available data). Illinois is, therefore, providing recommendations for attainment/nonattainment area boundaries for the PM2.5 standard. The U.S. EPA will act on the State's recommendations by affirming and promulgating the recommended designation boundaries, or by promulgating new designation boundaries.

This report provides the basis for recommendations by the Illinois Environmental Protection Agency (IEPA) for attainment/nonattainment designation boundaries for all areas in the State of Illinois for the PM2.5 standard**.** Based on an analysis of air quality, emissions, land use, and population trends, the IEPA recommends that portions of the Chicago and Metro-East metropolitan areas be designated as nonattainment for the PM2.5 standard. Except for Jersey County, the boundaries of the PM2.5 nonattainment areas recommended here for the Chicago and Metro-East metropolitan areas match the boundaries of the proposed 8-hour ozone nonattainment areas (see Figure 1). With the exception of Jersey and Randolph counties, the remaining areas of Illinois should be classified as attainment areas for the PM2.5 standard.

IEPA recommends that Jersey County, which is located in the Metro-East area in southwestern Illinois, be designated as unclassifiable for the PM2.5 standards. The IEPA has recently installed a PM2.5 ambient monitor in this county. Jersey County should be designated as unclassifiable until IEPA has collected sufficient ambient air monitoring data to clarify its attainment status. Randolph County, which is also located in the Metro-East area, is the location of the Baldwin power plant, a large source of PM2.5 precursor emissions. The Baldwin plant may be subject, in the near future, to significant new emission reduction requirements as a result of litigation and expected State and Federal regulatory initiatives. Since the plant will be required to substantially reduce emissions regardless of the area's PM2.5 designation, IEPA recommends that Baldwin Township, where the Baldwin plant is located, be designated as unclassifiable for the PM2.5 standards. If the anticipated emission reduction requirements are substantially delayed, the IEPA may seek to designate Baldwin Township in Randolph County as a nonattainment area in the future.

Federal Guidance

IEPA has relied on a U.S. EPA's memorandum, "Designation of the Fine Particle National Ambient Air Quality Standards" (April 1, 2003), for developing this recommendation for designating geographic boundaries for nonattainment areas for the PM2.5 standard in Illinois. In this memorandum, U.S. EPA recommends that areas with air quality data showing violations of the PM2.5 NAAQS, and nearby areas that cause or contribute to NAAQS violations, be designated nonattainment. Consistent with the requirements for 8-hour nonattainment areas, U.S. EPA's presumption favors PM2.5 nonattainment boundaries that reflect the Metropolitan Statistical Area (MSA) or the Consolidated Metropolitan Statistical Area (CMSA) as defined by the U.S. Census Bureau. A list of the counties in Illinois comprising the Chicago CMSA and the St. Louis MSA is included as Table 1.

States may request that the boundaries of a nonattainment area be expanded beyond the MSA or CMSA to include additional counties when those counties contain sources, population, commuting patterns or other factors that may contribute to the nonattainment problem. States may also request nonattainment area boundaries that are smaller than the CMSA or MSA where counties, or portions

**TABLE 1**
**COUNTIES INCLUDED IN THE**
**CHICAGO CMSA AND ST. LOUIS MSA***

| Chicago-Gary-Kenosha (IL-IN-WI) CMSA | St. Louis, MO-IL MSA |
|---|---|
| Cook County, IL | Clinton County, IL |
| DeKalb County, IL | Jersey County, IL |
| DuPage County, IL | Madison County, IL |
| Grundy County, IL | Monroe County, IL |
| Kane County, IL | St. Clair County, IL |
| Kankakee County, IL | Crawford County (Sullivan City), MO |
| Kendall County, IL | Franklin County, MO |
| Lake County, IL | Jefferson County, MO |
| McHenry County, IL | Lincoln County, MO |
| Will County, IL | St. Charles County, MO |
| Lake County, IN | St. Louis County, MO |
| Porter County, IN | Warren County, MO |
| Kenosha County, WI | St. Louis City, MO |

*Metropolitan areas defined by Office of Management and Budget in 1998 – Source: U.S. Census Bureau

of counties, are considered to be rural. Factors to be considered in assessing whether to include areas outside of or exclude portions within a metropolitan area include: air quality, emissions in areas potentially included versus excluded from the nonattainment area, population density and degree of urbanization, traffic and commuting patterns, expected growth, and the boundaries used for implementation of the 8-hour ozone standard. The IEPA has considered these and other factors in preparing these recommendations.

U.S. EPA's guidance also mentions weather and transport patterns, and geography/topography as factors to consider for establishing nonattainment boundaries. As discussed in the following section, the PM2.5 standard of concern is the annual standard. Since all weather patterns contribute to the average concentration over the course of a year, it is difficult to use meteorological factors as a means of excluding or including counties within the nonattainment areas for Chicago or the Metro-East. Further, there are no dominant geographic or topographic features that distinguish or separate one county from another in either the Chicago or Metro-East areas. Consequently, IEPA has not considered these factors in preparing these recommendations.

Current Air Quality

The PM2.5 design values derived from measurements collected from IEPA's ambient air monitoring network from the most recent 3-year period of record (2000-2002) are summarized in Table 2 and Figures 2 and 3. For comparison to the annual PM2.5 NAAQS, the annual design value for a given monitoring location is the 3-year arithmetic mean of the measured annual average concentrations. The 24-hour design value for a given monitor is the 3-year average of each year's $98^{th}$-percentile daily PM2.5 concentration. There have been no violations of the 24-hour standard anywhere in the State of Illinois since monitoring for this pollutant was initiated in 1999. Violations of the annual PM2.5 standard have been measured, however, in both the Chicago and Metro-East metropolitan areas. In the Chicago area, measured design values from the 2000-2002 period exceed the NAAQS at several monitoring stations located in Cook, DuPage, and Will counties. In the Metro-East area, design values exceeding the NAAQS have been measured in Madison and St. Clair counties during this 3-year period. Air quality data collected in Illinois, therefore, indicate that it is appropriate to designate at least portions of the Chicago and Metro-East metropolitan areas as nonattainment for the PM2.5 standard. All other areas in Illinois are attaining the annual PM2.5 standard, and should be designated attainment for the PM2.5 standard.

Figures 4 and 5 depict annual PM2.5 design values for 2000-2002 in the Lake Michigan and St. Louis areas, respectively. In the Lake Michigan region, PM2.5 design values exceeded the annual NAAQS in 2000-2002 in Indiana and Michigan. In Missouri, violations of the annual PM2.5 NAAQS have been measured only within the City of St. Louis during 2000-2002. In both the Lake Michigan and metropolitan St. Louis areas, annual PM2.5 design values are higher in Illinois than in neighboring states.

Precursor Emissions

U.S. EPA recommends that proposed nonattainment designations for the PM2.5 NAAQS reflect not only the areas of measured violations, but also the nearby areas that contribute to measured

# TABLE 2
# ILLINOIS PM2.5 DESIGN VALUES FOR 2000-2002

| | 24-Hour 98th Percentile Values | | | 24-Hour Design Values | Annual Mean Values | | | Annual Design Values |
|---|---|---|---|---|---|---|---|---|
| **Monitoring Site** | **2000** | **2001** | **2002** | **00-02** | **2000** | **2001** | **2002** | **00-02** |
| Quincy | 29.5 | 28.2 | 27.0 | 28.2 | 13.1 | 12.3 | 13.7 | 13.0 |
| Champaign | 27.8 | 29.3 | 23.4 | 26.8 | 14.8 | 12.6 | 12.2 | 13.2 |
| Bondville[1] | 27.8 | 23.3 | 23.2 | 24.8 | 14.5 | 11.9 | 12.2 | 12.9 |
| Chicago-Farr[1] | 32.5 | 41.9 | 37.2 | 37.2 | 15.9 | 17.1 | 15.5 | 16.2 |
| Chicago-Washington | 37.0 | 39.9 | 35.7 | 37.5 | 17.9 | 17.1 | 15.3 | 16.8 |
| Chicago-SE Police[1] | 39.8 | 41.2 | 36.6 | 39.2 | 16.5 | 18.1 | 15.5 | 16.7 |
| Chicago-Mayfair | 43.2 | 44.4 | 39.3 | 42.3 | 18.3 | 19.4 | 16.5 | 18.1 |
| Chicago-Springfield | 35.7 | 38.8 | 34.1 | 36.2 | 17.3 | 16.2 | 15.2 | 16.3 |
| Chicago-Com Ed[1] | 33.7 | 37.4 | 36.0 | 35.7 | 16.6 | 16.5 | 15.7 | 16.3 |
| McCook* | 47.5 | 38.1 | 41.4 | 42.3 | - | - | - | - |
| Blue Island | 32.8 | 38.2 | 36.2 | 35.7 | 16.8 | 17.1 | 15.2 | 16.4 |
| Summit | 36.4 | 35.8 | 37.3 | 36.5 | 16.9 | 16.5 | 16.1 | 16.5 |
| Des Plaines** | - | 34.4 | 34.9 | 34.7 | - | 14.8 | 14.4 | 14.6 |
| Northbrook | 35.1 | 38.4 | 32.8 | 35.4 | 14.3 | 14.7 | 13.2 | 14.1 |
| Cicero[1] | 34.4 | 38.9 | 37.2 | 36.8 | 16.5 | 17.4 | 16.0 | 16.6 |
| Naperville | 34.1 | 36.8 | 34.4 | 35.1 | 15.3 | 15.5 | 14.7 | 15.2 |
| Elgin[1] | 34.8 | 33.6 | 35.3 | 34.6 | 14.5 | 15.1 | 14.3 | 14.6 |
| Zion[1] | 31.3 | 33.8 | 32.7 | 32.6 | 12.2 | 13.8 | 13.5 | 13.1 |
| Oglesby* | 34.8 | 28.9 | 31.1 | 31.6 | - | - | - | - |
| Cary | 34.8 | 33.3 | 33.1 | 33.7 | 14.8 | 13.7 | 12.3 | 13.6 |
| Normal | 32.5 | 32.4 | 25.7 | 30.2 | 14.9 | 14.8 | 12.9 | 14.2 |
| Decatur | 30.9 | 34.7 | 33.9 | 33.2 | 15.0 | 14.3 | 14.1 | 14.5 |
| Granite City-VFW* | 37.4 | 42.9 | 44.6 | 41.6 | - | - | - | - |
| Granite City-23rd | 33.5 | 35.0 | 42.9 | 37.1 | 17.4 | 17.3 | 17.7 | 17.5 |
| Alton | 36.3 | 39.6 | 34.5 | 36.8 | 16.0 | 15.8 | 14.7 | 15.5 |
| Wood River | 32.1 | 33.9 | 33.9 | 33.3 | 15.9 | 15.0 | 15.1 | 15.3 |
| Peoria | 32.2 | 36.4 | 33.6 | 34.1 | 14.9 | 13.9 | 13.9 | 14.2 |
| Houston | 32.6 | 26.6 | 25.7 | 28.3 | 15.2 | 12.1 | 11.6 | 12.9 |
| Rock Island** | - | 30.4 | 24.7 | 27.6 | - | 12.8 | 11.8 | 12.3 |
| E. St. Louis | 36.1 | 33.7 | 40.9 | 36.9 | 17.4 | 17.0 | 16.7 | 17.0 |
| Swansea | 32.8 | 39.3 | 37.2 | 36.4 | 15.0 | 15.5 | 15.1 | 15.2 |
| Springfield | 32.2 | 33.3 | 31.5 | 32.3 | 13.4 | 13.3 | 13.6 | 13.4 |
| Joliet | 30.8 | 40.1 | 33.7 | 34.9 | 16.0 | 16.1 | 14.4 | 15.5 |
| Braidwood | 28.6 | 26.1 | 32.0 | 28.9 | 14.2 | 12.9 | 13.5 | 13.5 |
| Rockford[1] | 36.2 | 42.6 | 32.6 | 37.1 | 15.0 | 14.0 | 14.8 | 14.6 |

* - Annual $PM_{2.5}$ Standard does not apply at these monitoring sites

** - These sites have less than three years of data

[1] - These sites have incomplete data based on Illinois EPA's criteria

violations. Figures 6a through 6e, and the accompanying tables, summarize actual emissions from point, area and mobile sources in the Chicago metropolitan area for the following pollutants: sulfur dioxide (SO2), oxides of nitrogen (NOx), volatile organic compounds (VOC), fine particulate matter (PM2.5), and ammonia (NH3), based on U.S. EPA's National Emissions Inventory (NEI) for 1999. Figures 7a through 7e provide similar information for the Metro-East area, including Randolph County. Note that the Randolph County point source emissions for SO2 and NOx reflect 2002 reported emissions to account for dramatic emissions reductions that have occurred at the Baldwin power plant since 1999.

For the Chicago CMSA (Figures 6a-6e):

- SO2 emissions are highest in Will, Cook, and Lake counties, and lowest in Kankakee, DeKalb, and Kendall counties.
- NOx emissions are highest in Cook County. NOx emissions in Will, DuPage, and Lake counties are also relatively large. Kankakee, Kendall, McHenry, and DeKalb counties have relatively low emissions.
- VOC emissions are highest in Cook County. DuPage, and Lake counties also have relatively large VOC emissions. VOC emissions are lowest in DeKalb, Grundy, and Kendall counties.
- PM2.5 emissions are highest in Cook County. PM2.5 emissions are relatively high in Will, Lake, and DuPage counties. PM2.5 emissions are lowest in Kankakee, DeKalb, Grundy, and Kendall counties.
- NH3 emissions are highest in Cook County. Grundy, DeKalb, and Will counties also have relatively high emissions of NH3. Lake and Kendall counties have the lowest NH3 emissions.

For the Metro-East MSA, including Randolph County (Figures 7a-7e):

- SO2 emissions are highest in Madison and Randolph counties, and lowest in Clinton, Jersey, and Monroe counties.
- NOx emissions are highest in Madison and Randolph counties. NOx emissions in St. Clair County are also relatively high. Clinton, Monroe, and Jersey counties have relatively low emissions.

- VOC emissions are highest in Madison and St. Clair counties, and lowest in Monroe and Jersey counties.
- PM2.5 emissions are highest in Madison, St. Clair, and Randolph counties, and lowest in Clinton, Monroe, and Jersey counties.
- NH3 emissions are highest in Madison and Clinton counties. Randolph and St. Clair counties also have relatively high emissions of NH3. Jersey County has the lowest NH3 emissions.

Figures 8a through 8e depict both the locations and emission rates of point sources in the Chicago metropolitan area for the following pollutants: sulfur dioxide (SO2), oxides of nitrogen (NOx), volatile organic compounds (VOC), fine particulate matter (PM2.5), and ammonia (NH3), based on U.S. EPA's National Emissions Inventory (NEI) for 1999. The shaded areas in the figures represent the areas being recommended as nonattainment for the PM2.5 NAAQS. Figures 9a through 9e provide similar information for the Metro-East area.

For the Chicago CMSA (Figures 8a-8e):

- The largest point sources for SO2 are located in Will County. Cook and Lake counties also contain some point sources with high SO2 emission rates. Cook County has the largest number of SO2 emitting point sources. McHenry, Kane, DeKalb, Kendall, Grundy, and Kankakee counties have relatively few point sources emitting SO2.
- The largest point sources for NOx are located in Will County. Cook and Lake counties also contain some point sources with high NOx emission rates. Cook County has the greatest number of NOx emitting point sources. DeKalb, Kendall, Grundy, and Kankakee counties have relatively few point sources emitting NOx.
- Both the largest size and greatest number of VOC point sources occur in Cook County. DuPage, Kane, Will and Kankakee counties also contain significant point sources of VOC. DeKalb, Grundy, and Kendall counties have relatively few VOC point sources.
- The largest emitting and greatest number of PM2.5 point sources are located in Cook County. There are numerous, but relatively small PM2.5 point sources located in Will, Lake, and DuPage counties. There are relatively few PM2.5 point sources in McHenry, Kane, DeKalb, Kendall, Grundy, and Kankakee counties.

- There are few point sources emitting NH3 in the Chicago CMSA based on U.S. EPA's 1999 NEI inventory. One large point source is located in Grundy County, and two smaller NH3 sources are located in Will County.

For the Metro-East MSA, including Randolph County (Figures 9a-9e):

- The largest point sources for SO2 are located in Madison and Randolph counties. Madison and St. Clair counties have the largest number of SO2 emitting point sources. Jersey, Clinton, and Monroe counties have relatively few point sources emitting SO2.
- The largest point sources for NOx are located in Madison and Randolph counties. Madison and St. Clair counties have the largest number of NOx emitting point sources. Jersey, Clinton, and Monroe counties have relatively few point sources emitting NOx.
- The largest emitting and greatest number of point sources emitting VOC's are located in Madison and St. Clair counties. Jersey, Clinton, Monroe, and Randolph counties have relatively few point sources emitting VOC's.
- The largest point sources for PM2.5 are located in Madison and Randolph counties. Madison and St. Clair counties have the largest number of PM2.5 emitting point sources. Jersey, Clinton, and Monroe counties have relatively few point sources emitting PM2.5.
- Madison County contains the only significant point sources of NH3 based on U.S. EPA's 1999 NEI inventory.

Urbanization, Population and Employment Trends

Table 3 lists the population of each of the counties contained in the Chicago CMSA and Metro-East St. Louis MSA, as well as land areas, and population densities based on U.S. Census Bureau estimates for 2000. Figures 10 and 11 graphically depict population densities in the Chicago CMSA and the Metro-East MSA, respectively. For the Chicago area, these data show that Cook, DuPage, Lake, and Will Counties have both the highest population and population densities, while Grundy, DeKalb, Kendall, and Kankakee Counties have the lowest. St. Clair and Madison Counties contain the majority of the total Metro-East population, while Jersey, Monroe, Randolph, and Clinton Counties are considerably less populated.

## TABLE 3

## POPULATION ESTIMATES BY COUNTY

### Chicago CMSA
### (Illinois Counties Only)

| County | 2000 Population | Land Area (Sq. Miles) | Population Density (Persons per sq. mile) |
|---|---|---|---|
| Cook | 5,376,741 | 945.68 | 5,685 |
| DuPage | 904,161 | 333.61 | 2,710 |
| Lake | 644,356 | 447.56 | 1,440 |
| Will | 502,266 | 836.94 | 600 |
| Kane | 404,119 | 520.44 | 777 |
| McHenry | 260,077 | 603.51 | 431 |
| Kankakee | 103,833 | 676.75 | 153 |
| DeKalb | 88,969 | 634.16 | 140 |
| Kendall | 54,544 | 320.58 | 170 |
| Grundy | 37,535 | 419.90 | 89 |

### Metro-East-St. Louis MSA
### (Illinois Counties Only)

| County | 2000 Population | Land Area (Sq. Miles) | Population Density (Persons per sq. mile) |
|---|---|---|---|
| Madison | 258,941 | 725.02 | 357 |
| St. Clair | 256,082 | 663.81 | 386 |
| Clinton | 35,535 | 474.23 | 74 |
| Randolph | 33,893 | 578.42 | 58 |
| Monroe | 27,619 | 388.29 | 71 |
| Jersey | 21,668 | 369.16 | 58 |

Figures 12 and 13 depict current land cover for both the Chicago and Metro-East areas based on data compiled by the Illinois Department of Natural Resources. In the Chicago area, the most urbanized counties are clearly Cook and DuPage Counties, although Lake, Will and Kane Counties also contain significant urbanized areas. Madison and St. Clair Counties are the most urbanized of the counties in the Metro-East area. In each of the Illinois counties of DeKalb, Kankakee, Kendall, Grundy, Jersey, and Clinton, the predominant land cover is agricultural and cropland, and in each county the amount of urban and built-up land is small (less than 5%). The dominance of agricultural land use, coupled with the low population densities in these counties, confirm that they are primarily rural in nature.

Population and economic trends are developed for long range planning activities by both State and local governmental agencies. Data compiled by the U.S. Census State Data Center were referenced for this analysis and are shown in Figure 14. In the Chicago CMSA, the highest total population growth is projected to occur in Cook and Will Counties. The lowest growth is projected for DeKalb, Grundy, Kendall, and Kankakee Counties. In the Metro-East area, population growth is highest in St. Clair and Madison counties, and lowest in Randolph, Monroe, Jersey and Clinton Counties.

Employment growth projections, which were compiled from projections developed by the Illinois Department of Employment Security, are shown in Figure 15. In the Chicago area, the highest rate of employment growth is expected to occur in Cook, Lake, and DuPage counties, while the lowest rates of employment growth are expected in DeKalb, Kendall, and Grundy counties. In the Metro-East area, moderate employment growth is forecast for Madison, and St. Clair counties. Relatively low employment growth is expected in Monroe, Clinton, Jersey, and Randolph counties.

Traffic Characteristics

The Illinois Department of Transportation (IDOT) publishes an annual report entitled “Illinois Travel Statistics”. This report provides detailed information regarding vehicular traffic for each county in Illinois. Table 4 summarizes IDOT’s estimates of Average Daily Vehicle Miles Traveled (ADVMT) in 2001 as calculated by IDOT’s Highway Information System. ADVMT on a segment of road is calculated by multiplying the length of the road (in miles) by the estimated average daily traffic on

# Table 4
# Illinois Travel Statistics 2001

| Chicago Consolidated Metropolitan Statistical Area (CMSA) | Average Daily Vehicle Miles Traveled (ADVMT) |
|---|---|
| Cook | 90,662,920 |
| DuPage | 22,457,672 |
| Lake | 15,437,959 |
| Will | 11,804,005 |
| Kane | 8,045,872 |
| McHenry | 5,490,420 |
| Kankakee | 2,474,810 |
| DeKalb | 2,019,848 |
| Grundy | 1,723,265 |
| Kendall | 1,506,392 |

| St. Louis Metropolitan Statistical Area (MSA) | Average Daily Vehicle Miles Traveled (ADVMT) |
|---|---|
| Madison | 7,433,221 |
| St. Clair | 7,097,561 |
| Clinton | 1,049,143 |
| Monroe | 912,099 |
| Randolph | 754,847 |
| Jersey | 550,050 |

the road. In the Chicago area, Cook, DuPage, Lake, and Will counties have the highest ADVMT. In fact, the ADVMT in these four counties account for approximately 87% of the total for the Illinois portion of the CMSA. Collectively, Kankakee, DeKalb, Grundy, and Kendall counties account for about 5% of the total ADVMT in the CMSA. In the Metro-East MSA, Madison and St. Clair counties have the highest ADVMT, accounting for about 81% of the ADVMT in the Illinois portion of the MSA. Randolph and Jersey counties have the lowest ADVMT, about 8% of the total for the MSA.

