



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



C. HEIDI GRETHNER
DIRECTOR

October 13, 2016

VIA E-MAIL and U.S. MAIL

Mr. Robert A. Kaplan, Acting Regional Administrator
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (R-19J)
Chicago, Illinois 60604-3590

Dear Mr. Kaplan:

In accordance with Section 107(d) of the federal Clean Air Act, the Michigan Department of Environmental Quality (MDEQ) is providing recommendations for area designations for the ozone National Ambient Air Quality Standard (NAAQS) revised on October 1, 2015.

The designation recommendations are based on certified ozone monitoring data, collected at 30 ozone monitors in Michigan from 2013-2015. Ten counties in Michigan contain a monitor violating the standard or were found to contribute to nonattainment in a neighboring county and, therefore, are being recommended for nonattainment (see enclosure). These counties are Allegan, Berrien, Livingston, Macomb, Monroe, Muskegon, Oakland, St. Clair, Washtenaw, and Wayne. In addition, one county, Schoolcraft, contains a monitor violating the standard using preliminary 2016 data. As the United States Environmental Protection Agency (USEPA) will base their designation recommendations on 2014-2016 data, the MDEQ tentatively recommends Schoolcraft County as nonattainment. Once validated, if the 2016 data changes, the MDEQ will then revise this designation to attainment.

The following counties are being recommended for attainment (see enclosure) based on numerous factors including ambient air monitoring data that demonstrated compliance with the 2015 ozone NAAQS and non-interference with any recommended nonattainment area: Benzie, Cass, Chippewa, Clinton, Eaton, Genesee, Huron, Ingham, Kalamazoo, Kent, Lenawee, Manistee, Mason, Missaukee, Ottawa, Tuscola, and Wexford. It is recommended that all remaining counties in the state be designated unclassifiable due to insufficient ambient air monitoring data.

Mr. Robert A. Kaplan

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The justification for the recommended area designations is summarized in the enclosure. If you would like to discuss further, please contact Ms. Lynn Fiedler, Chief, Air Quality Division, at 517-284-6773; fiedlerl@michigan.gov; or MDEQ, P.O. Box 30260, Lansing, Michigan 48909-7760; or you may contact me.

Sincerely,



C. Heidi Grether
Director
517-284-6700

Enclosure

cc: Mr. John Mooney, USEPA
Mr. Robert Wagner, Program Deputy Director, MDEQ
Ms. Lynn Fiedler, MDEQ
Ms. Mary Maupin, MDEQ

**Recommended Area Designations in Michigan
for the
Ozone National Ambient Air Quality Standard**



**Michigan Department of Environmental Quality
Air Quality Division**

September 30, 2016

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Appendix A:

Southeast Michigan Council of Governments Ozone Designation in SEMCOG Region

Appendix B:

Resolution from Allegan County Board of Commissioners Opposing a Nonattainment Designation for Allegan County

**Recommended Area Designations in Michigan for the Revised 2015
Ozone National Ambient Air Quality Standard
Michigan Department of Environmental Quality
Air Quality Division**

In October 2015 the United States Environmental Protection Agency (USEPA) revised the National Ambient Air Quality Standard (NAAQS) for ozone from 0.075 to 0.070 part per million (ppm). Following the promulgation of a new or revised standard, the federal Clean Air Act (CAA) requires the USEPA to seek recommendations from states' governors on initial designations for the attainment status for all areas of the states. The USEPA will either affirm the states' recommendations or make modifications as necessary. States are to make their recommendations by October 1, 2016, and final designation promulgations by the USEPA will occur by October 1, 2017, in accordance with the federal CAA.

Ozone designations are to be based on design values (the average of the fourth-highest annual values from three consecutive years of data at each monitor) calculated from ambient monitored data during the most recent three-year period of record. State recommendations are based on air quality data from the period of 2013-2015, whereas the USEPA will make designations based on the period of 2014-2016. Preliminary 2016 data will also be considered to supplement the state's recommendations.