The U. S. Census Bureau has compiled statistics from the 2000 census that quantify commuting patterns in the Chicago and Metro-East metropolitan areas. Figures 16 and 17 illustrate where people reside and the counties where they journey to work. Each county is color-coded on the histograms. For example, Cook County is shown in Figure 16 as a yellow bar in each county's histogram. The data show that 2.07 million people reside in Cook County and commute within Cook County to reach their place of employment, but only 826 people reside in Cook County and commute to DeKalb County for employment. From Figure 16, it is evident that more commuters in the Chicago CMSA travel to places of employment in the same county where they reside than travel to other counties. Not all commuters reside in the counties where they are employed, however. In some counties, a significant percentage of commuters travel to places of employment in other counties. For example, 152,433 residents of DuPage County commute to Cook County for employment. Similarly, a large percentage of commuters residing in Kendall County travel to DuPage and Kane counties for employment, although the number of commuters residing in Kendall County is small relative to the number of commuters in the CMSA. Commuting patterns in the Metro-East area (see Figure 17) are similar in that more commuters travel to places of employment in the same county where they reside than travel to other counties.

Recommended Nonattainment Area Boundaries for the 8-hour Ozone Standard

U.S. EPA's guidance (April 2003) recognizes that there is significant overlap in the precursors of PM2.5 and the precursors of ozone, and therefore suggests that states consider aligning the boundaries of PM2.5 and ozone nonattainment areas. The IEPA submitted recommended nonattainment area boundaries (see Figure 1) for the 8-hour ozone NAAQS on July 16, 2003. U.S. EPA has not yet promulgated final designations for Illinois, but has indicated its concurrence with IEPA's recommendations.

The IEPA recommended that the following counties, or portions thereof, be designated as nonattainment for the 8-hour ozone standard:

| **Chicago NAA** | **Metro-East NAA** |
|---|---|
| Cook County | Jersey County |
| DuPage County | Madison County |
| Grundy County | Monroe County |
| (Aux Sable and Goose Lake Townships) | St. Clair County |
| Kane County | |
| Kendall County | |
| (Oswego Township) | |
| Lake County | |
| McHenry County | |
| Will County | |

As will be discussed in the following section, with the exception of Jersey and Randolph counties, IEPA is recommending boundaries for PM2.5 nonattainment areas that match the above-listed boundaries recommended as 8-hour ozone nonattainment areas.

## RECOMMENDATIONS

The CAA does not specify the geographic boundaries, size, or the extent to which source contributions would require that an area be designated as nonattainment for the PM2.5 standard nor has U.S. EPA promulgated rules prescribing such. IEPA's recommendations are consistent with guidance provided by U.S. EPA (April 2003), and are based on an evaluation of present and projected air quality, the distribution of precursor emissions, and other demographic factors. The IEPA recognizes that each of the factors considered in this evaluation are not necessarily conclusive when evaluated individually. Rather, IEPA's recommendations are based on consideration of all of the data and projections taken together.

IEPA's recommendations for attainment/nonattainment designations in Illinois for the PM2.5 ambient air quality standards are contained in Table 5. Current air quality data collected by the IEPA indicate that the only areas of Illinois where the PM2.5 air quality standard is not being met are in portions of the Chicago and Metro-East metropolitan areas. Nonattainment designations for at least

portions of these metropolitan areas are, therefore, warranted. The IEPA's recommendation for inclusion of counties within the boundaries of the nonattainment areas are discussed in the following section.

**Chicago PM2.5 Nonattainment Area**

***Cook County***. Current air quality data (2000-2002) at several monitoring locations in Cook County do not meet the PM2.5 annual standard. Cook County is currently designated nonattainment for the 1-hour standard, and the IEPA has recommended that it be designated as an 8-hour ozone nonattainment area, also. Cook County has high levels of precursor emissions, generally the highest emissions of any of the ten counties in the CMSA. Demographically, Cook County has the highest population, the highest population density, the largest acreage of urban land cover, and the highest levels of vehicular traffic of all the counties in the CMSA. Cook County should be included in the Chicago nonattainment area for the PM2.5 standard.

***Lake County***. Lake County is currently designated nonattainment for the 1-hour standard, and has been recommended as an 8-hour ozone nonattainment area by the IEPA. Lake County has high levels of precursor emissions, relatively high total population and population density, large amounts of acreage with urban land cover, and high levels of vehicular traffic. The IEPA, therefore, recommends that Lake County be included in the Chicago nonattainment area for the PM2.5 standard.

***DuPage and Will Counties***. Both DuPage and Will Counties are currently designated nonattainment for the 1-hour standard, and have been recommended for inclusion in the 8-hour ozone nonattainment area by the IEPA. Air quality at monitoring stations in both counties exceed the annual PM2.5 air quality standard. DuPage and Will Counties have high levels of precursor emissions. DuPage County is second only to Cook County in total population, population density, vehicular traffic, and total urban land cover. Similarly, Will County has a relatively high population, population density, population growth, traffic level, and urban land coverage. The IEPA, therefore, recommends that DuPage and Will Counties be included in the Chicago nonattainment area for the PM2.5 standard.

**Table 5**
**Recommended Attainment/Nonattainment Designations in Illinois**
**For the PM2.5 Ambient Air Quality Standard**

| County | Designation | Name of Area |
|---|---|---|
| Cook | Nonattainment | Chicago |
| DuPage | Nonattainment | Chicago |
| Kane | Nonattainment | Chicago |
| Lake | Nonattainment | Chicago |
| Will | Nonattainment | Chicago |
| McHenry | Nonattainment | Chicago |
| Kendall: | | |
| Oswego Township | Nonattainment | Chicago |
| All Other Townships | Attainment | |
| Grundy: | | |
| Aux Sable Township | Nonattainment | Chicago |
| Goose Lake Township | Nonattainment | Chicago |
| All Other Townships | Attainment | |
| Madison | Nonattainment | Metro-East |
| Monroe | Nonattainment | Metro-East |
| St. Clair | Nonattainment | Metro-East |
| Randolph: | | |
| Baldwin Township | Unclassifiable | Randolph |
| All Other Townships | Attainment | |
| Jersey | Unclassifiable | Jersey |
| All Other Counties | Attainment | |

***McHenry and Kane Counties***. McHenry and Kane Counties are on the western fringe of the metropolitan area with the eastern portions of these counties having an urban/suburban character, while the western portions are basically rural. These counties have moderate levels of precursor emissions relative to Cook, Lake, DuPage, and Will Counties, and the total population, population density, and total urban land cover in these counties are also relatively moderate. McHenry and Kane Counties are experiencing moderate population and employment growth. Both McHenry and Kane Counties are currently designated nonattainment for the 1-hour standard, and have been recommended for inclusion in the 8-hour ozone nonattainment area by the IEPA. The IEPA, therefore, recommends that McHenry and Kane Counties be included in the Chicago nonattainment area for the PM2.5 standard.

***Grundy and Kendall Counties***. Due to their primarily rural character, most of Grundy and Kendall Counties were not included in the Chicago 1-hour nonattainment area, and were not recommended for inclusion in the Chicago 8-hour ozone nonattainment area by the IEPA. Certain townships in Grundy and Kendall Counties were included in the 1-hour nonattainment area, the boundaries of which were established subsequent to the 1990 Amendments to the CAA, due to the significance of certain stationary, or point, sources as indicated by the IEPA's 1990 emissions inventory. Precursor emission levels in the remaining portions of these counties are low, as is the total population, population density, traffic volumes, and total urban land cover. For these reasons, the IEPA recommends that Oswego Township in Kendall County and Goose Lake and Aux Sable Townships in Grundy County be included in the Chicago nonattainment area for the NAAQS for PM2.5, but that the remainder of these two counties should retain their current designation as attainment.

***DeKalb and Kankakee Counties***. The U.S. Census Bureau added DeKalb and Kankakee counties to the Chicago CMSA in 1998. They were not included in the Chicago nonattainment area for the 1-hour ozone standard, and were not recommended for inclusion in the Chicago 8-hour ozone nonattainment area by the IEPA. These counties are primarily rural, as shown by their low 2000 population totals and population densities, and the small amount of urban land cover in each county is not contiguous with the Chicago urbanized area. Current precursor emission levels in these counties are also low, compared to the other counties in the CMSA. For these reasons, the IEPA recommends

that DeKalb and Kankakee Counties not be included in the nonattainment area and that they be designated as attainment for the NAAQS for PM2.5.

**Metro-East PM2.5 Nonattainment Area**

***Madison County***. Madison County is currently designated as a maintenance area for the 1-hour standard, and has been recommended for inclusion in the 8-hour ozone nonattainment area by the IEPA. In terms of precursor emissions, Madison County has the highest levels of both VOC and NOx emissions of any of the counties in the Metro-East area. Demographically, Madison County has the highest population, the second highest population density, and the largest acreage of urban land cover of all the counties in the Metro-East. Madison County should be included in the Metro-East nonattainment area for the PM2.5 standard.

***St. Clair County***. Air quality data from the most recent 3-year period (2000-2002) indicate that St. Clair County does not meet the PM2.5 standard. It is currently designated as a maintenance area for the 1-hour ozone standard, and has been recommended for inclusion in the 8-hour ozone nonattainment area by the IEPA. St. Clair County has relatively high levels of both VOC and NOx emissions, relatively high total population and population density, and large amounts of acreage with urban land cover. St. Clair County is also expected to experience relatively high population and employment growth in future years. The IEPA, therefore, recommends that St. Clair County be included in the Metro-East nonattainment area for the PM2.5 standard.

***Monroe County***. Monroe County is on the southern fringe of the Metro-East area with the northern portions of the county having an urban/suburban character, while the southern and eastern portions of the county are basically rural. It is currently designated as a maintenance area for the 1-hour standard, and has been recommended for inclusion in the 8-hour ozone nonattainment area by the IEPA. This county has relatively low levels of precursor emissions relative to Madison and St. Clair Counties, and the total population, population density, and total urban land cover is also relatively low. Because of its current designation as a 1-hour maintenance area, the IEPA recommends that Monroe County be included in the Metro-East nonattainment area for the PM2.5 standard.

***Jersey County***. Jersey County is a rural county located to the north of St. Louis, and is currently designated as a maintenance area for the 1-hour standard. IEPA recommended that it be designated as an 8-hour ozone nonattainment area, not because of emissions levels, growth, or adverse air quality impacts in nearby areas, but because violations of the 8-hour ozone standard have been measured in this county. Jersey County has low levels of precursor emissions, low population and population density, low urban land cover, and low population and employment growth rates. To determine PM2.5 air quality levels in Jersey County, IEPA installed a PM2.5 monitoring station in Jerseyville. As the site was installed in January 2004, there are not sufficient data at this time to determine the attainment status of this county. For this reason, the IEPA recommends that Jersey County be designated as unclassifiable until sufficient monitoring data are available.

***Clinton County***. As mentioned previously, the current (1998) MSA boundaries established by the U.S. Census Bureau for St. Louis include Clinton County, Illinois. Clinton County is not contained within the existing 1-hour maintenance area. This county is primarily rural, with low 2000 population totals and population densities, and small amounts of urban land cover, compared to other counties in the MSA. Current precursor emission levels in Clinton County are low, as are expected rates of population and employment growth. For these reasons, the IEPA recommends that Clinton County be designated as attainment for the NAAQS for PM2.5.

***Randolph County.*** Randolph County is not part of the Metro-East/St. Louis MSA as defined by the U.S. Census Bureau, and was not recommended for inclusion in the 8-hour ozone nonattainment area. This rural county has low population and population density, low urban land cover, and low population and employment growth rates. Randolph County has high levels of PM2.5 emissions and high precursor emissions, especially SO2 and NOx, virtually all of which are emitted from an existing, stationary emission source, the Baldwin Power Station. Figure 18 shows the location of the Baldwin plant in northern Randolph County. Because of the high levels of precursor emissions, and because of the close proximity of the Baldwin facility to the southern edge of St. Clair County, the IEPA has carefully considered whether to recommend that a portion of Randolph County be designated as nonattainment for PM2.5. However, the Baldwin plant may be subject, in the near

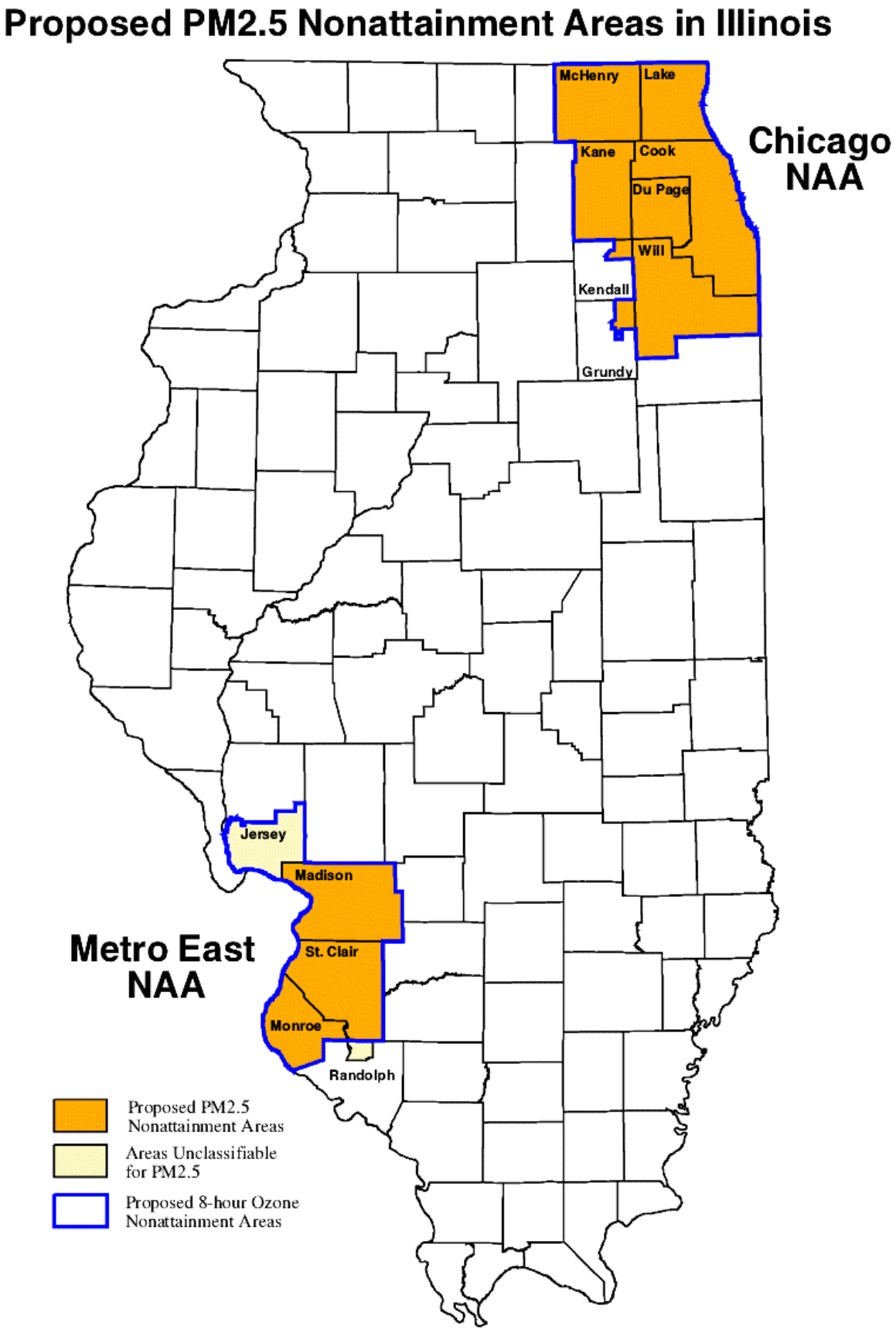
future, to significant new emission reduction requirements as a result of litigation and new State and Federal regulatory initiatives. Since the plant may be required to substantially reduce emissions regardless of the area's PM2.5 designation, IEPA is not recommending that Baldwin Township, where the Baldwin plant is located, be designated as nonattainment at this time. Rather, IEPA recommends that Baldwin Township be designated as unclassifiable for the PM2.5 standards, and the remainder of Randolph County should be designated as attainment. If the anticipated emission reduction requirements are substantially delayed, the IEPA may seek to designate Baldwin Township in Randolph County as a nonattainment area in the future.

**Remainder of Illinois**

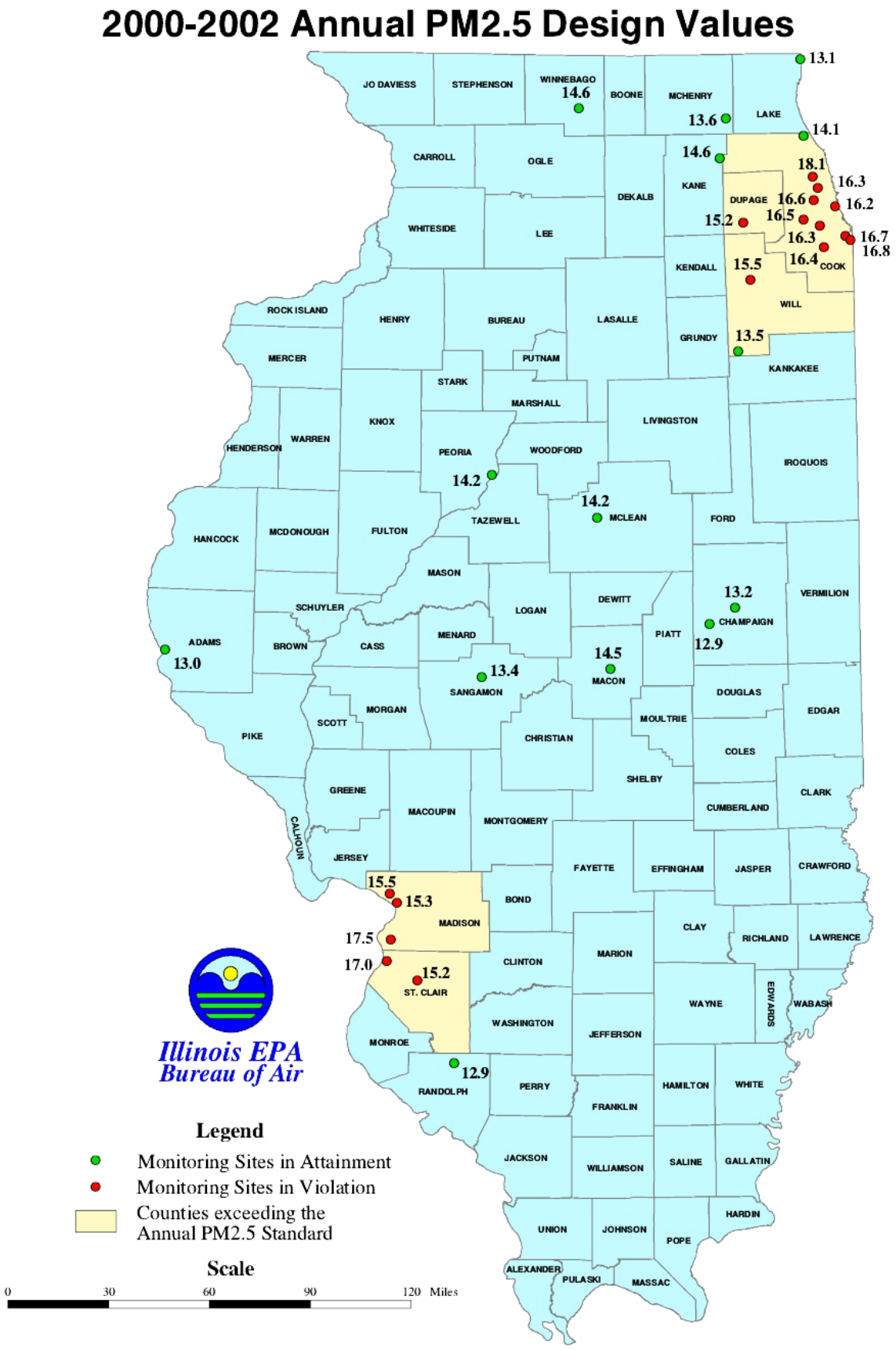
Areas of the state that are not part of these two metropolitan areas are in attainment with the PM2.5 NAAQS, and it is recommended that all remaining counties be designated as attainment.

File:G:\Brenda\rob kaleel\PM2.5 NAA Recommendation(Feb04).doc

# Figure 1

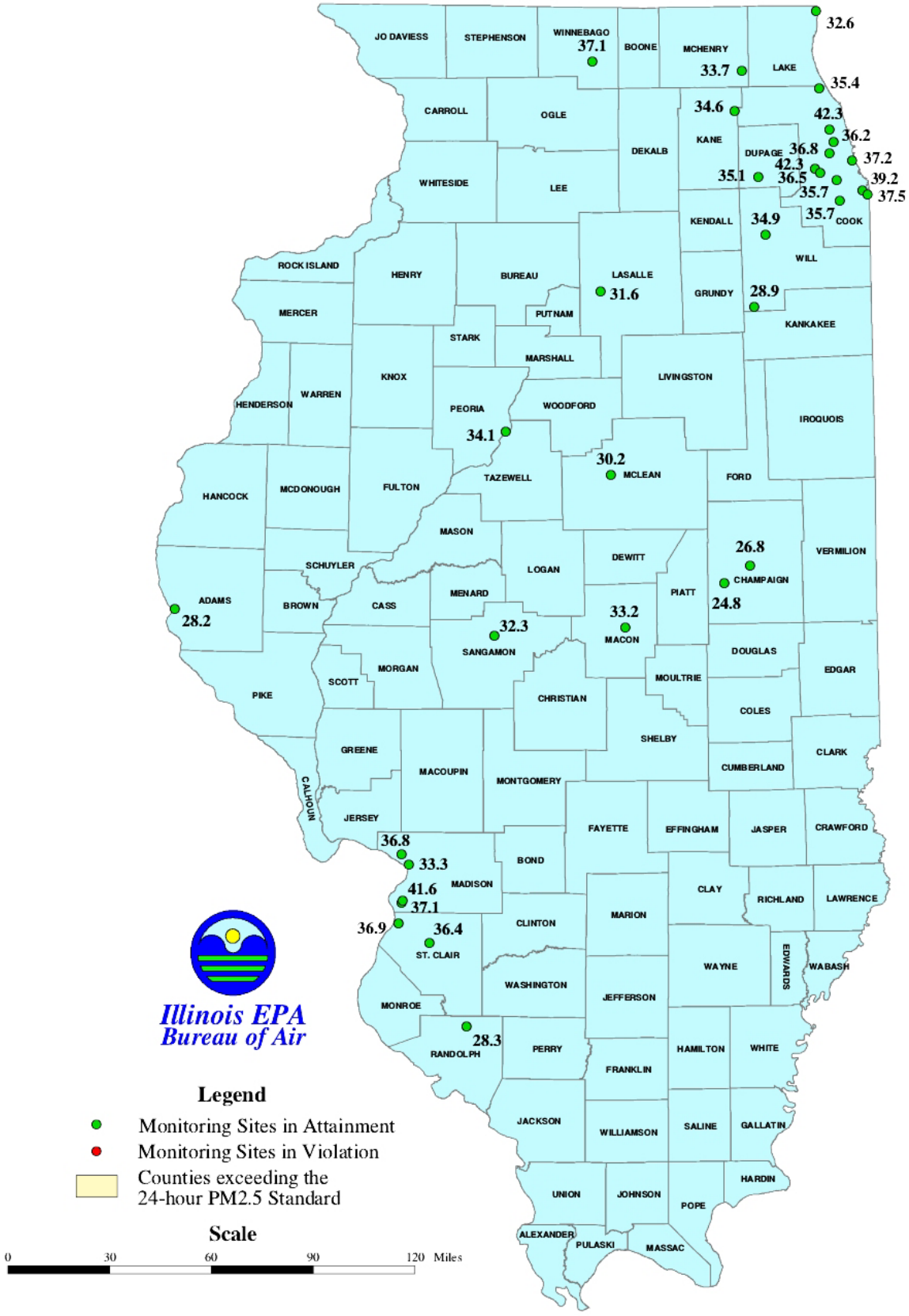

Proposed PM2.5 Nonattainment Areas in Illinois
McHenry
Lake
Kane
Cook
Du Page
Will
Kendall
Grundy
Chicago NAA
Jersey
Madison
St. Clair
Monroe
Randolph
Metro East NAA
Proposed PM2.5 Nonattainment Areas
Areas Unclassifiable for PM2.5
Proposed 8-hour Ozone Nonattainment Areas

# Figure 2


2000-2002 Annual PM2.5 Design Values
JO DAVIESS
STEPHENSON
WINNEBAGO
14.6
BOONE
MCHENRY
13.6
LAKE
13.1
14.1
CARROLL
OGLE
DEKALB
14.6
KANE
18.1
16.3
DUPAGE
16.6
16.2
15.2
16.5
WHITESIDE
LEE
16.3
16.7
16.8
16.4
COOK
KENDALL
15.5
WILL
ROCK ISLAND
HENRY
BUREAU
LASALLE
GRUNDY
13.5
MERCER
PUTNAM
KANKAKEE
STARK
MARSHALL
KNOX
LIVINGSTON
HENDERSON
WARREN
PEORIA
WOODFORD
IROQUOIS
14.2
14.2
MCLEAN
HANCOCK
MCDONOUGH
FULTON
TAZEWELL
FORD
MASON
13.2
VERMILION
SCHUYLER
LOGAN
DEWITT
CHAMPAIGN
ADAMS
BROWN
CASS
MENARD
PIATT
12.9
13.0
14.5
13.4
MACON
SANGAMON
DOUGLAS
MORGAN
SCOTT
MOULTRIE
EDGAR
PIKE
CHRISTIAN
COLES
SHELBY
GREENE
CLARK
MACOUPIN
CUMBERLAND
MONTGOMERY
CALHOUN
JERSEY
FAYETTE
EFFINGHAM
JASPER
CRAWFORD
15.5
15.3
BOND
MADISON
CLAY
17.5
RICHLAND
LAWRENCE
17.0
CLINTON
MARION
15.2
ST. CLAIR
WAYNE
EDWARDS
WABASH
WASHINGTON
JEFFERSON
MONROE
12.9
RANDOLPH
PERRY
HAMILTON
WHITE
FRANKLIN
JACKSON
WILLIAMSON
SALINE
GALLATIN
UNION
JOHNSON
POPE
HARDIN
ALEXANDER
PULASKI
MASSAC
Illinois EPA
Bureau of Air
Legend
Monitoring Sites in Attainment
Monitoring Sites in Violation
Counties exceeding the Annual PM2.5 Standard
Scale
0
30
60
90
120 Miles

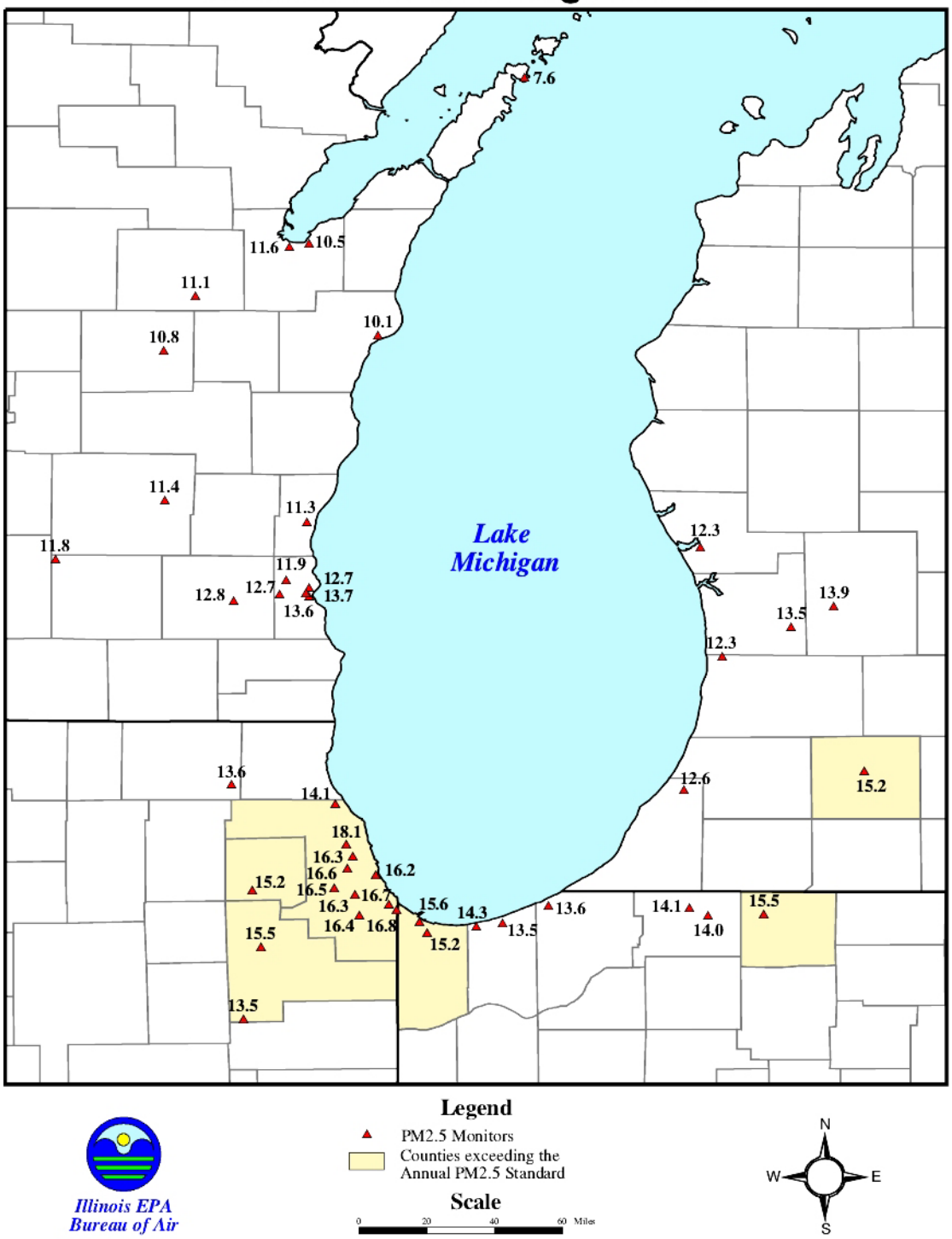
# Figure 3

## 2000-2002 24-hour PM2.5 Design Values

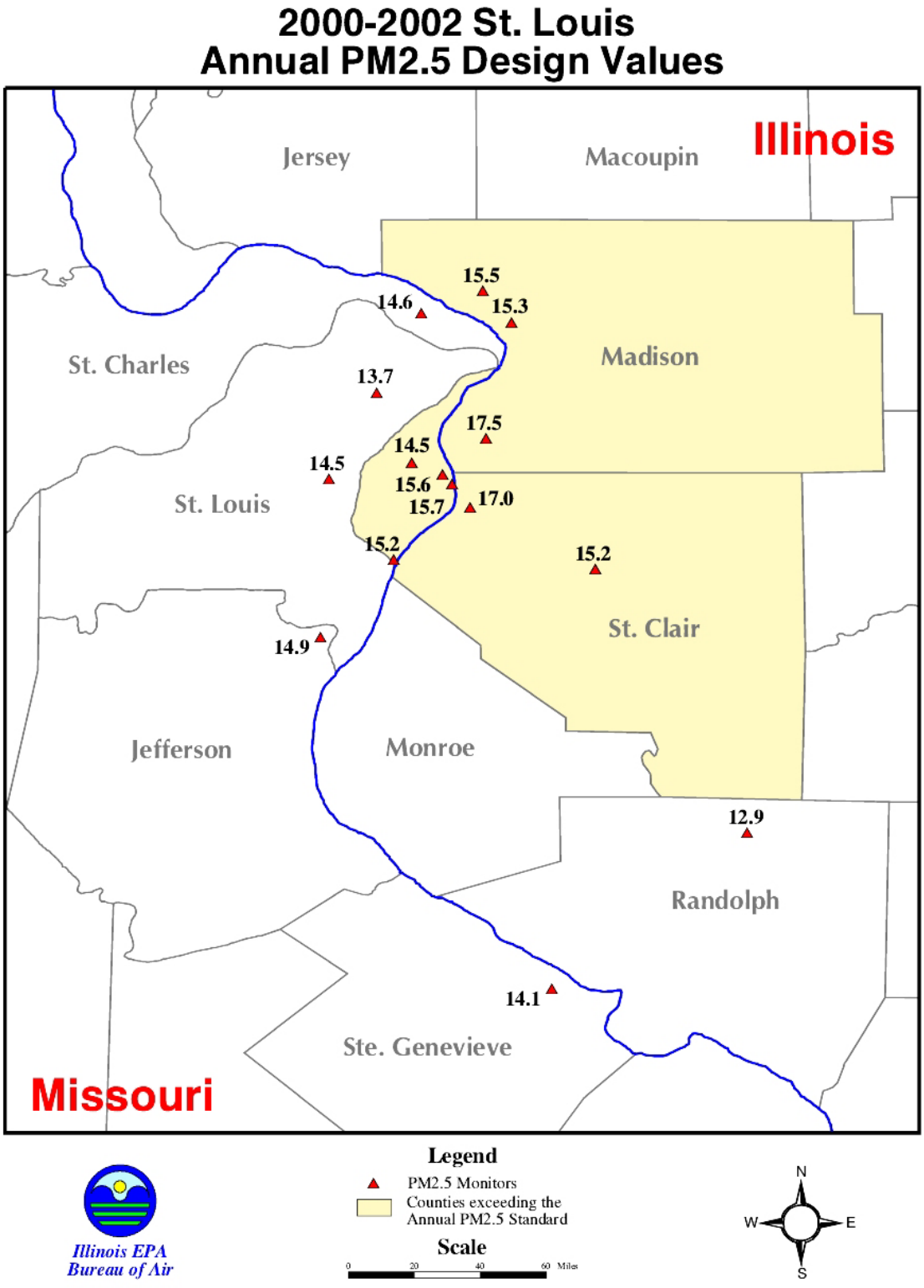


# Figure 4

## 2000-2002 Lake Michigan Annual PM2.5 Design Values

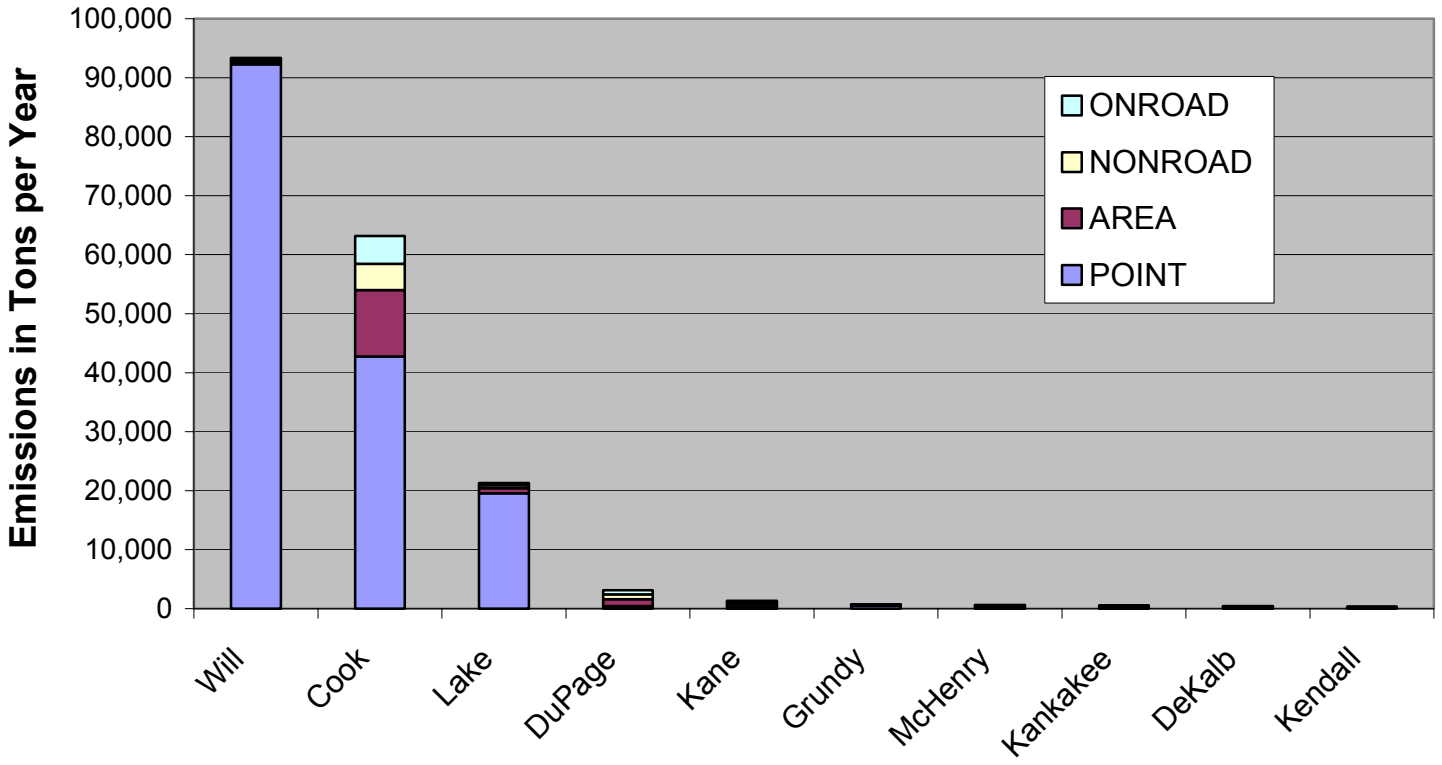


# Figure 5


2000-2002 St. Louis
Annual PM2.5 Design Values
Illinois
Jersey
Macoupin
Madison
St. Charles
St. Louis
St. Clair
Jefferson
Monroe
Randolph
Ste. Genevieve
Missouri
15.5
14.6
15.3
13.7
17.5
14.5
14.5
15.6
15.7
17.0
15.2
15.2
14.9
12.9
14.1
Illinois EPA
Bureau of Air
Legend
PM2.5 Monitors
Counties exceeding the
Annual PM2.5 Standard
Scale
0
20
40
60 Miles
N
W
E
S

# FIGURE 6a

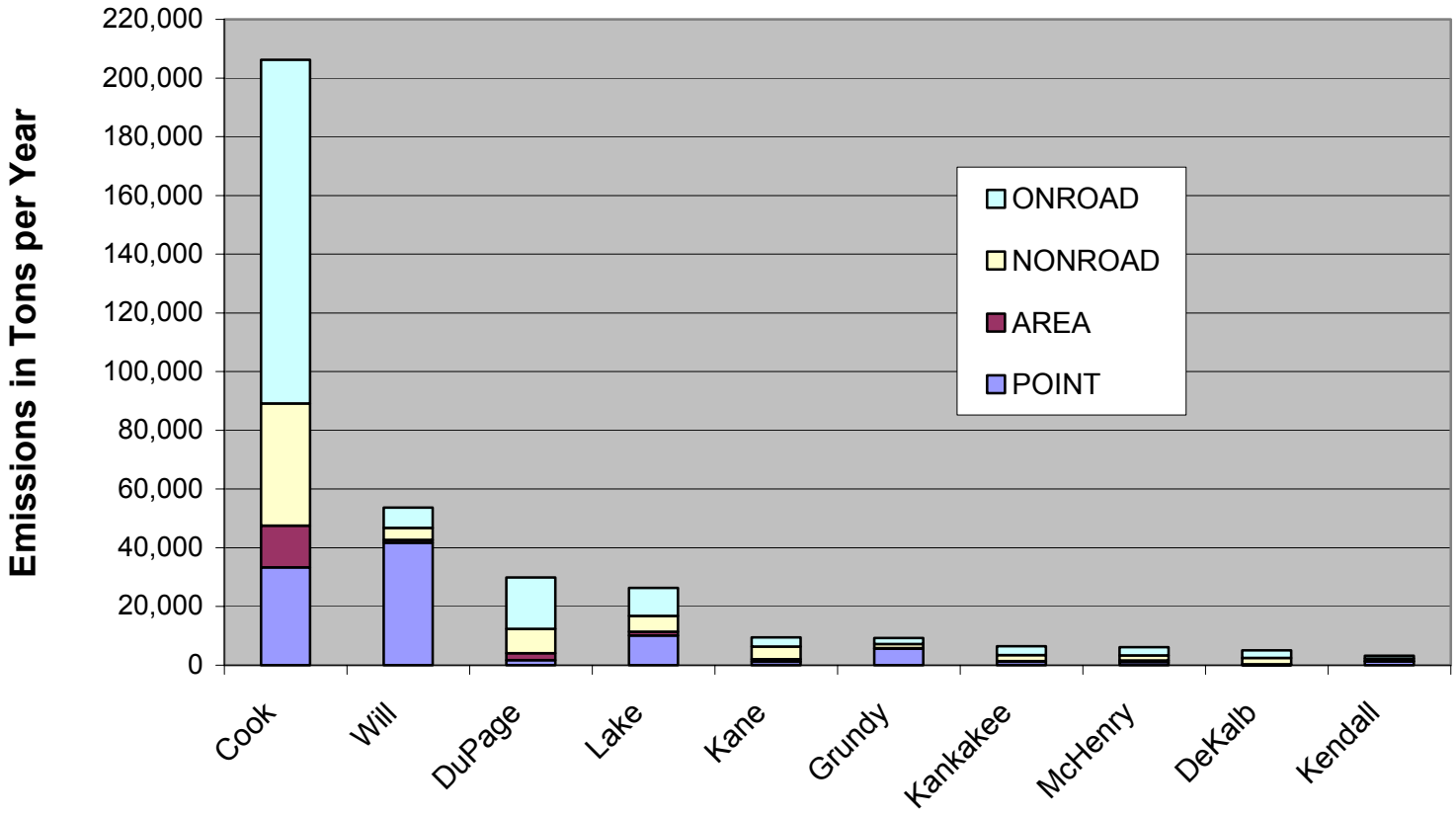
## 1999 SO2 Emissions by County for the Chicago CMSA




| SO2 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Will | 92, 268.58 | 381.22 | 261.62 | 409.24 | 93,320.66 |
| Cook | 42,744.67 | 11,257.92 | 4,679.01 | 4,474.67 | 63,156.27 |
| Lake | 19,563.78 | 832.86 | 378.10 | 521.48 | 21,296.22 |
| DuPage | 431.49 | 1,188.10 | 701.32 | 821.65 | 3,142.56 |
| Kane | 301.51 | 514.68 | 115.37 | 428.59 | 1,360.15 |
| Grundy | 474.92 | 67.73 | 69.65 | 154.95 | 767.25 |
| McHenry | 146.58 | 214.87 | 102.26 | 176.59 | 640.30 |
| Kankakee | 61.45 | 212.57 | 110.84 | 156.58 | 541.44 |
| DeKalb | 7.00 | 154.52 | 91.42 | 186.31 | 439.25 |
| Kendall | 151.76 | 45.76 | 36.79 | 73.27 | 307.58 |