Designation Categories

The federal CAA sets out the categories that states and the USEPA must use when making designation recommendations. Section 107(d)(1)(A) of the CAA requires that, "...the Governor of each State shall...submit to the Administrator a list of all areas (or portions thereof) in the State, designating as –

- (i) *nonattainment*, any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant,
- (ii) *attainment*, any area (other than an area identified in clause (i)) that meets the national primary or secondary ambient air quality standard for the pollutant, *or*
- (iii) *unclassifiable*, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant." (Emphasis added.)

In addition, Section 107(d)(1)(B)(iii) of the CAA requires the USEPA to "...act on such designations in accordance with the procedures under paragraph (3) (relating to redesignation)." The mentioned paragraph (3) does not include any additional

designation categories. Also, Section 107(d)(4)(A)(i), in reference to designation, only uses the categories of attainment, nonattainment, or unclassifiable.

Therefore, according to the federal CAA, there are only three distinct possible designation categories that the states and the USEPA can use; unclassifiable, nonattainment, or attainment. Consistent with these options the Michigan Department of Environmental Quality (MDEQ) provides the designation recommendations below.

Designation Recommendations

The designation recommendations for the 2015 ozone NAAQS are based on 2015 design values, which are calculated based on ambient monitored data for the period of 2013-2015 (Table 1). Five monitors in Michigan have 2015 design values above 0.070 ppm: Coloma, Holland, Muskegon, New Haven, and Port Huron, located in Berrien, Allegan, Muskegon, Macomb, and St. Clair Counties, respectively. Based on a weight-of-evidence analysis, including those monitors that are not meeting the standard, the MDEQ recommends that 10 Michigan counties be designated nonattainment for the 2015 ozone NAAQS (Table 2). The recommended nonattainment areas are three western Michigan single-county nonattainment areas in Allegan, Berrien, and Muskegon Counties, as well as a seven-county area in southeast Michigan, containing Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne Counties.

In addition, 21 monitors have 2015 design values showing attainment of the 2015 ozone NAAQS. Based on a weight-of-evidence analysis, including that these areas are meeting the standard and the federal CAA definition of attainment area, the MDEQ recommends an attainment designation for Benzie, Cass, Chippewa, Clinton, Eaton, Genesee, Huron, Ingham, Kalamazoo, Kent, Lenawee, Manistee, Mason, Missaukee, Ottawa, Tuscola, and Wexford Counties. For all other counties, the MDEQ is recommending an unclassifiable designation (Figure 1 and Table 2).

Preliminary 2016 design values were also considered in this designation process since the USEPA will be using this data to make the final area designations. Monitoring data for 2016 that was validated through June 2016 shows that the Seney monitor in Schoolcraft County has a 2016 design value that exceeds the 2015 ozone standard. Due to the unique situation of this monitor being in attainment of the standard with 2015 design values, but out of attainment for the preliminary 2016 design values, Schoolcraft is recommended to be tentative nonattainment. An analysis of the 2016 air quality data and the tentative recommendations for Schoolcraft County are provided at the end of this document.

Table 1. Ambient Monitored Ozone Concentrations and 2015 Design Values

Monitor Number	Monitor	County	4 th Highest Ozone Concentration (ppm)			3-Year Design Value
			2013	2014	2015	
260050003	Holland	Allegan	0.078	0.077	0.072	0.075
260190003	Frankfort	Benzie	0.069	0.069	0.067	0.068
260210014	Coloma	Berrien	0.074	0.073	0.072	0.073
260270003	Cassopolis	Cass	0.071	0.066	0.068	0.068
260330901	Sault St. Marie	Chippewa	0.060	0.058	0.059	0.059
260370001	Rose Lake	Clinton	0.064	0.066	0.064	0.064
260490021	Flint	Genesee	0.065	0.068	0.066	0.066
260492001	Otisville	Genesee	0.067	0.068	0.067	0.067
260630007	Harbor Beach	Huron	0.064	0.066	0.067	0.065
260650012	Lansing	Ingham	0.066	0.065	0.064	0.065
260770008	Kalamazoo	Kalamazoo	0.068	0.067	0.067	0.067
260810020	Grand Rapids	Kent	0.068	0.066	0.067	0.067
260810022	Evans	Kent	0.068	0.066	0.065	0.066
260910007	Tecumseh	Lenawee	0.064	0.068	0.065	0.065
260990009	New Haven	Macomb	0.072	0.071	0.072	0.071
260991003	Warren	Macomb	0.066	0.068	0.064	0.066
261010922	Manistee	Manistee	0.069	0.066	0.067	0.067
261050007	Scottville	Mason	0.068	0.070	0.066	0.068
261130001	Houghton Lake	Missaukee	0.065	0.063	0.064	0.064
261210039	Muskegon	Muskegon	0.073	0.075	0.074	0.074
261250001	Oak Park	Oakland	0.067	0.067	0.066	0.066
261390005	Jenison	Ottawa	0.070	0.071	0.065	0.068
261470005	Port Huron	St. Clair	0.071	0.071	0.075	0.072
261530001	Seney	Schoolcraft	0.067	0.068	0.070	0.068
261579991	Unionville	Tuscola	0.064	0.063	0.063	0.063
261619991	Ann Arbor	Washtenaw	0.064	0.067	0.066	0.065
261610008	Ypsilanti	Washtenaw	0.065	0.070	0.064	0.066
261630001	Allen Park	Wayne	0.064	0.064	0.064	0.064
261630019	East 7 Mile	Wayne	0.067	0.073	0.070	0.070
261659991	Hoxyville	Wexford	0.064	0.066	0.066	0.065