# FIGURE 6b

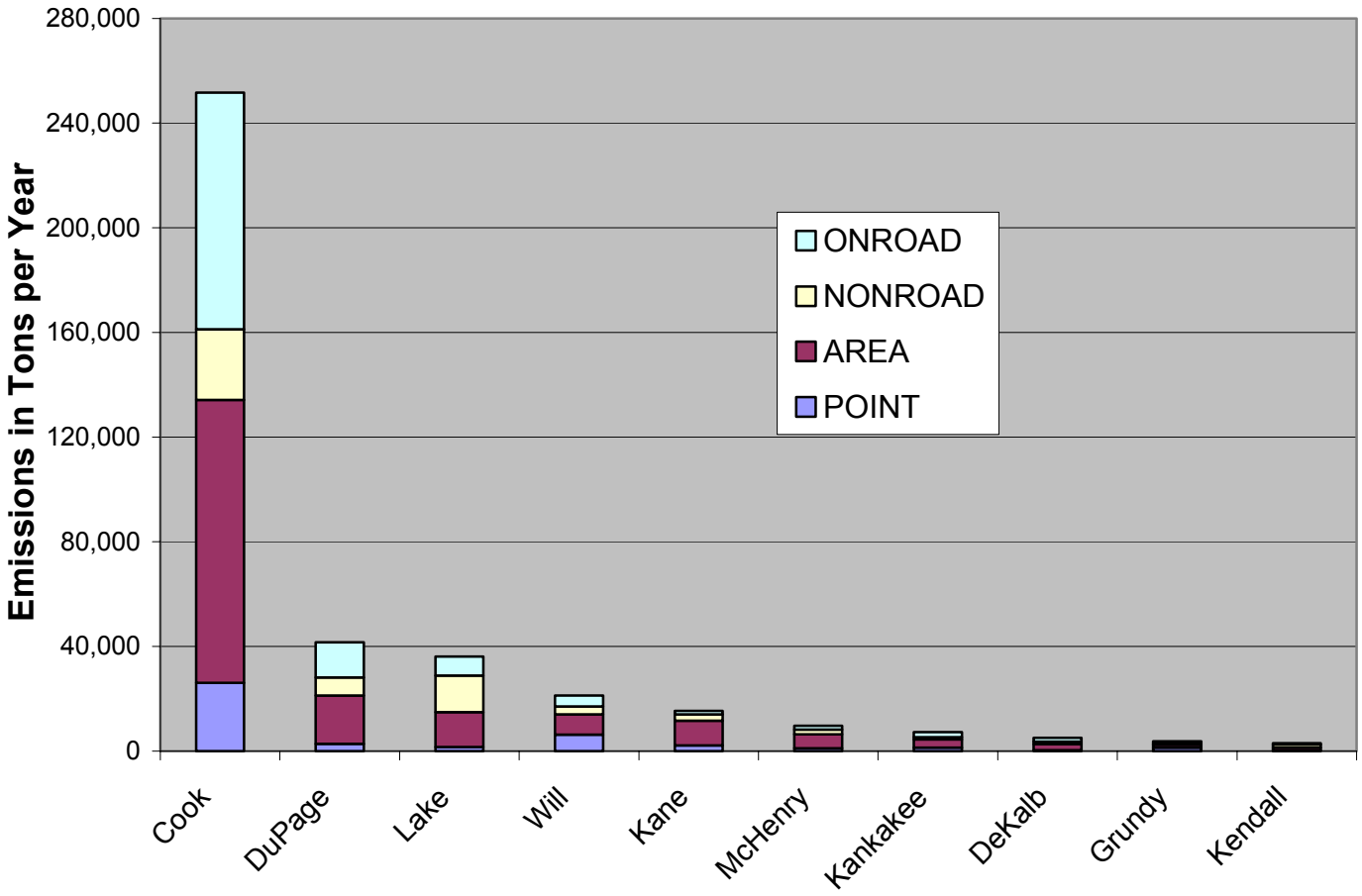
## 1999 NOx Emissions by County for the Chicago CMSA




| NOx (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Cook | 33,360.92 | 14,228.06 | 117,076.52 | 41,568.40 | 206,233.90 |
| Will | 41,693.54 | 951.62 | 6,865.61 | 4,144.48 | 53,655.25 |
| DuPage | 1,737.47 | 2,406.56 | 17,552.37 | 8,207.61 | 29,904.01 |
| Lake | 10,085.01 | 1,292.50 | 9,475.59 | 5,399.17 | 26,252.27 |
| Kane | 1,176.13 | 907.98 | 3,139.80 | 4,275.63 | 9,499.54 |
| Grundy | 5,686.21 | 89.14 | 1,974.68 | 1,496.17 | 9,246.20 |
| Kankakee | 1,170.58 | 268.64 | 2,988.52 | 1,994.44 | 6,422.18 |
| McHenry | 1,033.49 | 555.42 | 2,709.03 | 1,799.64 | 6,097.58 |
| DeKalb | 114.20 | 193.06 | 2,510.65 | 2,205.33 | 5,023.24 |
| Kendall | 1,277.93 | 115.74 | 959.41 | 835.50 | 3,188.58 |

# FIGURE 6c

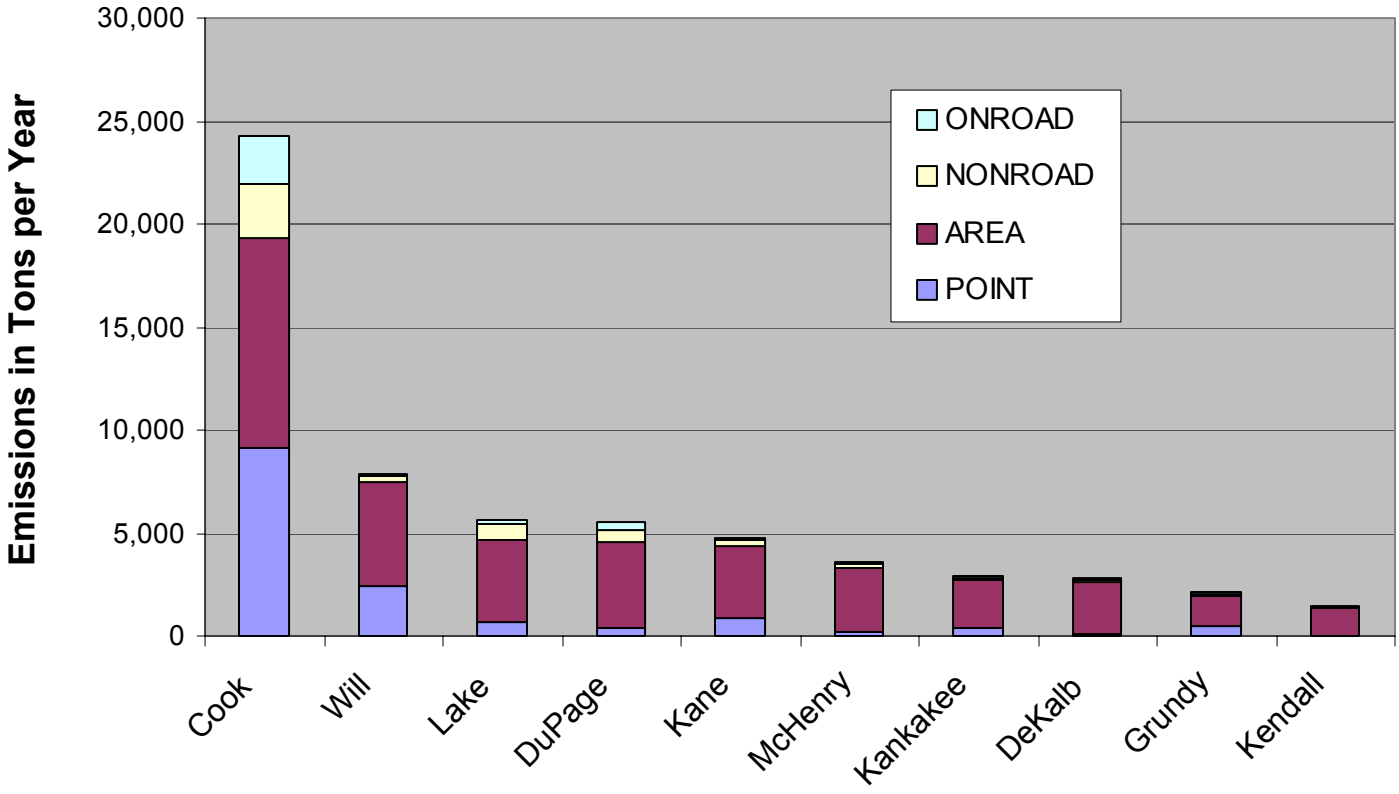
## 1999 VOC Emissions by County for the Chicago CMSA




| VOC (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Cook | 26,044.82 | 108,139.44 | 90,346.11 | 27,060.60 | 251,590.97 |
| DuPage | 2,783.31 | 18,472.83 | 13,529.00 | 6,834.21 | 41,619.35 |
| Lake | 1,621.67 | 13,290.22 | 7,244.41 | 13,931.53 | 36,087.83 |
| Will | 6,244.80 | 7,790.22 | 4,038.48 | 3,113.12 | 21,186.62 |
| Kane | 2,185.79 | 9,474.34 | 1,440.28 | 2,340.31 | 15,440.72 |
| McHenry | 1,119.97 | 5,336.08 | 1,468.10 | 1,799.31 | 9,723.46 |
| Kankakee | 1,361.91 | 3,174.96 | 1,970.27 | 801.05 | 7,308.19 |
| DeKalb | 376.20 | 2,284.15 | 1,567.26 | 915.64 | 5,143.25 |
| Grundy | 1,300.18 | 1,171.15 | 926.14 | 366.58 | 3,764.05 |
| Kendall | 296.18 | 1,002.24 | 510.65 | 1,199.08 | 3,008.15 |

# FIGURE 6d

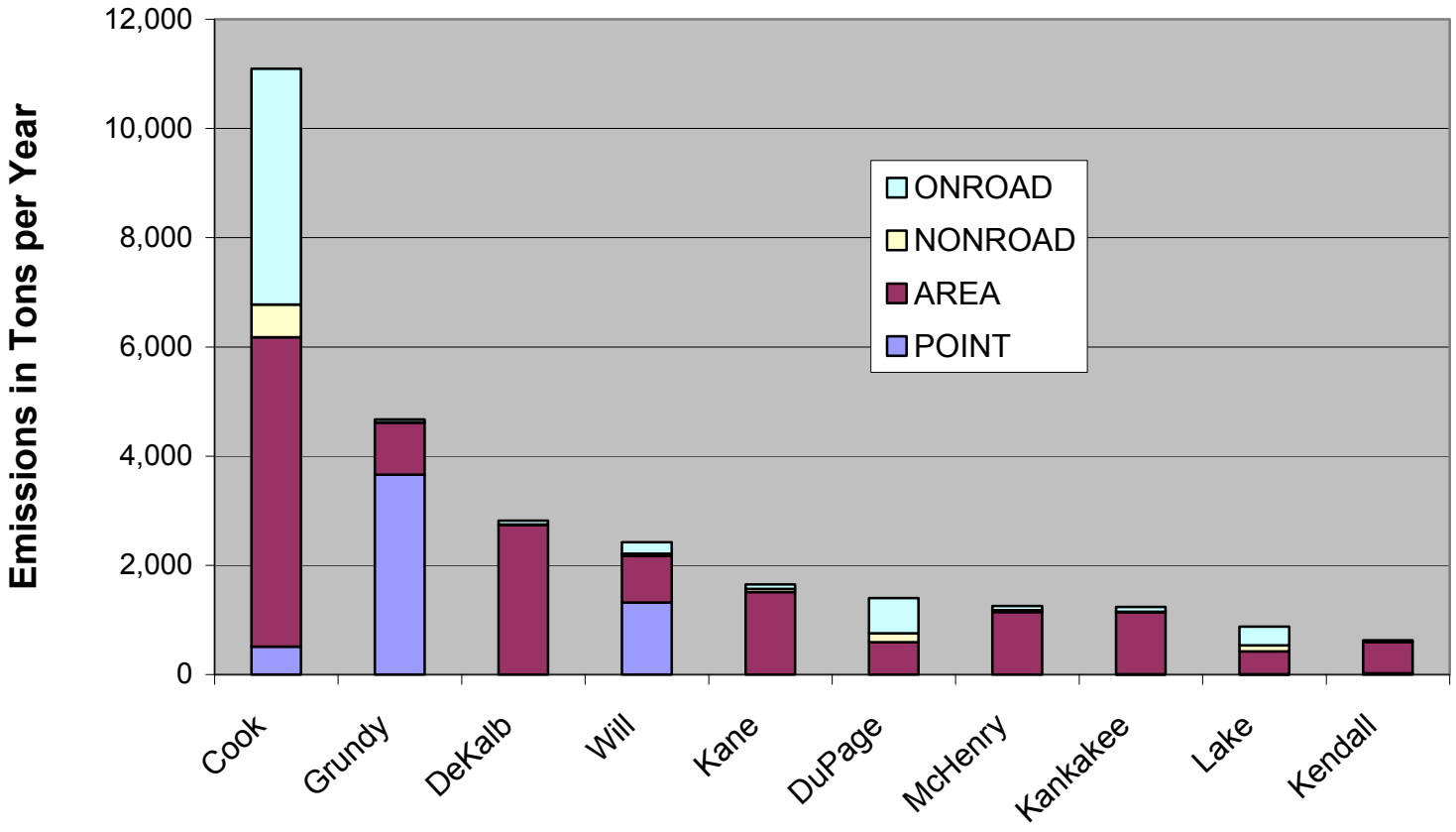
## 1999 PM2.5 Emissions by County for the Chicago CMSA




| PM2.5 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Cook | 9,104.27 | 10,254.96 | 2,367.73 | 2,584.81 | 24,311.77 |
| Will | 2,397.77 | 5,039.03 | 159.47 | 313.47 | 7,909.75 |
| Lake | 694.82 | 3,972.39 | 193.21 | 762.39 | 5,622.81 |
| DuPage | 428.93 | 4,113.60 | 355.29 | 611.88 | 5,509.70 |
| Kane | 885.44 | 3,444.13 | 78.91 | 320.26 | 4,728.74 |
| McHenry | 210.38 | 3,136.82 | 66.24 | 169.87 | 3,583.30 |
| Kankakee | 350.43 | 2,347.67 | 66.80 | 137.09 | 2,901.99 |
| DeKalb | 50.32 | 2,554.39 | 56.86 | 150.89 | 2,812.46 |
| Grundy | 516.53 | 1,450.52 | 45.91 | 95.92 | 2,108.88 |
| Kendall | 26.11 | 1,313.23 | 24.08 | 82.71 | 1,446.13 |

# FIGURE 6e

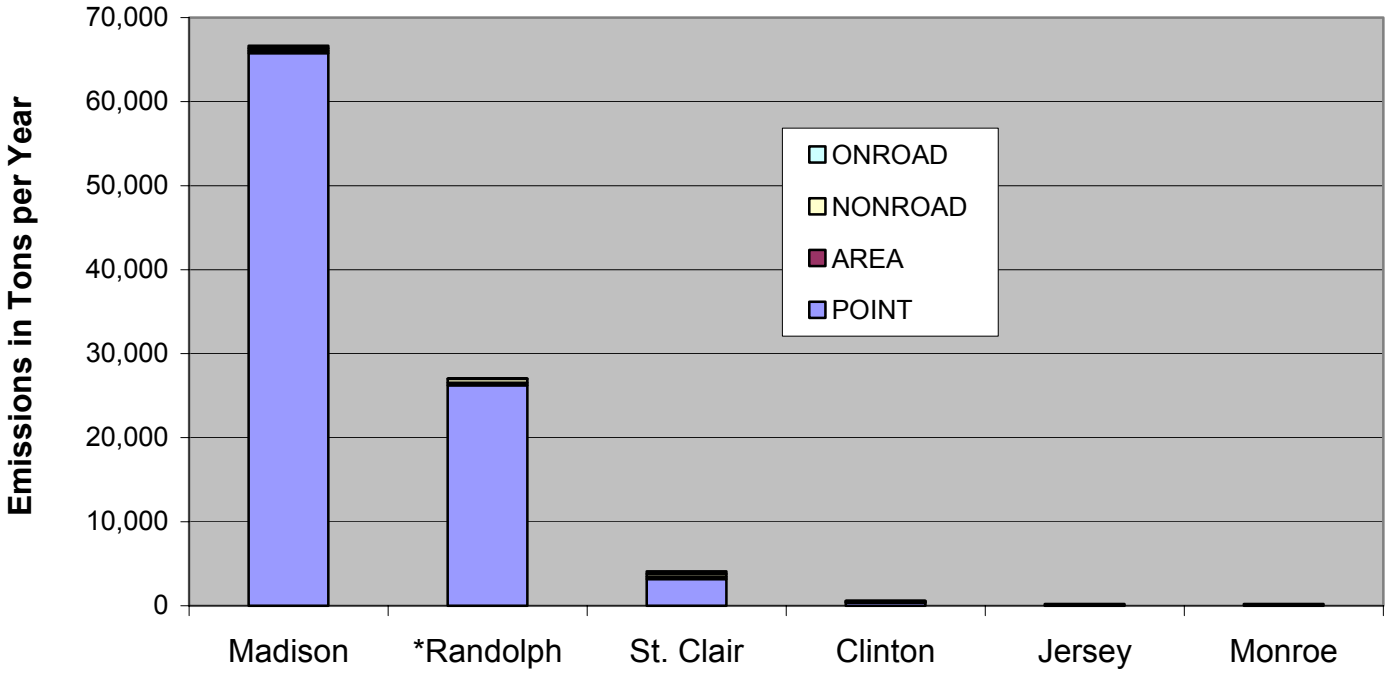
## 1999 NH3 Emissions by County for the Chicago CMSA




| NH3 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Cook | 510.59 | 5,663.92 | 4,318.24 | 601.94 | 11,094.69 |
| Grundy | 3,663.66 | 949.69 | 50.94 | 5.13 | 4,669.42 |
| DeKalb | 0.26 | 2,735.01 | 71.09 | 13.41 | 2,819.77 |
| Will | 1,318.22 | 855.24 | 207.51 | 39.37 | 2,420.34 |
| Kane | 0.00 | 1,513.20 | 80.77 | 58.65 | 1,652.62 |
| DuPage | 1.63 | 592.24 | 646.70 | 159.25 | 1,399.82 |
| McHenry | 0.00 | 1,145.76 | 76.35 | 34.36 | 1,256.47 |
| Kankakee | 6.68 | 1,129.88 | 88.76 | 13.34 | 1,238.66 |
| Lake | 3.36 | 423.35 | 346.53 | 105.98 | 879.22 |
| Kendall | 24.12 | 573.11 | 26.92 | 5.63 | 629.78 |

# FIGURE 7a

## 1999 SO2 Emissions by County for the Metro-East St. Louis MSA

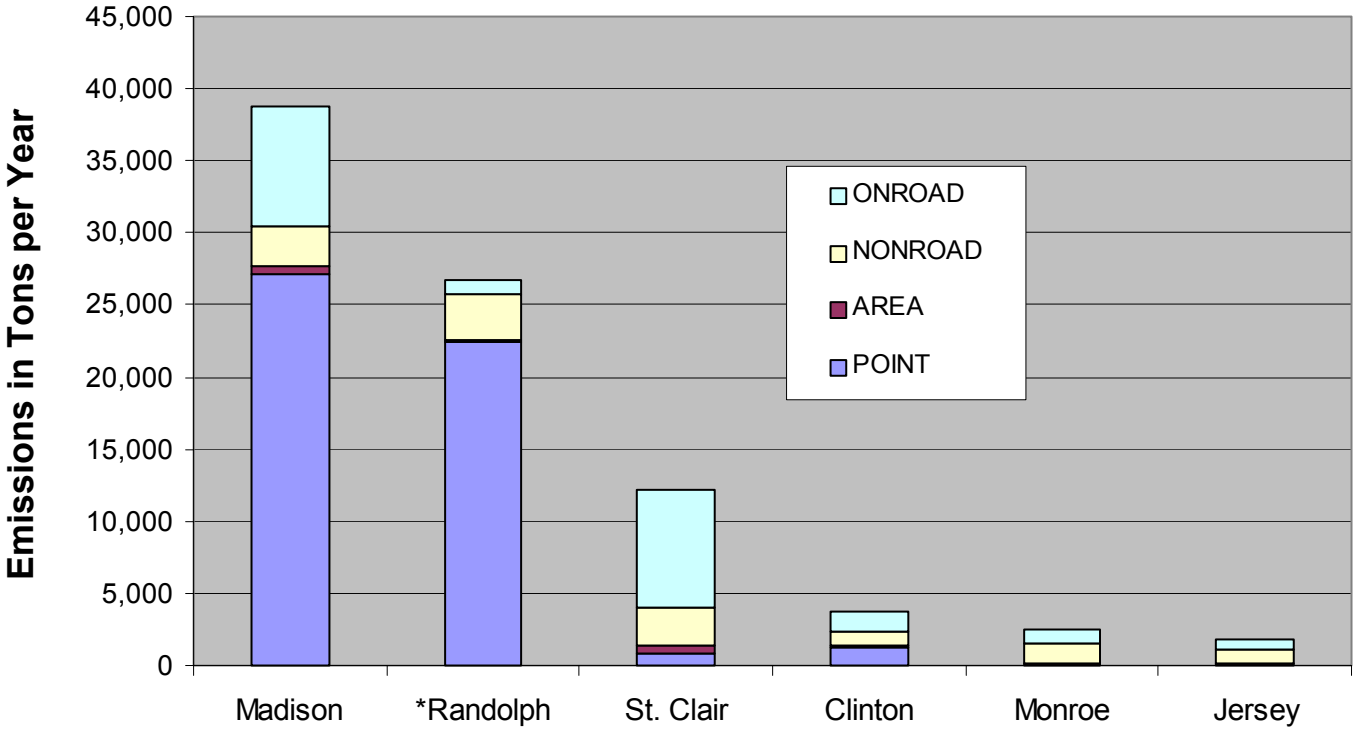



***2002 Point Source Emissions**

| SO2 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Madison | 65,775.72 | 274.45 | 320.08 | 295.78 | 66,666.03 |
| St. Clair | 3,193.18 | 263.56 | 320.51 | 342.55 | 4,119.80 |
| Clinton | 362.63 | 104.86 | 49.88 | 88.16 | 605.53 |
| Monroe | 0.02 | 15.80 | 33.61 | 195.58 | 245.01 |
| Jersey | 0.00 | 44.49 | 26.02 | 174.52 | 245.03 |
| *Randolph | 26,267.50 | 277.00 | 36.45 | 480.67 | 27,061.62 |

# FIGURE 7b

## 1999 NOx Emissions by County for the Metro-East St. Louis MSA

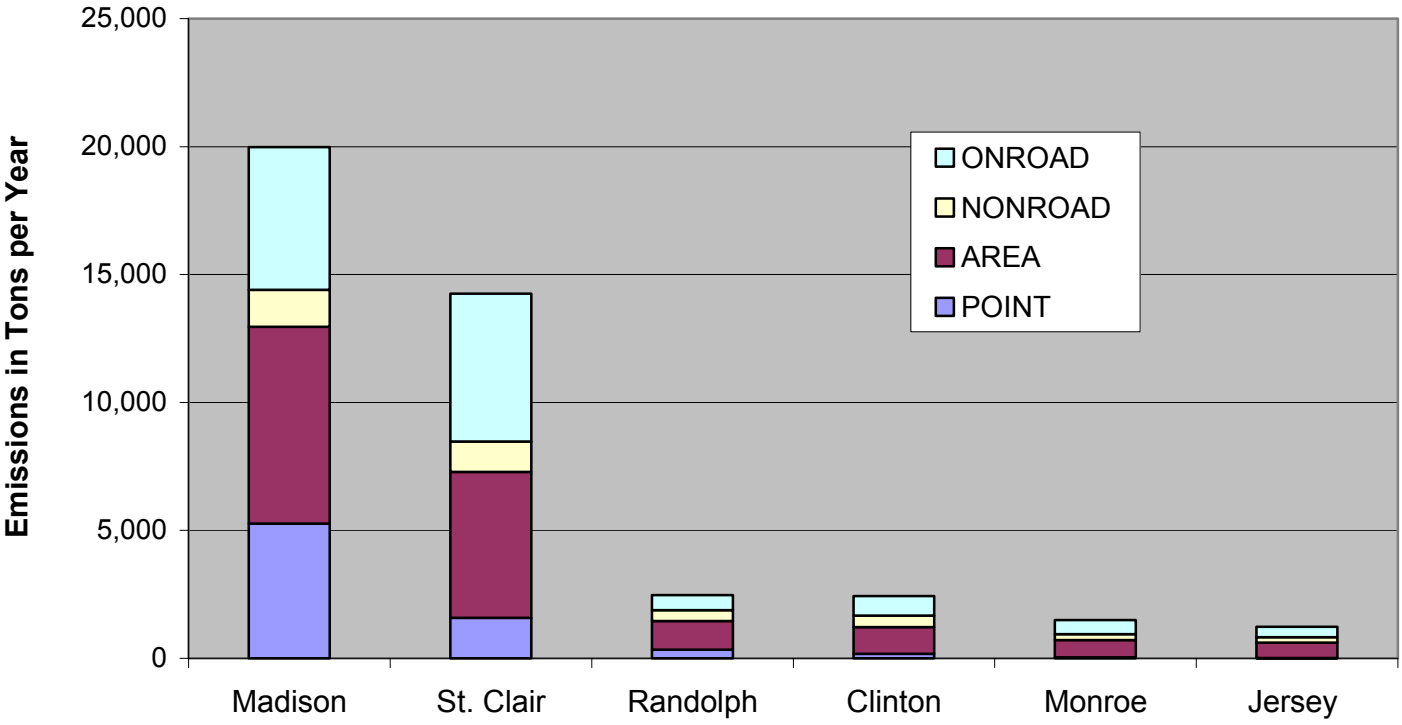



***2002 Point Source Emissions**

| NOx (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Madison | 27,138.20 | 599.38 | 8,323.62 | 2,731.30 | 38,792.50 |
| St. Clair | 770.21 | 599.93 | 8,118.32 | 2,688.02 | 12,176.48 |
| Clinton | 1,301.97 | 124.16 | 1,379.05 | 988.55 | 3,793.73 |
| Monroe | 10.29 | 65.75 | 895.49 | 1,503.33 | 2,474.86 |
| Jersey | 0.00 | 72.58 | 699.42 | 1,058.50 | 1,830.50 |
| *Randolph | 22,367.13 | 169.02 | 976.70 | 3,216.74 | 26,729.59 |

# FIGURE 7c

## 1999 VOC Emissions by County for the Metro-East St. Louis MSA

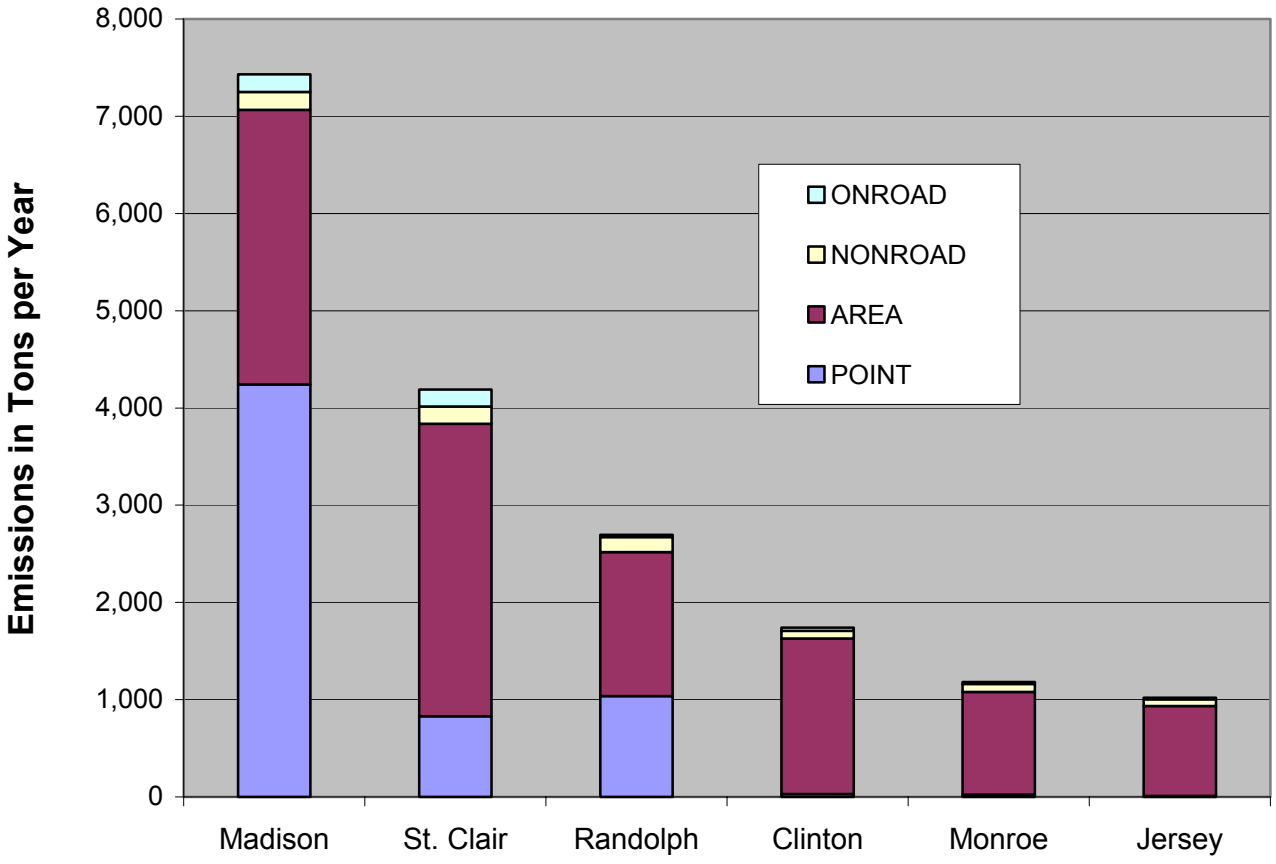



***2002 Point Source Emissions**

| VOC (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Madison | 5,264.98 | 7,690.34 | 5,568.87 | 1,452.74 | 19,976.93 |
| St. Clair | 1,579.59 | 5,715.01 | 5,777.90 | 1,186.15 | 14,258.65 |
| Clinton | 180.17 | 1,046.51 | 761.02 | 450.45 | 2,438.15 |
| Monroe | 37.79 | 675.47 | 538.99 | 240.83 | 1,493.08 |
| Jersey | 17.56 | 593.39 | 405.92 | 213.83 | 1,230.70 |
| *Randolph | 337.31 | 1,121.04 | 588.76 | 422.60 | 2,469.71 |

# FIGURE 7d

## 1999 PM2.5 Emissions by County for the Metro-East St. Louis MSA

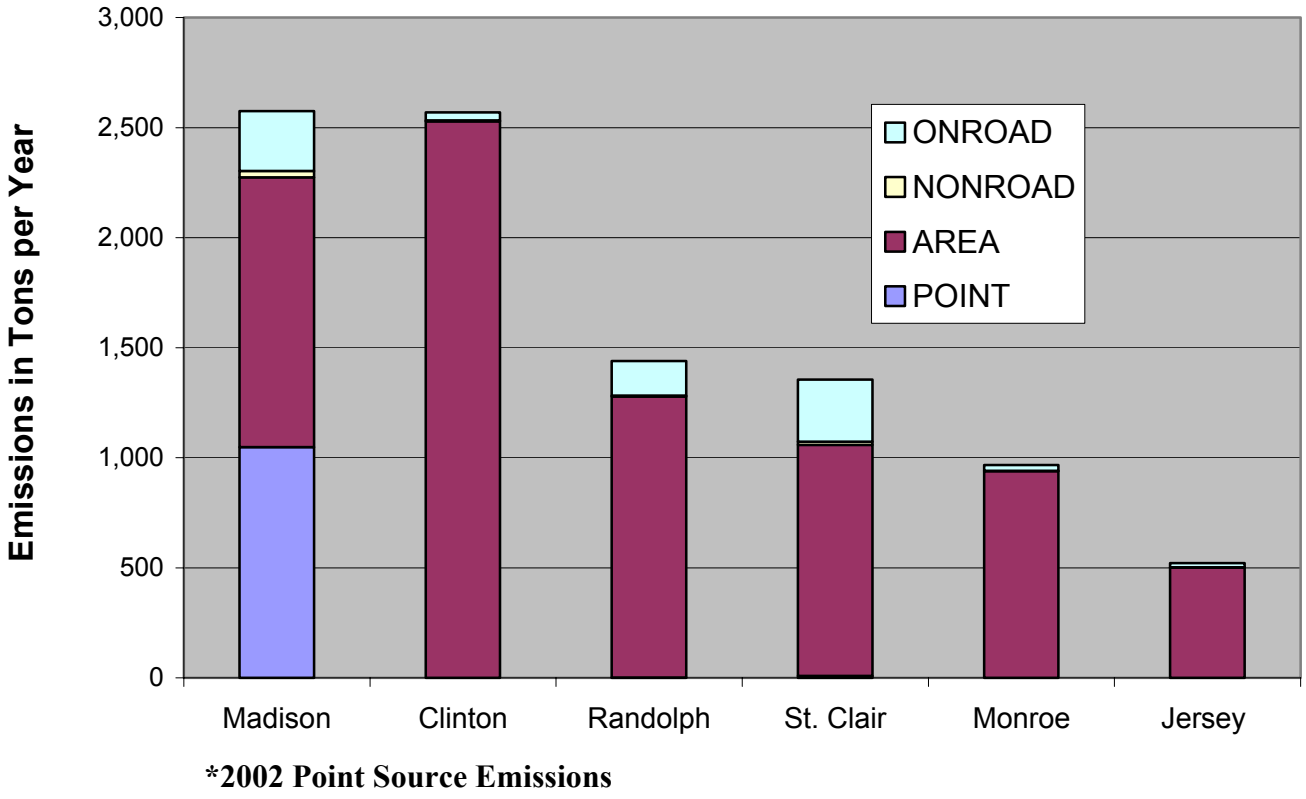



***2002 Point Source Emissions**

| PM2.5 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Madison | 4,240.81 | 2,822.97 | 180.75 | 185.66 | 7,430.19 |
| St. Clair | 827.68 | 3,007.90 | 172.39 | 179.95 | 4,187.92 |
| Clinton | 29.32 | 1,601.01 | 32.98 | 78.26 | 1,741.57 |
| Monroe | 22.88 | 1,057.21 | 20.92 | 80.22 | 1,181.23 |
| Jersey | 9.69 | 925.90 | 17.12 | 67.97 | 1,020.69 |
| *Randolph | 1,038.45 | 1,479.52 | 23.67 | 155.00 | 2,696.64 |

# FIGURE 7e

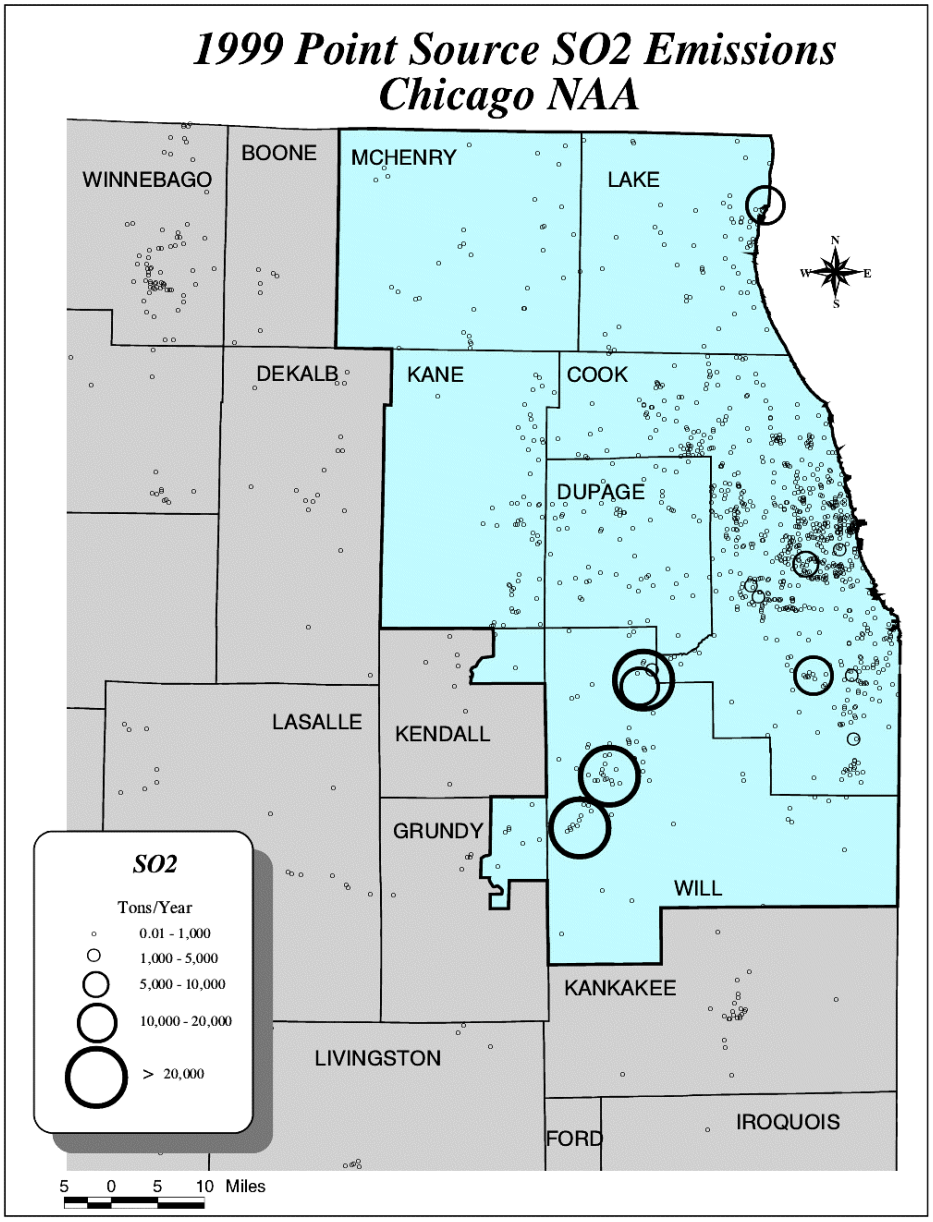
## 1999 NH3 Emissions by County for the Metro-East St. Louis MSA



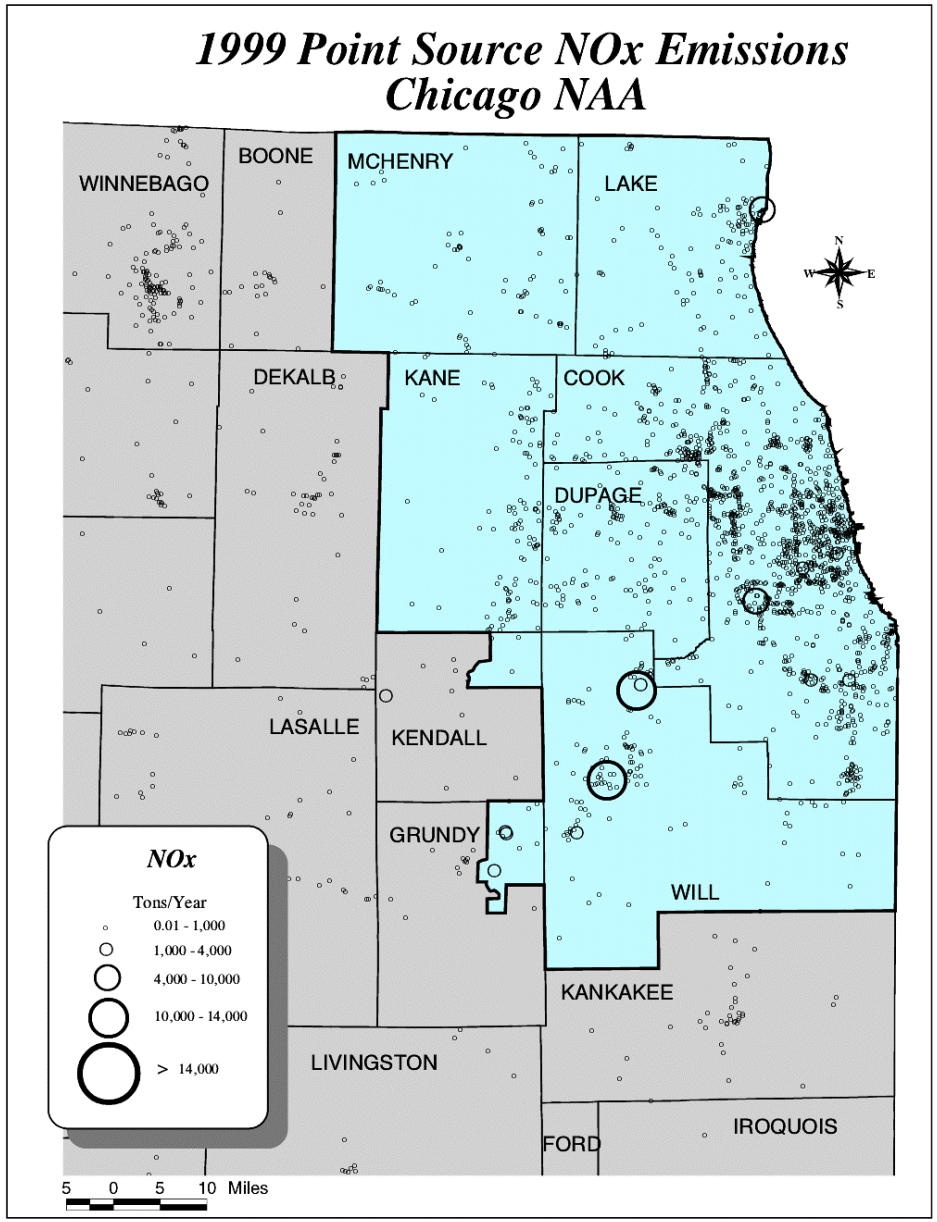

***2002 Point Source Emissions**

| NH3 (TPY) | | | | | |
|---|---|---|---|---|---|
| **County** | **Point** | **Area** | **On-Road** | **Off-Road** | **Total** |
| Madison | 1,047.31 | 1,226.73 | 272.08 | 28.69 | 2,574.81 |
| Clinton | 0.00 | 2,528.75 | 36.22 | 4.07 | 2,569.04 |
| St. Clair | 9.27 | 1,048.49 | 282.48 | 15.17 | 1,355.41 |
| Monroe | 0.00 | 938.87 | 25.81 | 2.09 | 966.77 |
| Jersey | 0.00 | 500.33 | 18.97 | 1.91 | 521.21 |
| *Randolph | 1.43 | 1,276.05 | 157.00 | 5.15 | 1,439.63 |