Table 2. Recommended Designations for Michigan Counties

Designation Area	Counties	2015 Design Value (ppm)	Designation
Allegan	Allegan County	0.075	Nonattainment
Benzie	Benzie County	0.068	Attainment
Berrien	Berrien County	0.073	Nonattainment
Cass	Cass County	0.068	Attainment
Chippewa	Chippewa County	0.059	Attainment
Lansing-East Lansing	Clinton County Eaton County Ingham County	0.064	Attainment
Flint	Genesee County	0.067	Attainment
Grand Rapids	Kent County Ottawa County	0.068	Attainment
Huron	Huron County	0.065	Attainment
Kalamazoo	Kalamazoo County	0.067	Attainment
Lenawee	Lenawee County	0.065	Attainment
Manistee	Manistee County	0.067	Attainment
Mason	Mason County	0.068	Attainment
Missaukee	Missaukee County	0.064	Attainment
Muskegon	Muskegon County	0.074	Nonattainment
Schoolcraft	Schoolcraft County	0.068	Tentative Nonattainment
Southeast Michigan	Livingston County Macomb County Monroe County Oakland County St. Clair County Washtenaw County Wayne County	0.072	Nonattainment
Tuscola	Tuscola	0.063	Attainment
Wexford	Wexford	0.065	Attainment
All other counties			Unclassifiable

Nonattainment Area Analysis

The USEPA Guidance on *Area Designations for the 2015 Ozone National Ambient Air Quality Standard* suggests using a five-factor weight-of-evidence approach to determine the appropriate nonattainment area boundaries. The USEPA recommends that states consider air quality data, emissions and emission-related data, meteorological data, geography and topography, and jurisdictional boundaries. The USEPA intends to use this five-factor weight-of-evidence approach when making the final area designations.

The MDEQ used the USEPA's recommended weight-of-evidence approach to determine the appropriate nonattainment areas. Due to the differences between the air quality sources and emissions across the state of Michigan, the analysis was split into two sections, one analysis for the three recommended nonattainment areas in western Michigan and another for the southeast Michigan nonattainment area.

Western Michigan

The MDEQ recommends that Allegan, Berrien, and Muskegon Counties all be designated as single-county nonattainment areas (Table 2) due to the impact of transported rather than local pollution on these shoreline monitors. Ozone is a secondary pollutant formed from the reaction of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of heat and sunlight, and depending on where the favorable photochemical conditions exist, ozone may form directly surrounding the sources of pollution or may be formed hundreds of miles away. In western Michigan, pollution transported from large metropolitan areas across Lake Michigan causes high ozone concentrations. Lake Michigan is the only geographic barrier between western Michigan and major metropolitan areas in Illinois, Indiana, and Wisconsin, and emissions of ozone precursors from these areas are commonly transported over the lake. During transport, the large size, low surface roughness, limited vertical mixing, and high reflectivity of Lake Michigan promotes the formation of ozone. The result is high concentrations of ozone arriving at Michigan's western coast¹.