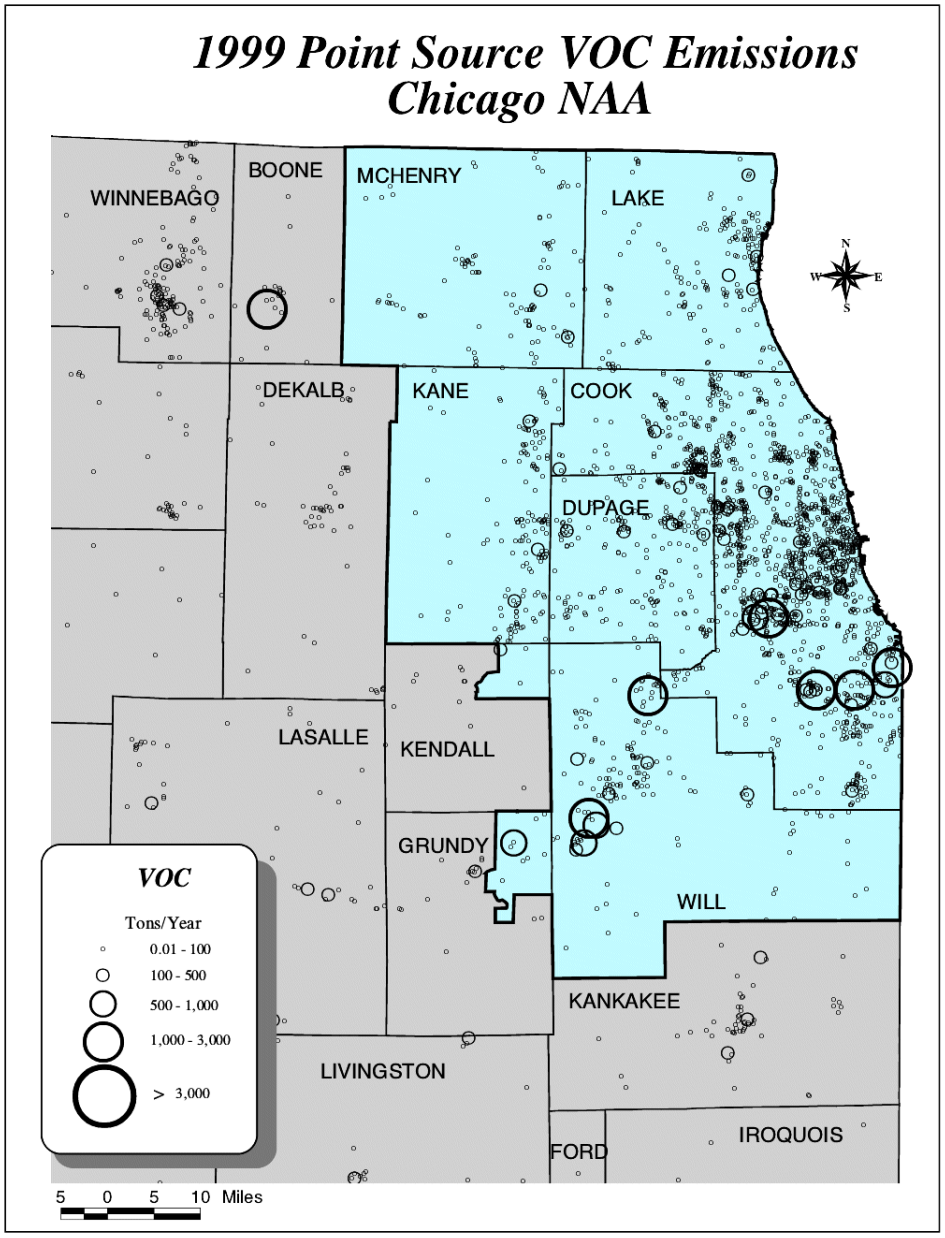
# Figure 8a



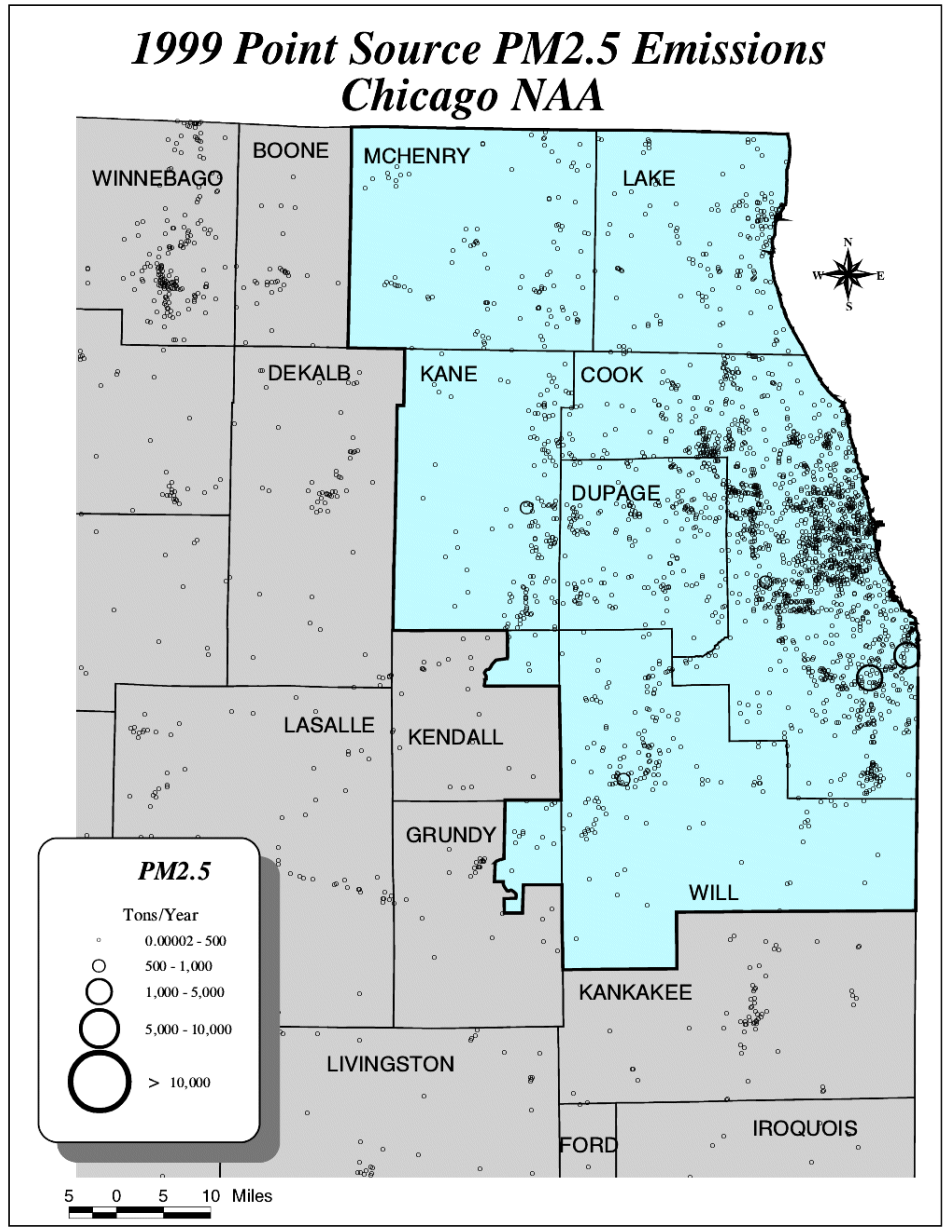

# Figure 8b



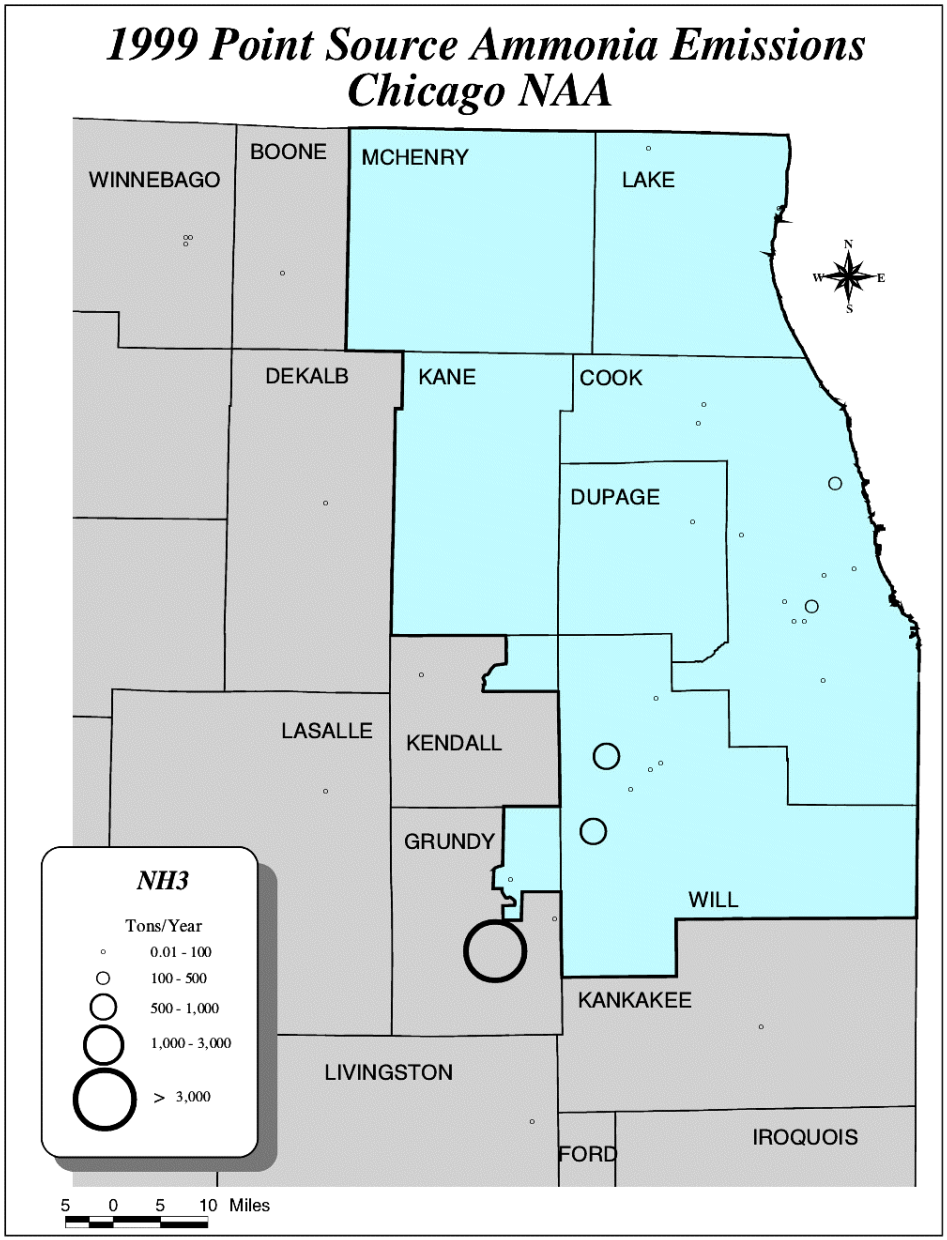
## Figure 8c



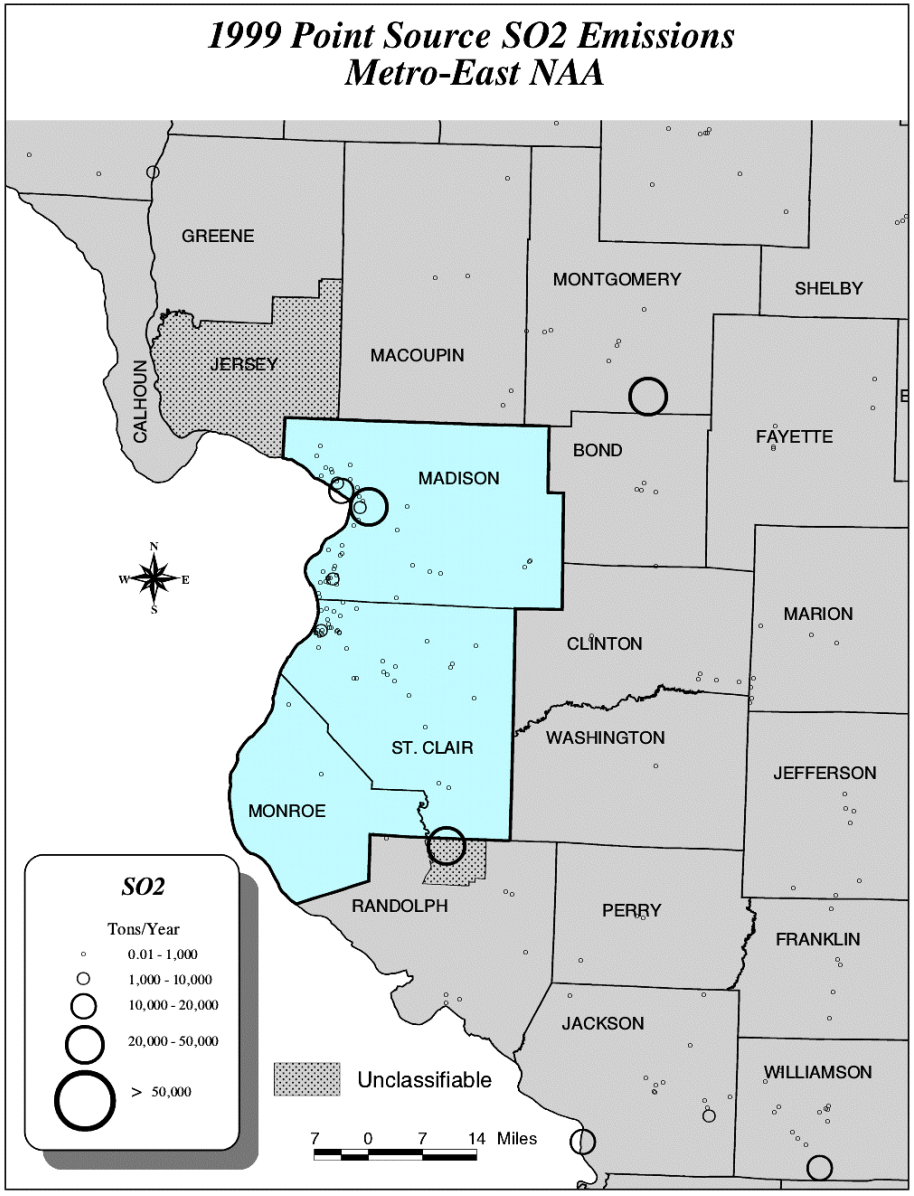

## Figure 8d



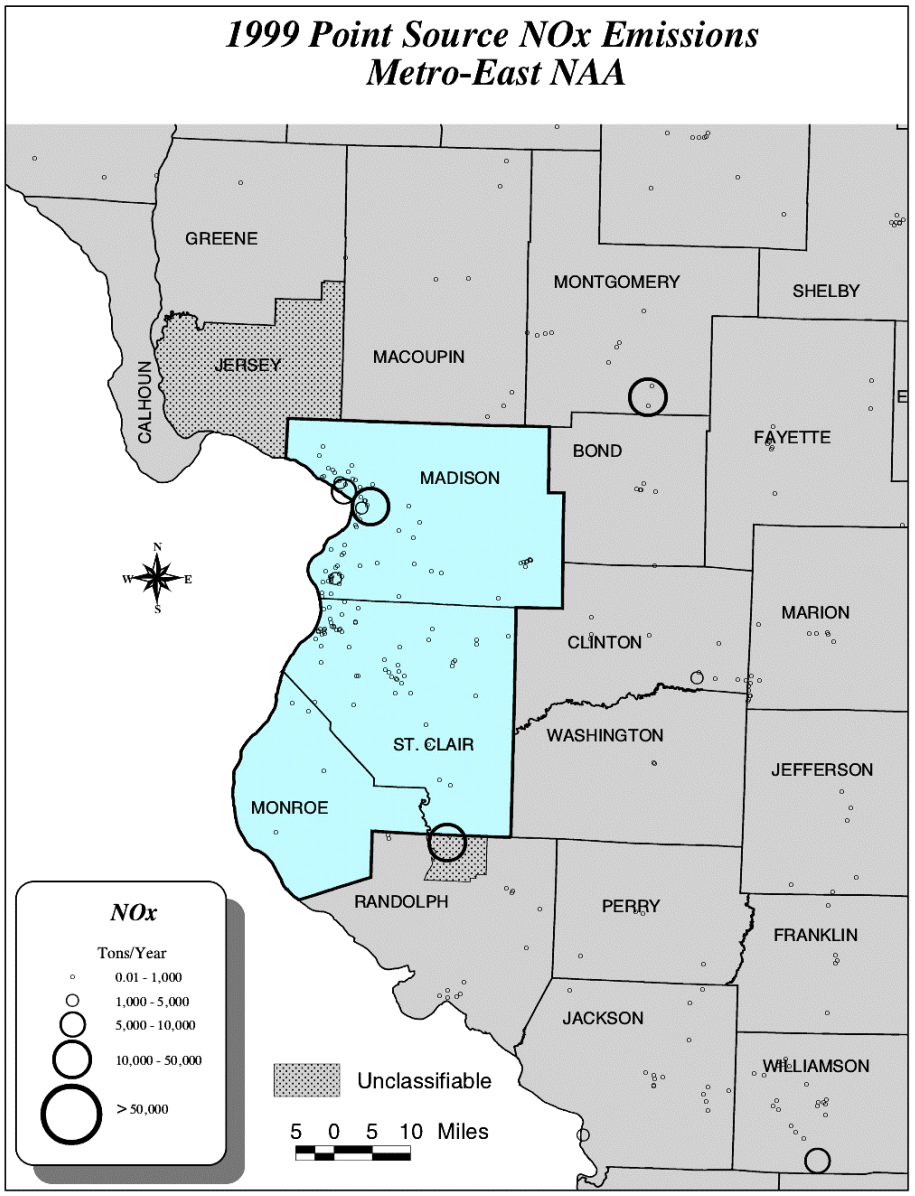
# Figure 8e


1999 Point Source Ammonia Emissions
Chicago NAA
WINNEBAGO
BOONE
MCHENRY
LAKE
DEKALB
KANE
COOK
DUPAGE
LASALLE
KENDALL
GRUNDY
WILL
KANKAKEE
LIVINGSTON
FORD
IROQUOIS
N
W
E
S
NH3
Tons/Year
0.01 - 100
100 - 500
500 - 1,000
1,000 - 3,000
> 3,000
5 0 5 10 Miles