Berrien, Allegan, and Muskegon Counties each contain a single violating monitor; the Coloma, Holland, and Muskegon monitors, respectively. All three of these monitors are along the coast of Lake Michigan in the Lower Peninsula, and none of the three monitors are in adjacent counties. Historical data indicate that ozone concentrations above the 2015 ozone standard are common at these monitors (Figure 2). While they have been in attainment for previous ozone standards, Coloma, Holland, and Muskegon have never had an 8-hour design value below 0.070 ppm. The consistently elevated concentrations at these western Michigan monitors reflect the impact that transported pollution has on this area.

Emissions inventory data from the 2011 National Emissions Inventory (NEI) indicate that emissions of ozone precursors in western Michigan are much lower than the

¹ Western Michigan Ozone Study, USEPA; https://www.michigan.gov/documents/deq/deq-aqd-air-aqe-Western-Michigan-Report-Final_276670_7.pdf

emissions in the coastal counties of Illinois, Indiana, and Wisconsin. Table 3 and Table 4 show the total NO_x and VOC emissions by county for the recommended nonattainment area and out-of-state counties bordering Lake Michigan. In addition to the total NO_x and VOC emissions, Tables 3 and 4 include the biogenic emissions by county to highlight the relative amount of natural emissions in each county. Figure 3 displays the emissions by county for NO_x and VOCs. Of the three western Michigan counties recommended to be nonattainment, the highest NO_x emitting county is Muskegon, with approximately 7,300 tons per year (tpy) of emissions. In comparison, the highest emitting out-of-state county bordering Lake Michigan is Cook County, Illinois, at 113,150 tons of NO_x per year, more than an order of magnitude higher than those in the western Michigan counties. The case is similar for the VOC emissions, with the highest emitting violating county in western Michigan being Allegan County, at 12,900 tpy of emissions, and the highest emitting out-of-state county being Cook County, Illinois, with 92,560 tpy of VOCs.

In addition, NEI data indicate that more than half of Allegan County's VOC emissions are biogenic, while only 5 percent of the VOC emissions in Cook County, Illinois, are biogenic (Table 3, Table 4). Biogenic emissions are naturally produced and are not the result of human activity. High biogenic emissions in western Michigan indicate that many VOC emissions occurring in this area are beyond human control. On the other hand, out-of-state counties shown in Table 4 typically have a lower proportion of biogenic emissions. In particular, the out-of-state counties most likely contributing to the ozone issue in western Michigan are the ones with the lowest proportion of biogenic emissions, and therefore, the primary sources of VOC emissions in these areas are human-caused. The high proportion of anthropogenic emissions from out-of-state counties, as well as the large amount of biogenic emissions in the three western counties, underlines the influence that out-of-state emissions have on the three violating counties.

Data on traffic patterns and population densities further support the conclusions made from the emissions data. Figure 4 displays the population density across the state of Michigan as of 2010. Since 2010, the population in Michigan has grown statewide by approximately 0.35 percent, and therefore, it is unlikely that the population density or the data displayed in Figure 4 have changed significantly. All three western counties recommended to be nonattainment have low population densities, with few urban centers. Figure 5 displays the daily traffic volumes for the lower half of Michigan's Lower Peninsula. The traffic volumes in the three recommended nonattainment counties are low, especially compared to the traffic volumes in major urban areas across the state. The traffic volumes also do not show much traffic movement into or out of the violating counties.

HYSPLIT modeling results and pollution roses provide evidence that a significant amount of pollution is transported from out of state. The HYSPLIT results for the three violating monitors in western Michigan are provided in Figure 6. Each line on the HYSPLIT output represents an individual air parcel back trajectory for a 24-hour period, for each high ozone day measured at a monitor. In other words, each line represents

the predicted transport of pollutants to a particular monitor prior to a measured violation of the 0.070 ppm ozone standard. The color of the line indicates the height at which the air parcel was modeled. The red lines are trajectories at the 100 meter height, the blue lines at the 500 meter height, and the green lines at the 1,000 meter height. These modeling results were used to identify the potential origin of air masses that influence the violating monitors in Michigan.

The HYSPLIT results for all three western Michigan monitors indicate that air is primarily transported from across Lake Michigan on high ozone days. In particular, for air masses modeled at the 100 meter height (red lines), all three western Michigan monitors show the primary source of air to be from the direction of the Chicago, Illinois - Gary, Indiana area. This indicates that the majority of air parcels being transported over a short distance came from those metropolitan areas. Higher altitude air masses are projected to come from the west and south, which represents the direction of long-range transport to these monitors. Throughout the long distance travel, these air parcels may pick up emissions from a number of sources before reaching western Michigan. While many of the HYSPLIT trajectories do not originate in areas immediately across Lake Michigan, the majority of the parcels are projected to pass over high emitting counties in Wisconsin, Illinois, and Indiana before reaching western Michigan. The HYSPLIT results projecting air parcels are passing over out-of-state counties across Lake Michigan, coupled with emissions data showing higher emissions of ozone precursors in those same out-of-state counties, provide strong evidence for the conclusion that transported ozone is the primary cause of elevated ozone in western Michigan.

Pollution roses support the conclusions made from the HYSPLIT results. Figure 7 shows pollution roses for the three western Michigan monitors for the 2013-2015 ozone seasons. The length of a petal on the pollution rose indicates the strength of the wind coming from that direction, while the color of the bars identifies the concentration of ozone at the monitor when the pollution is being transported to that monitor. For instance, the brown sections of the petals indicate the direction from which ozone is being transported when ozone concentrations are above 0.070 ppm. Across all pollutant concentrations, the majority of winds are coming from the south and southwest, which is the direction of Illinois, Indiana, and Wisconsin. On days with the highest ozone concentrations, winds only came from the south and west directions.

Air quality data, emissions inventories, and meteorological data indicate that out-of-state emissions are transported over Lake Michigan and contribute to elevated ozone levels in western Michigan. Local emissions do not appear to contribute significantly to ozone concentrations in the area and, therefore, it is being recommended that the three counties containing violating monitors in western Michigan should be designated separately. While each recommended nonattainment county is a part of a larger Combined Statistical Area (CSA), the use of the CSA as the nonattainment area boundaries would not accurately reflect the nature of the ozone problem, and would potentially place unnecessary requirements on surrounding counties. Further justification for why other western Michigan counties are not being classified as nonattainment is provided in the attainment area recommendations analysis.

Designating each county as a single-county nonattainment area is reasonable due to the large role that transported, rather than local, emissions play in the ozone levels in western Michigan. Therefore, the MDEQ recommends a designation of nonattainment for Allegan, Berrien, and Muskegon Counties as separate, single-county nonattainment areas.

While the federal CAA directs the states' governors to make these designation recommendations, in an effort to be collaborative, the MDEQ has sought opinions of the local governments that would be impacted by these designations. The western Michigan planning organizations representing the counties recommended to be nonattainment have expressed opposition to the MDEQ's recommended nonattainment designation. They instead would like to recommend a designation of attainment based on the fact that the high ozone levels are a result of transported pollutants from out of state. Refer to Appendix B for a copy of a resolution received from the Allegan County Board of Commissioners opposing the recommendation of a nonattainment designation for that county.

Figure 2. Historical Design Values in Western Michigan



Table 3. Total Emissions of NOx and VOCs by County in West Michigan

County	NOx Emissions (tons/year)	VOC Emissions (tons/year)	Biogenic VOC (tons/year)
Allegan	5,289	12,899	7,097
Berrien	6,799	11,125	3,914
Muskegon	7,296	12,263	5,545
State Total	461,298	939,089	

Source: National Emissions Inventory, 2011

Table 4. Total Emissions of NOx and VOCs in Out-of-State Counties Bordering Lake Michigan