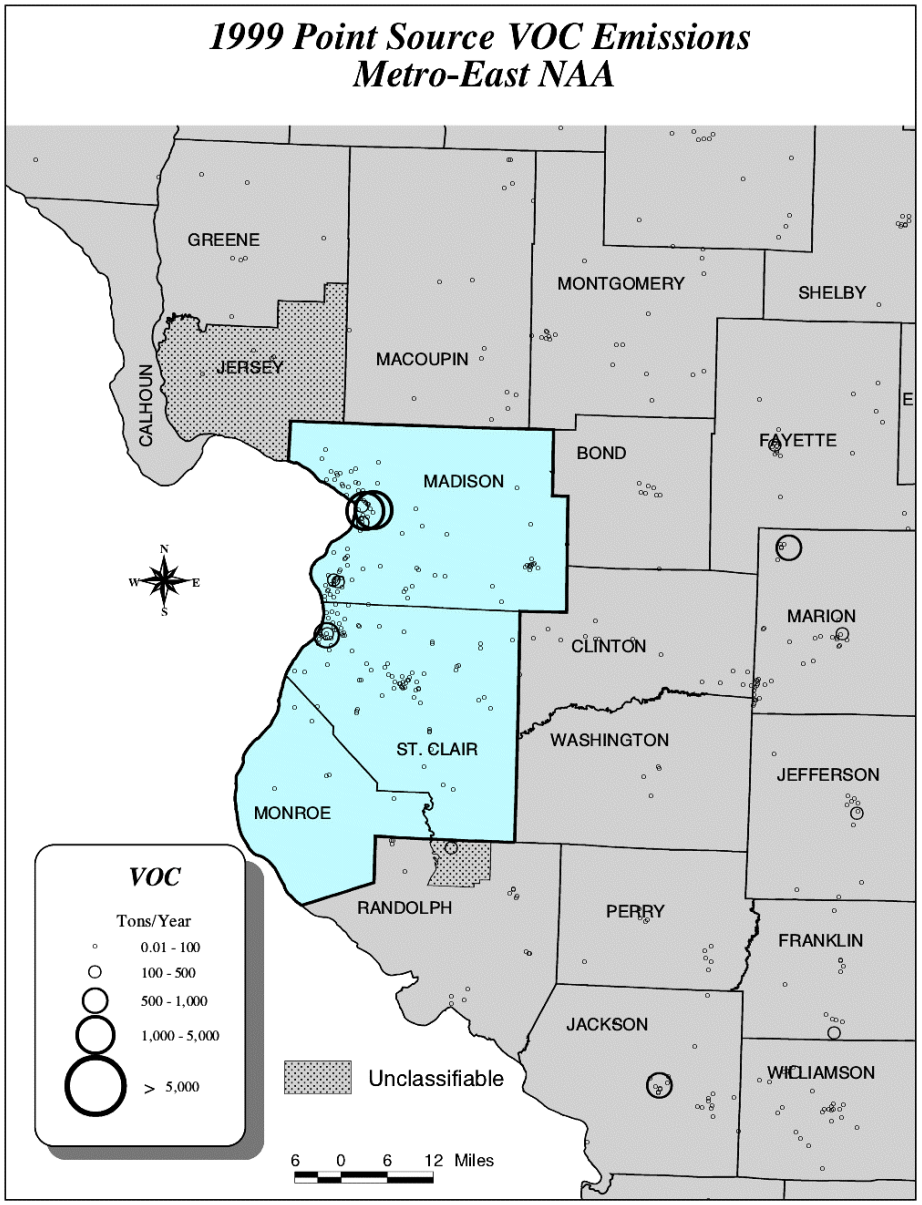
# Figure 9a



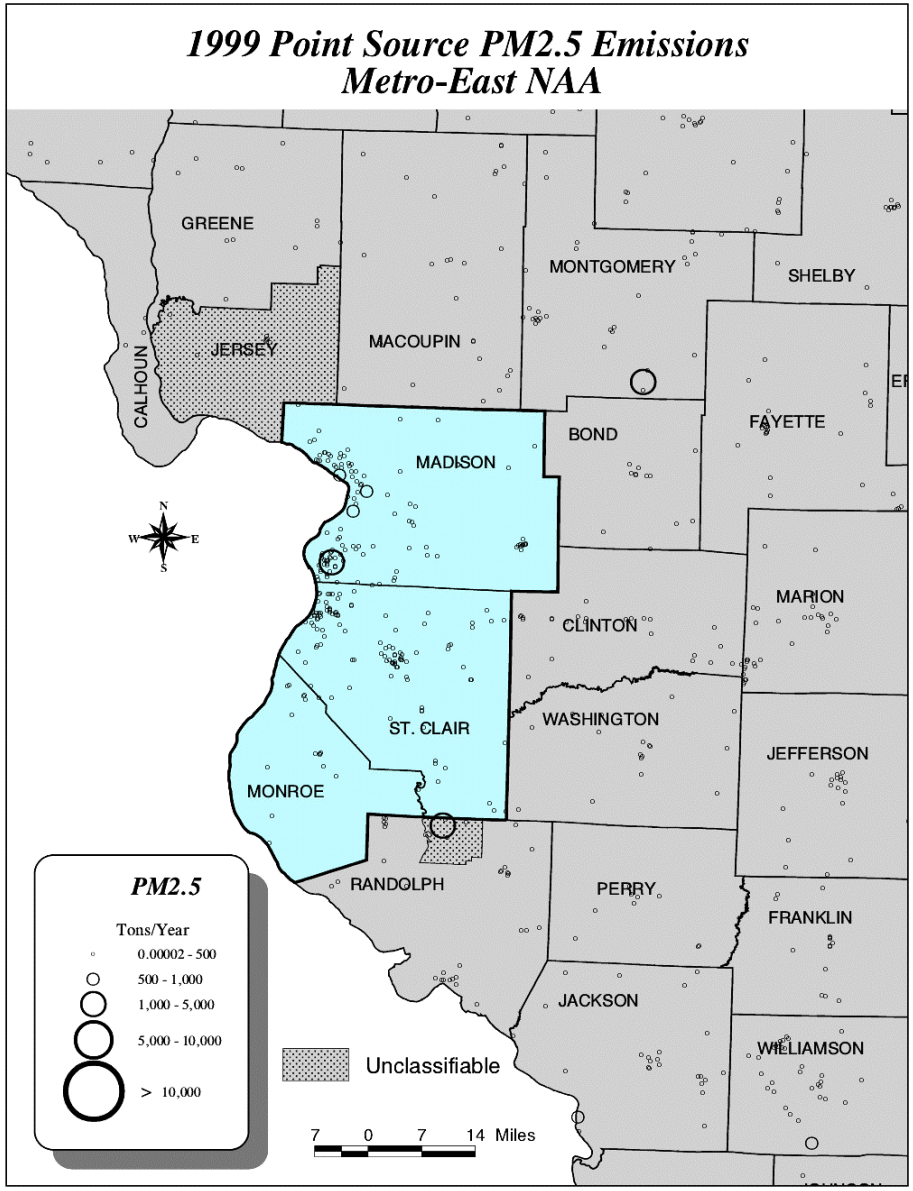

# Figure 9b



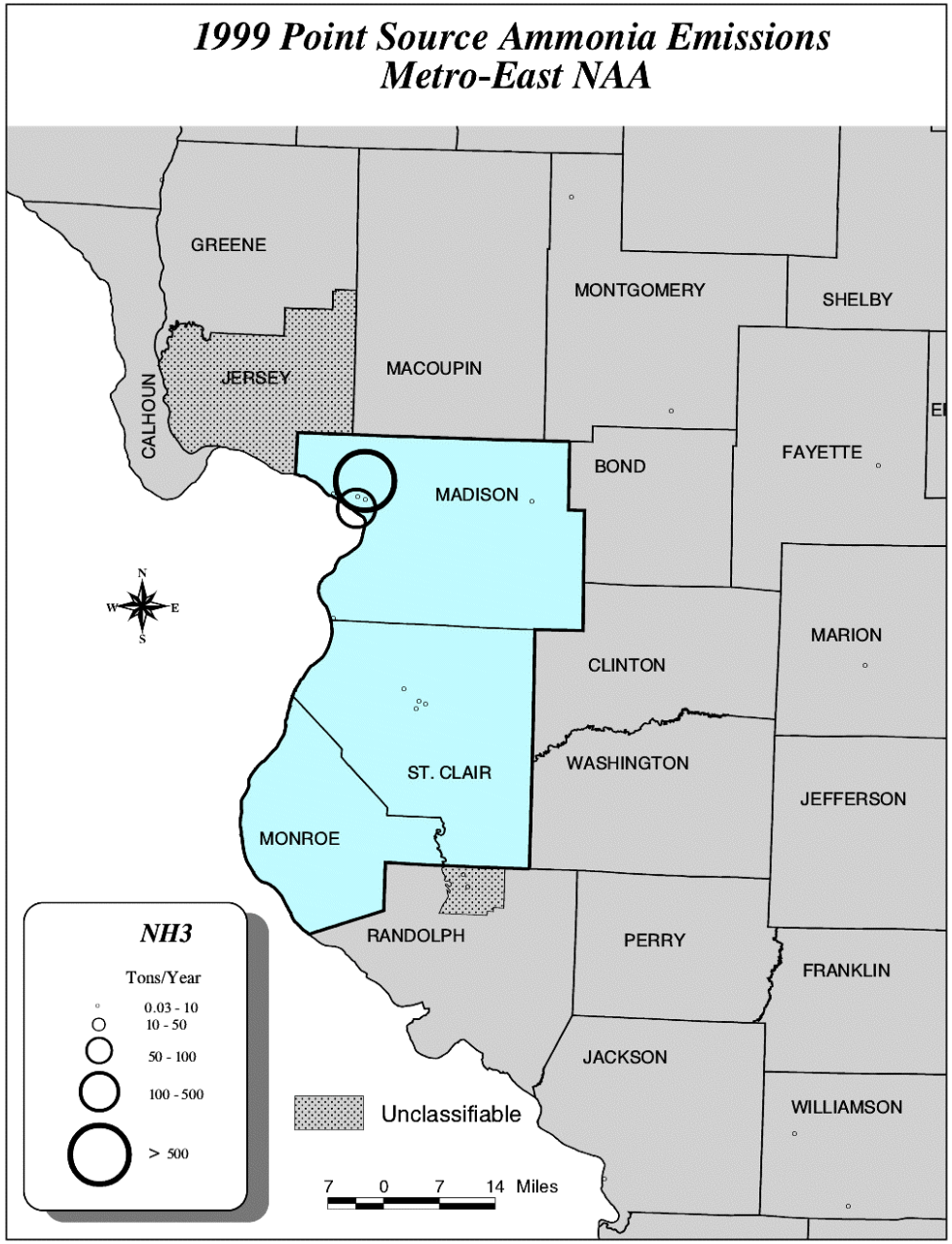
# Figure 9c



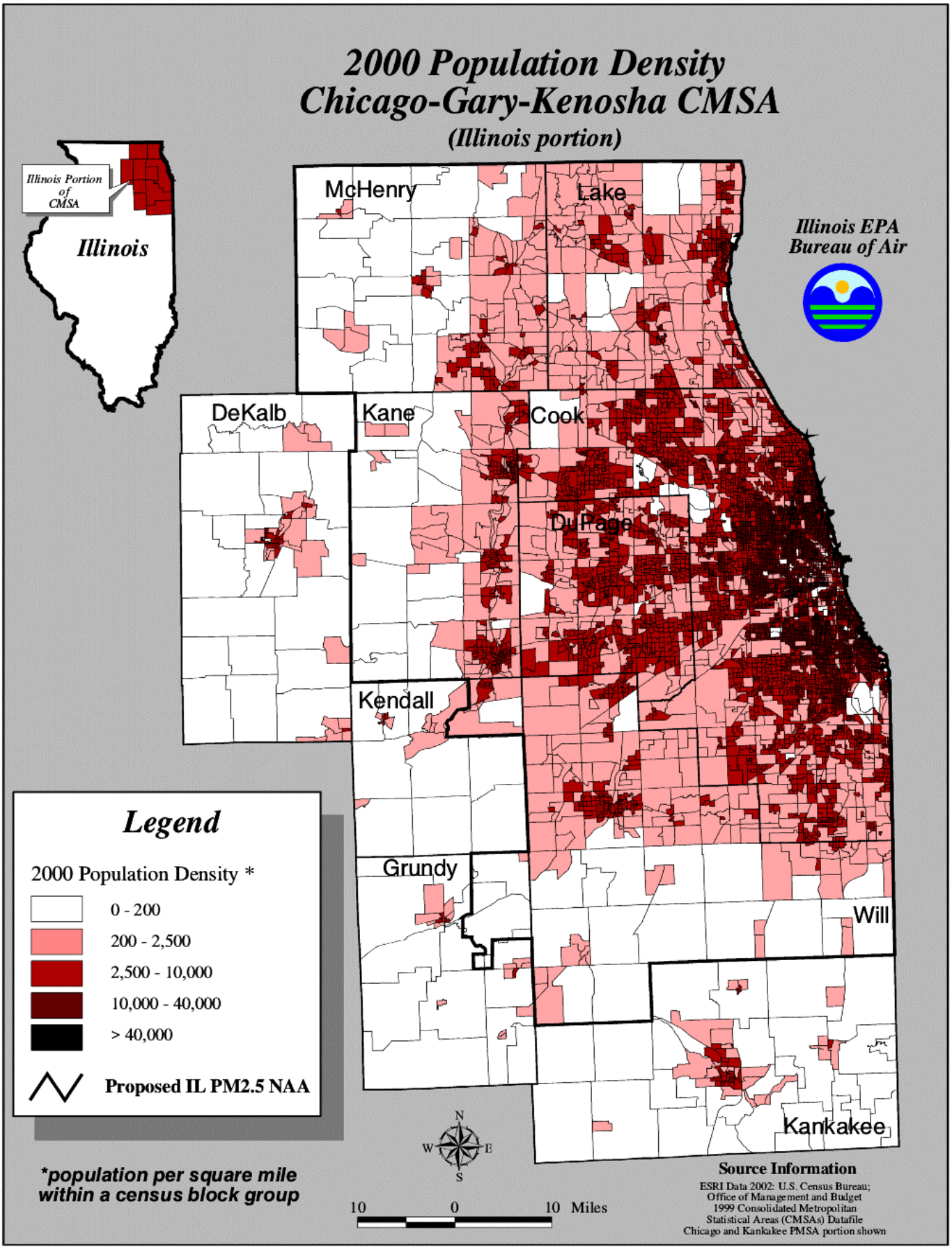

# Figure 9d



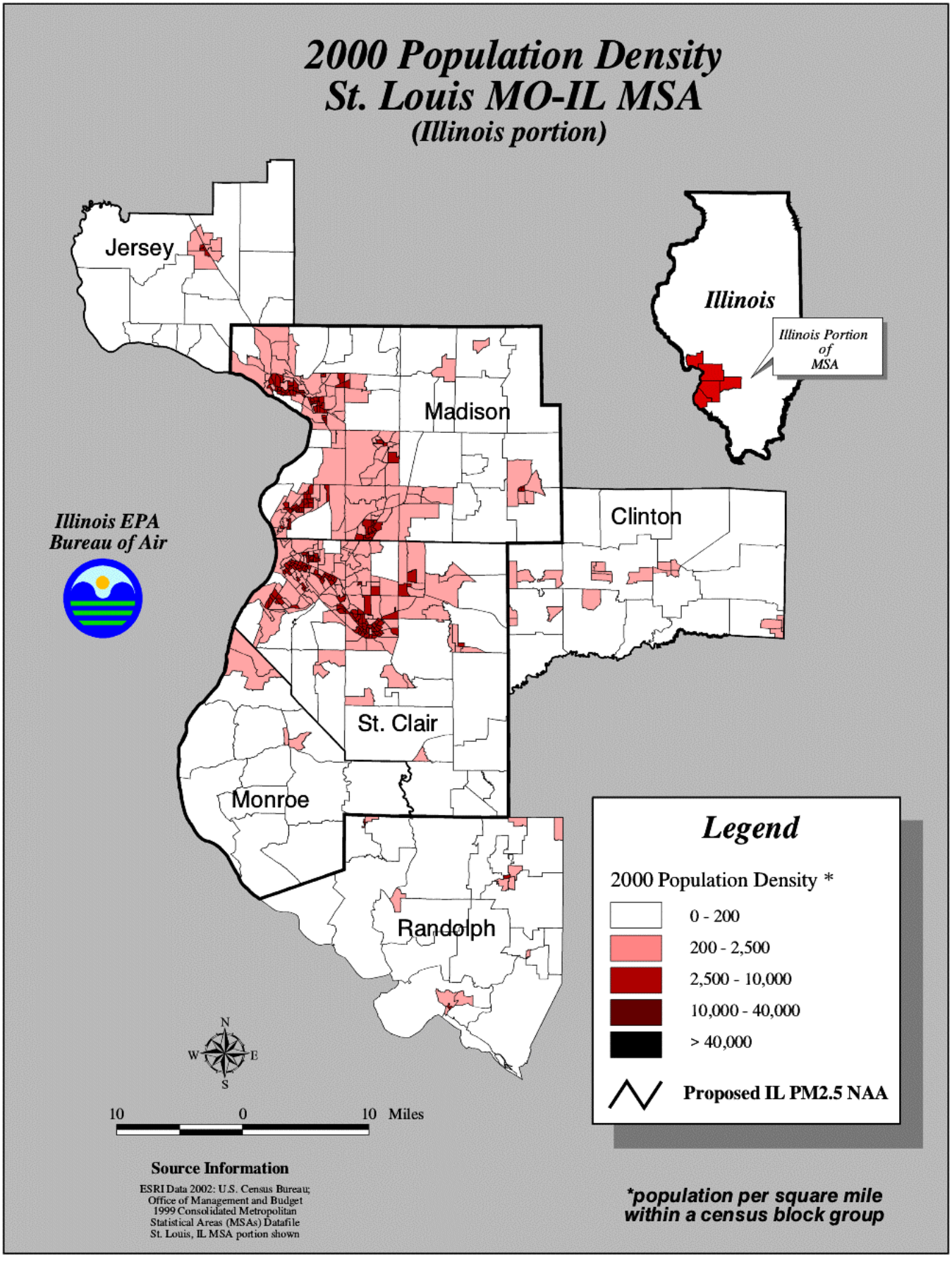
# Figure 9e


1999 Point Source Ammonia Emissions
Metro-East NAA
GREENE
MONTGOMERY
SHELBY
JERSEY
MACOUPIN
CALHOUN
BOND
FAYETTE
MADISON
N
W
E
S
MARION
CLINTON
ST. CLAIR
WASHINGTON
JEFFERSON
MONROE
RANDOLPH
PERRY
FRANKLIN
JACKSON
WILLIAMSON
NH3
Tons/Year
0.03 - 10
10 - 50
50 - 100
100 - 500
> 500
Unclassifiable
7 0 7 14 Miles

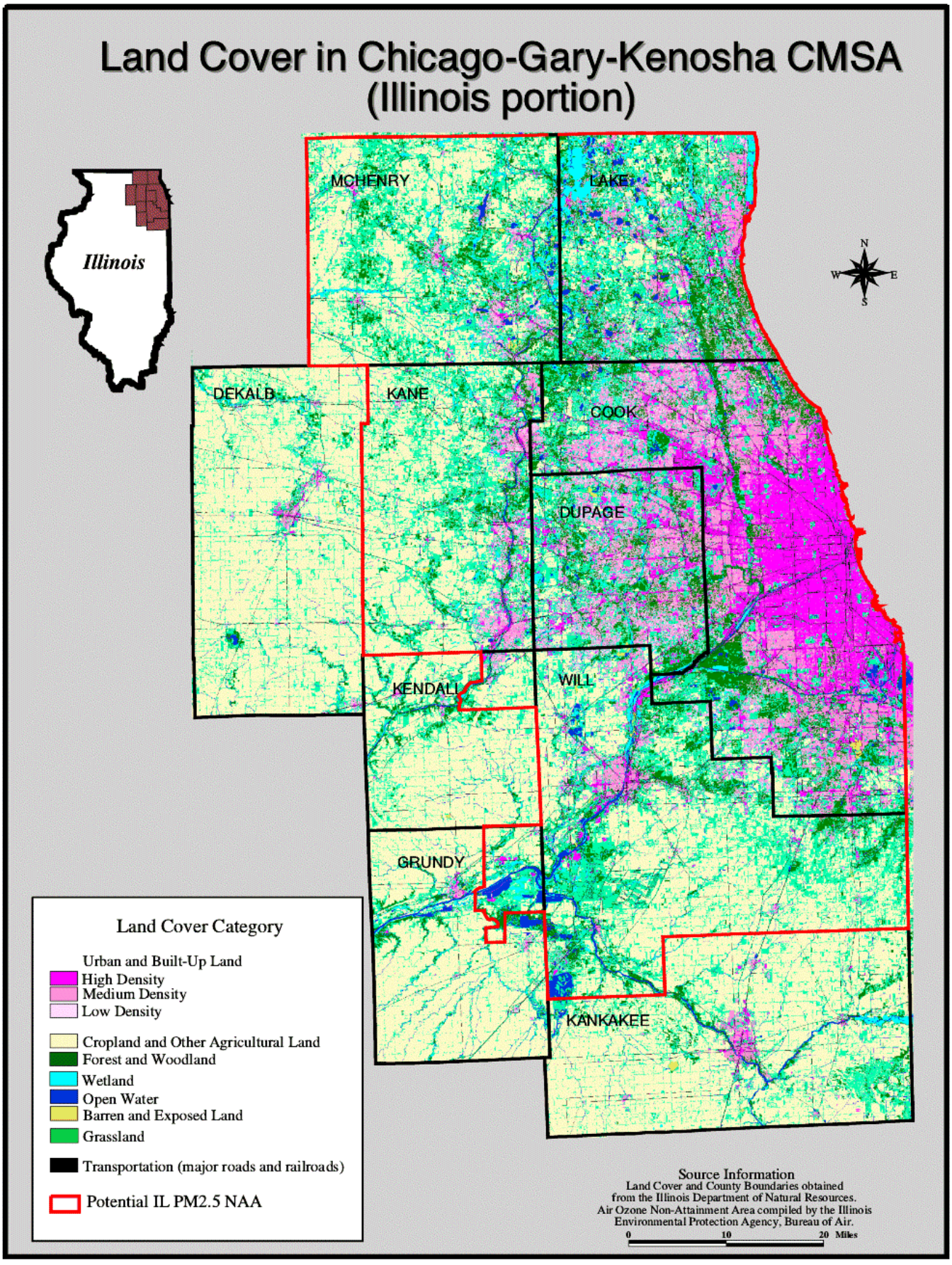
# Figure 10


2000 Population Density
Chicago-Gary-Kenosha CMSA
(Illinois portion)
Illinois Portion of CMSA
Illinois
Illinois EPA
Bureau of Air
McHenry
Lake
DeKalb
Kane
Cook
DuPage
Kendall
Grundy
Will
Kankakee
Legend
2000 Population Density *
0 - 200
200 - 2,500
2,500 - 10,000
10,000 - 40,000
> 40,000
Proposed IL PM2.5 NAA
*population per square mile within a census block group
N
W
E
S
10 0 10 Miles
Source Information
ESRI Data 2002: U.S. Census Bureau;
Office of Management and Budget
1999 Consolidated Metropolitan
Statistical Areas (CMSAs) Datafile
Chicago and Kankakee PMSA portion shown

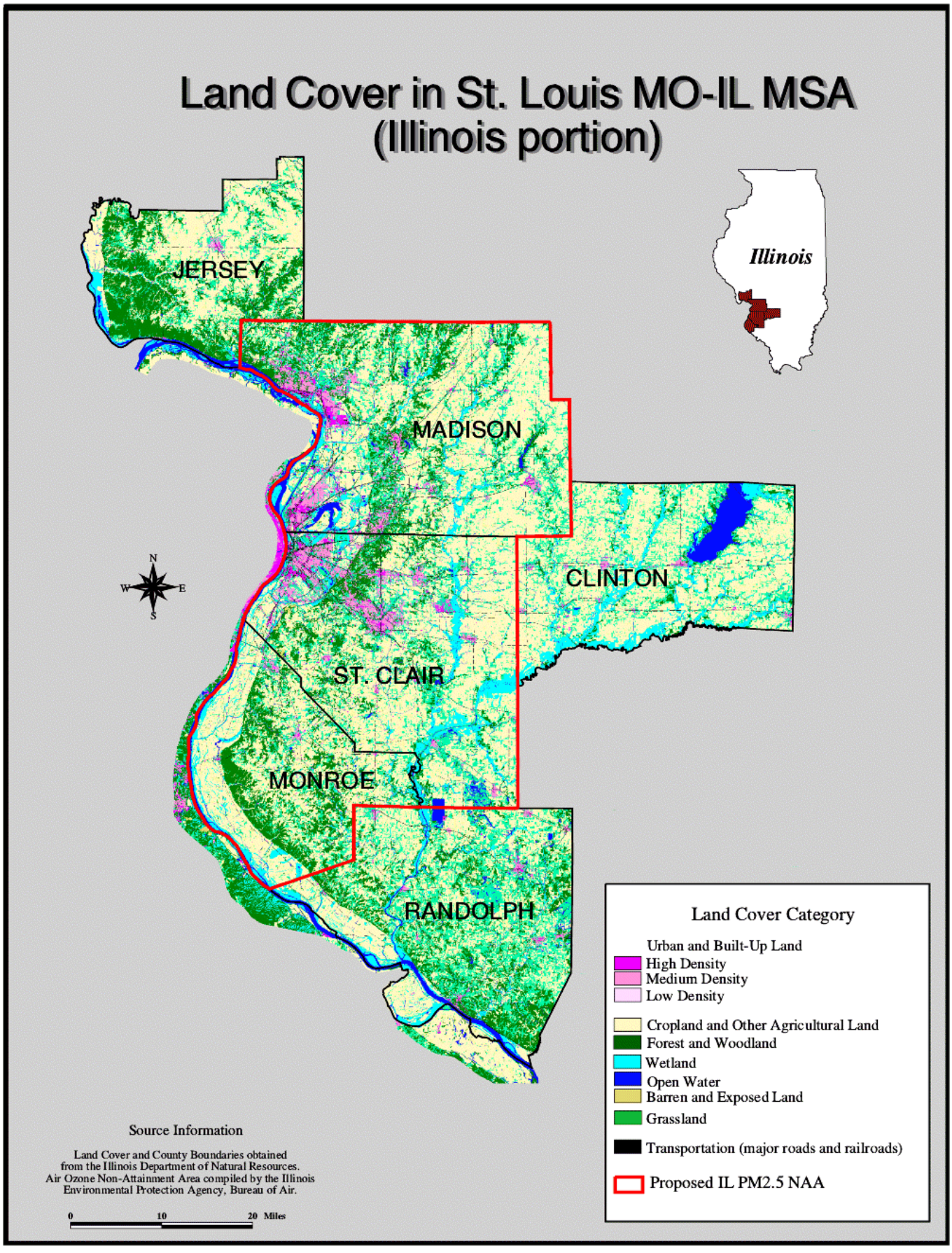
# Figure 11


2000 Population Density
St. Louis MO-IL MSA
(Illinois portion)
Jersey
Madison
Clinton
St. Clair
Monroe
Randolph
Illinois
Illinois Portion of MSA
Illinois EPA Bureau of Air
N
W
E
S
10 0 10 Miles
Legend
2000 Population Density *
0 - 200
200 - 2,500
2,500 - 10,000
10,000 - 40,000
> 40,000
Proposed IL PM2.5 NAA
Source Information
ESRI Data 2002: U.S. Census Bureau; Office of Management and Budget 1999 Consolidated Metropolitan Statistical Areas (MSAs) Datafile St. Louis, IL MSA portion shown
*population per square mile within a census block group

# Figure 12

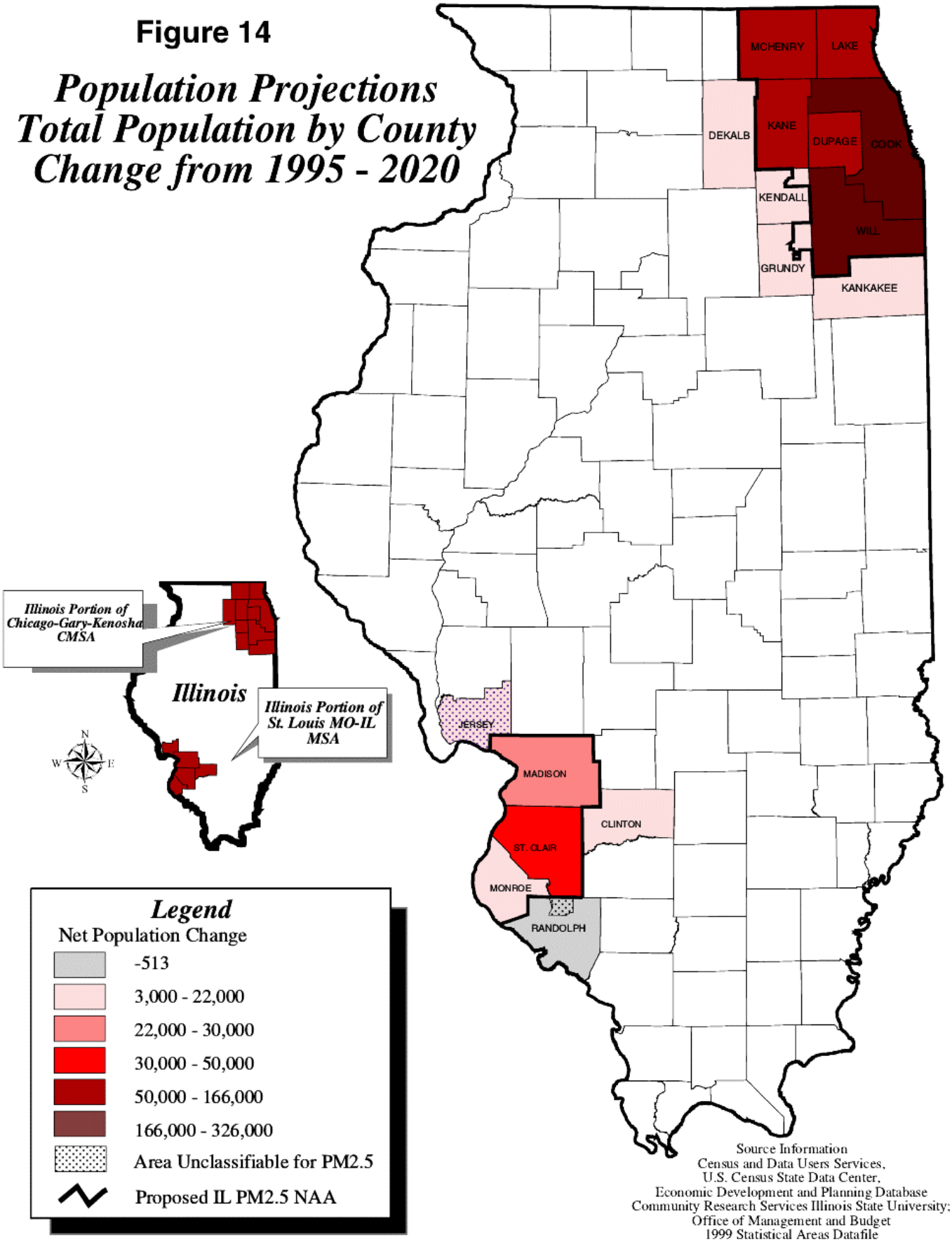

Land Cover in Chicago-Gary-Kenosha CMSA
(Illinois portion)
Illinois
MCHENRY
LAKE
DEKALB
KANE
COOK
DUPAGE
KENDALL
WILL
GRUNDY
KANKAKEE
N
W
E
S
Land Cover Category
Urban and Built-Up Land
High Density
Medium Density
Low Density
Cropland and Other Agricultural Land
Forest and Woodland
Wetland
Open Water
Barren and Exposed Land
Grassland
Transportation (major roads and railroads)
Potential IL PM2.5 NAA
Source Information
Land Cover and County Boundaries obtained
from the Illinois Department of Natural Resources.
Air Ozone Non-Attainment Area compiled by the Illinois
Environmental Protection Agency, Bureau of Air.
0
10
20 Miles

# Figure 13


Land Cover in St. Louis MO-IL MSA
(Illinois portion)
Illinois
JERSEY
MADISON
CLINTON
ST. CLAIR
MONROE
RANDOLPH
N
W
E
S
Land Cover Category
Urban and Built-Up Land
High Density
Medium Density
Low Density
Cropland and Other Agricultural Land
Forest and Woodland
Wetland
Open Water
Barren and Exposed Land
Grassland
Transportation (major roads and railroads)
Proposed IL PM2.5 NAA
Source Information
Land Cover and County Boundaries obtained from the Illinois Department of Natural Resources.
Air Ozone Non-Attainment Area compiled by the Illinois Environmental Protection Agency, Bureau of Air.
0
10
20 Miles

# Figure 14

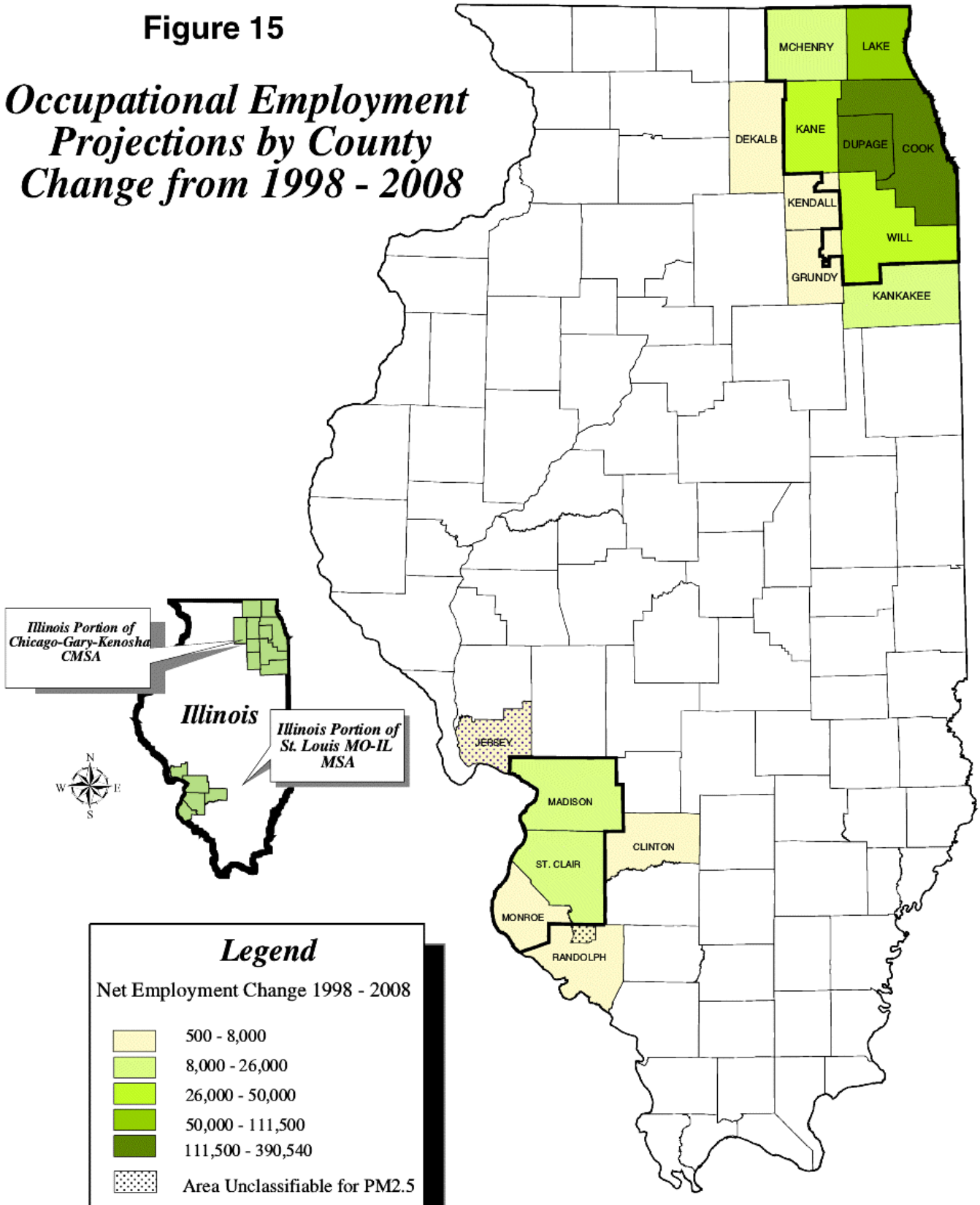
## *Population Projections Total Population by County Change from 1995 - 2020*




Source Information
Census and Data Users Services,
U.S. Census State Data Center,
Economic Development and Planning Database
Community Research Services Illinois State University;
Office of Management and Budget
1999 Statistical Areas Datafile

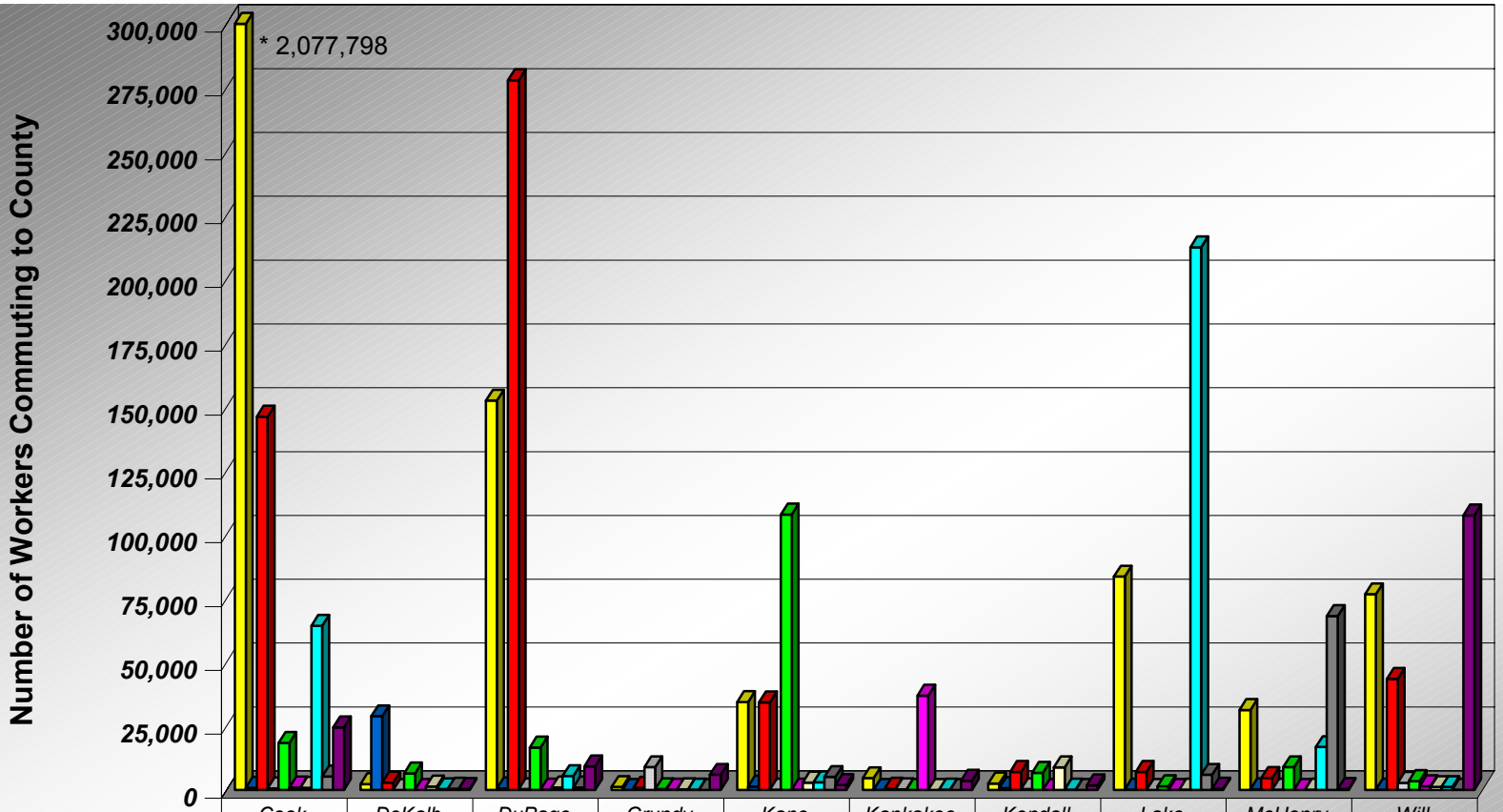
# Figure 15

## *Occupational Employment Projections by County Change from 1998 - 2008*



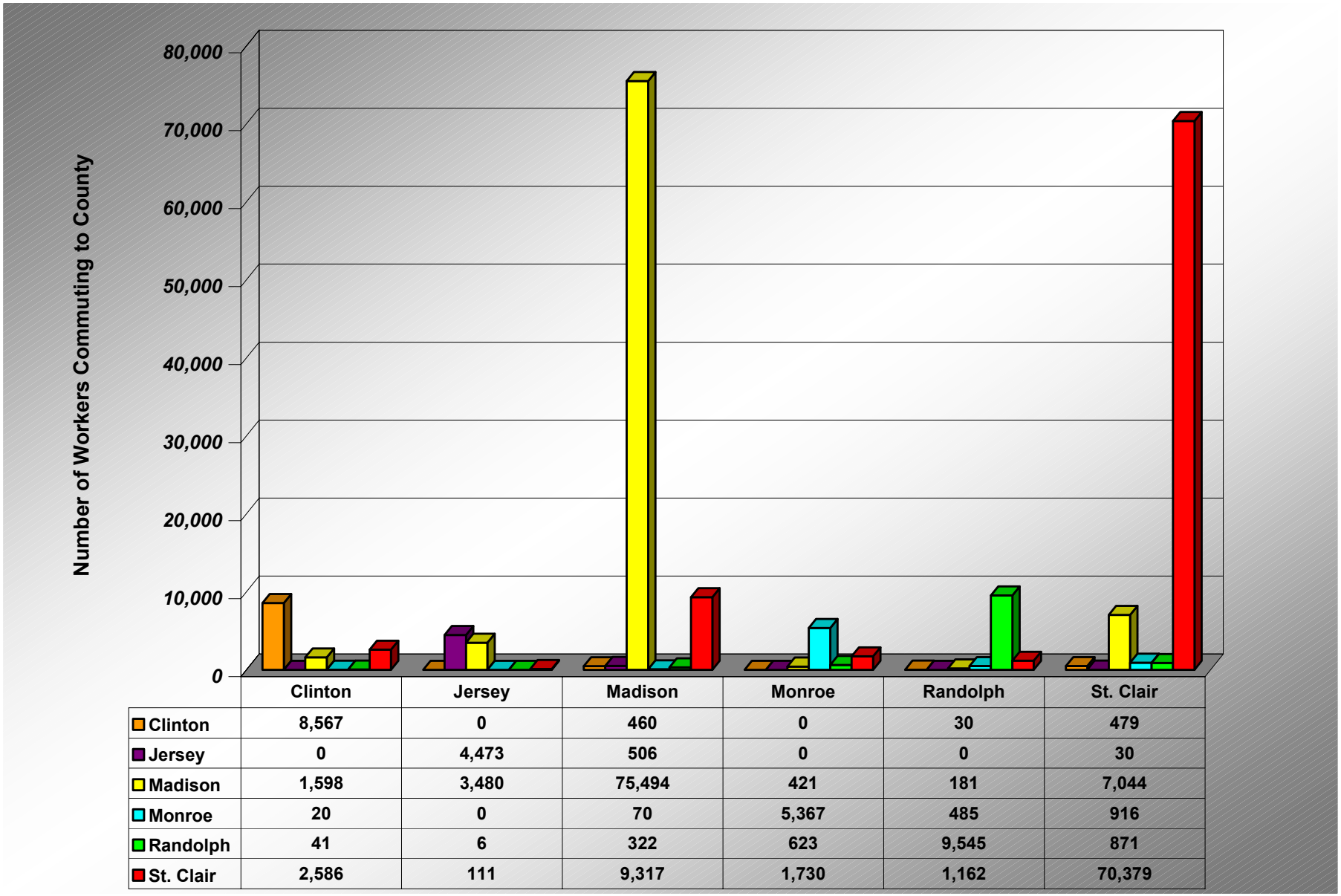

Source Information
Illinois Department of Employment Security, Labor Market Information,
Illinois Occupation Long-Term Projections, Labor Economics Database

# Figure 16
# Where People Reside and Where They Journey to Work Within the Chicago CMSA Counties




| | Cook | DeKalb | DuPage | Grundy | Kane | Kankakee | Kendall | Lake | McHenry | Will |
|---|---|---|---|---|---|---|---|---|---|---|
| Cook | 2,077,798 | 2,221 | 152,433 | 1,123 | 34,361 | 4,559 | 2,459 | 83,502 | 31,337 | 76,574 |
| DeKalb | 826 | 28,811 | 560 | 7 | 1,311 | 0 | 725 | 60 | 202 | 149 |
| DuPage | 146,135 | 2,857 | 277,934 | 765 | 34,318 | 471 | 7,051 | 6,967 | 4,650 | 43,498 |
| Grundy | 533 | 19 | 260 | 8,884 | 51 | 202 | 299 | 24 | 47 | 2,702 |
| Kane | 18,345 | 6,468 | 16,539 | 296 | 107,807 | 30 | 6,630 | 1,383 | 8,877 | 3,432 |
| Kankakee | 977 | 0 | 95 | 98 | 36 | 36,936 | 8 | 8 | 0 | 1,352 |
| Kendall | 837 | 1,263 | 949 | 180 | 2,866 | 12 | 8,798 | 64 | 73 | 1,097 |
| Lake | 64,253 | 249 | 5,377 | 68 | 3,012 | 63 | 108 | 212,450 | 16,731 | 1,128 |
| McHenry | 5,182 | 448 | 884 | 23 | 5,056 | 4 | 20 | 5,866 | 68,108 | 158 |
| Will | 24,432 | 349 | 9,197 | 5,869 | 1,840 | 3,564 | 1,737 | 389 | 343 | 107,456 |

# Figure 17
# Where People Reside and Where They Journey to Work Within the Metro-East Counties




| | Clinton | Jersey | Madison | Monroe | Randolph | St. Clair |
|---|---|---|---|---|---|---|
| Clinton | 8,567 | 0 | 460 | 0 | 30 | 479 |
| Jersey | 0 | 4,473 | 506 | 0 | 0 | 30 |
| Madison | 1,598 | 3,480 | 75,494 | 421 | 181 | 7,044 |
| Monroe | 20 | 0 | 70 | 5,367 | 485 | 916 |
| Randolph | 41 | 6 | 322 | 623 | 9,545 | 871 |
| St. Clair | 2,586 | 111 | 9,317 | 1,730 | 1,162 | 70,379 |

**Figure 18**

*Location of Baldwin Power Plant*