County	State	NOx Emissions (tons/year)	VOC Emissions (tons/year)	Biogenic VOC (tons/year)
Cook	IL	113,148	92,555	4,303
Lake	IL	20,709	22,308	3,304
La Porte	IN	8,978	9,015	3,671
Lake	IN	38,995	20,433	3,331
Porter	IN	17,725	9,712	3,296
Brown	WI	14,161	11,121	2,260
Door	WI	1,700	6,515	3,479
Kenosha	WI	6,691	5,989	1,671
Kewaunee	WI	895	3,352	1,702
Manitowoc	WI	3,918	6,379	2,547
Marinette	WI	2,030	18,348	14,987
Milwaukee	WI	27,439	19,845	997
Oconto	WI	1,983	12,396	9,507
Ozaukee	WI	3,596	3,385	1,090
Racine	WI	4,839	7,368	1,738
Sheboygan	WI	6,848	7,019	2,340

Source: National Emissions Inventory, 2011

Figure 3. Emissions of NOx and VOCs in 2011 by County
2011 Emissions of Nitrogen Oxides by County **2011 Emissions of Volatile Organic Compounds by County**

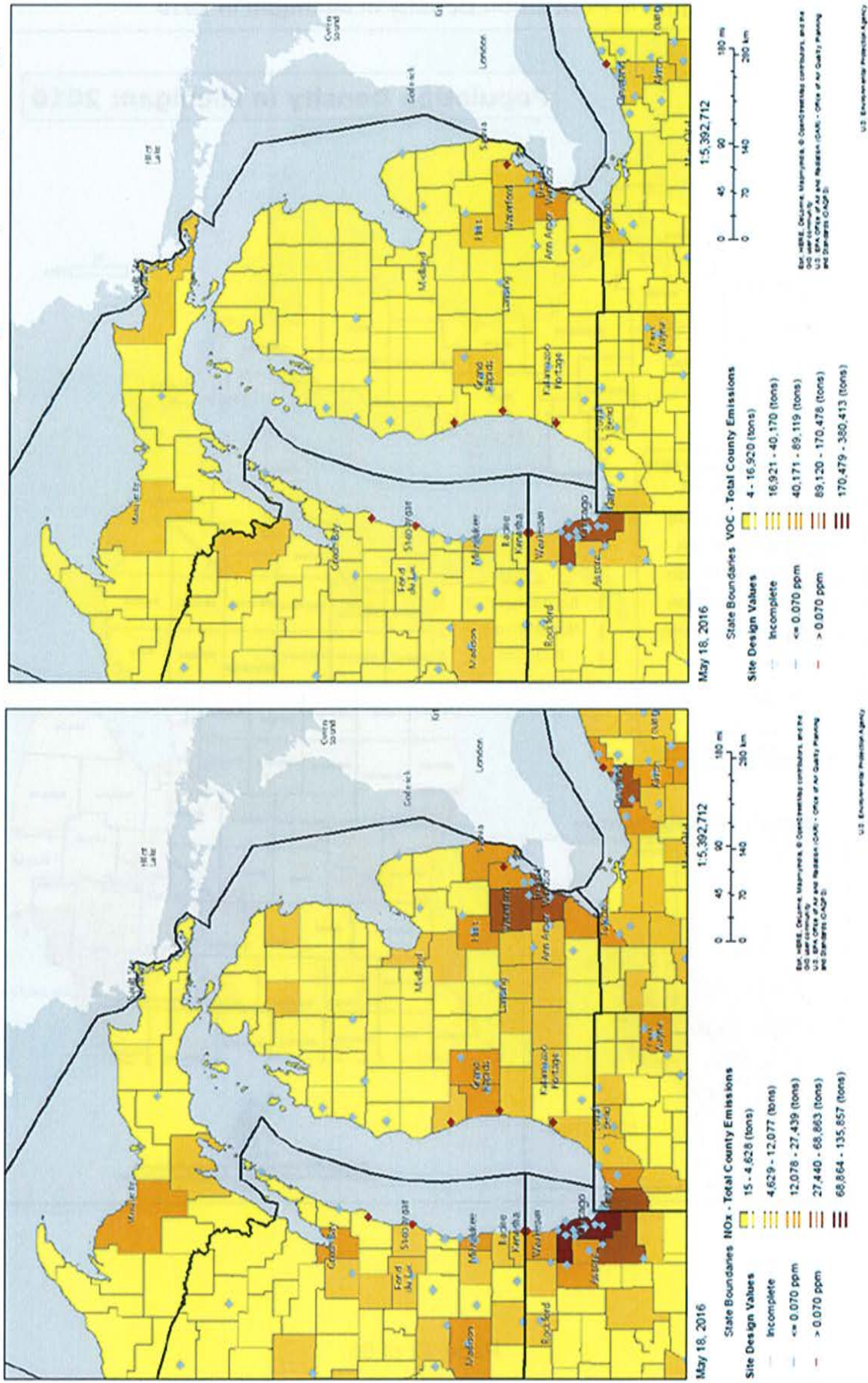


Figure 4. Population Density in Michigan in 2010

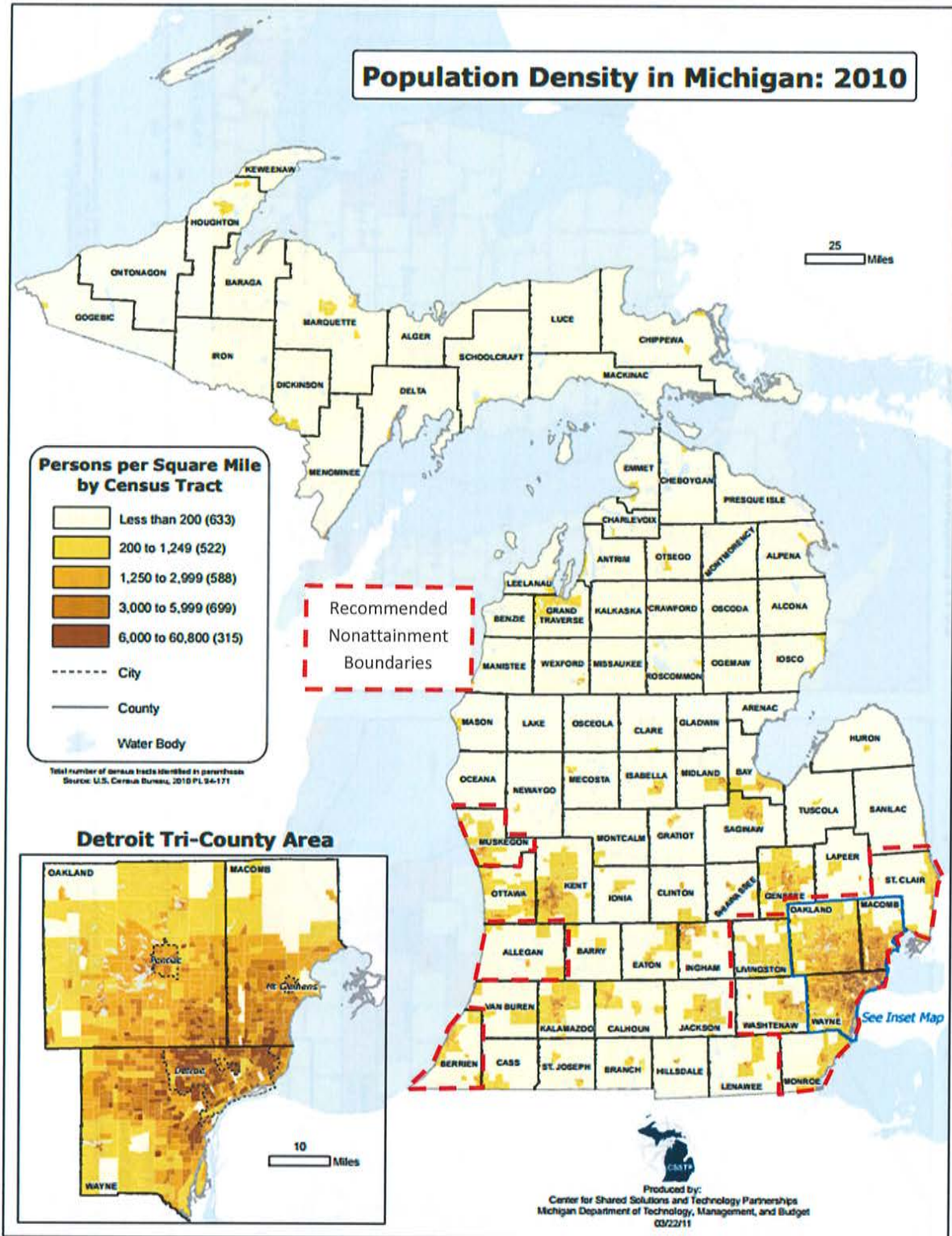


Figure 5. Traffic Volumes in Lower Michigan

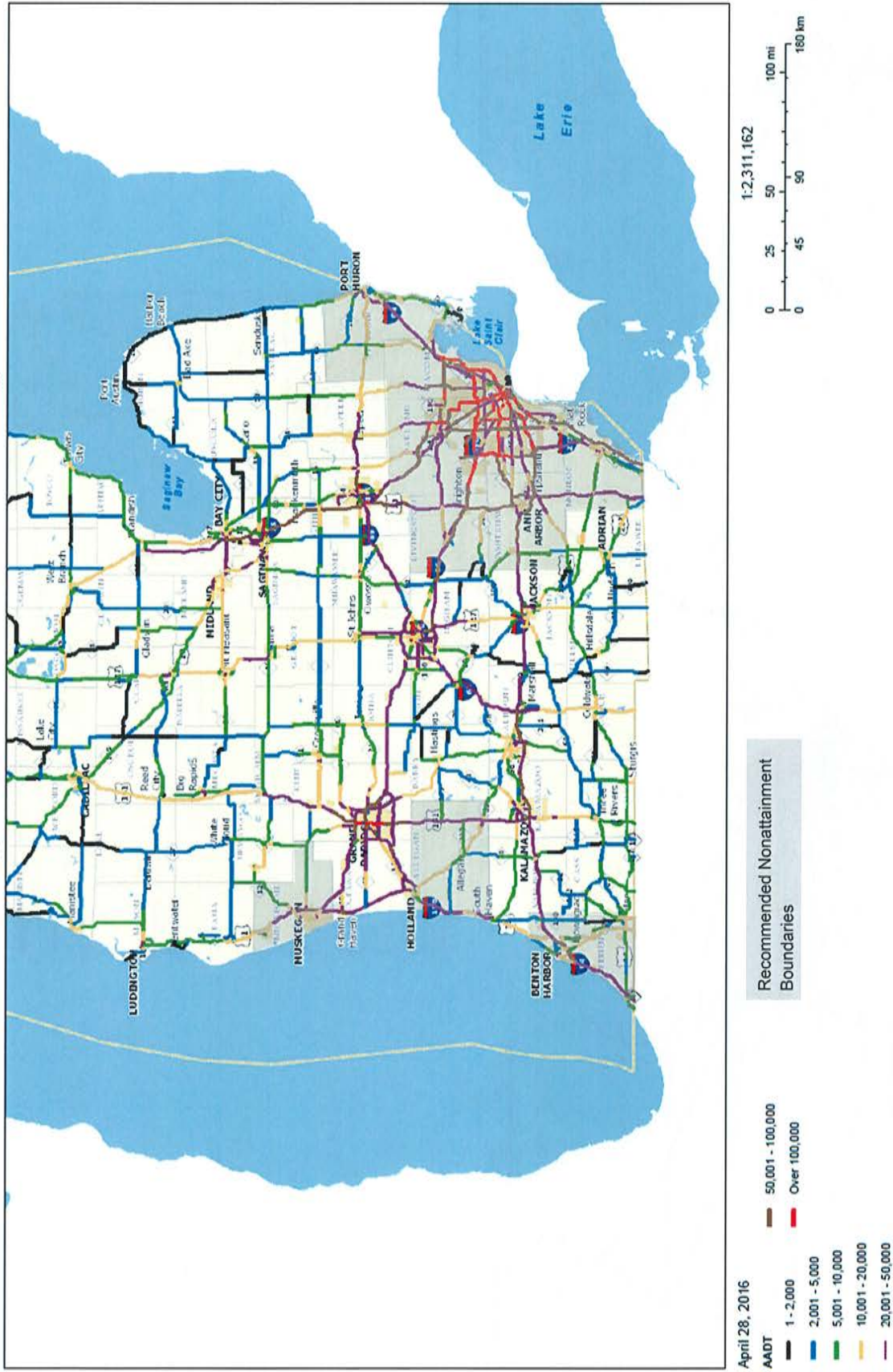
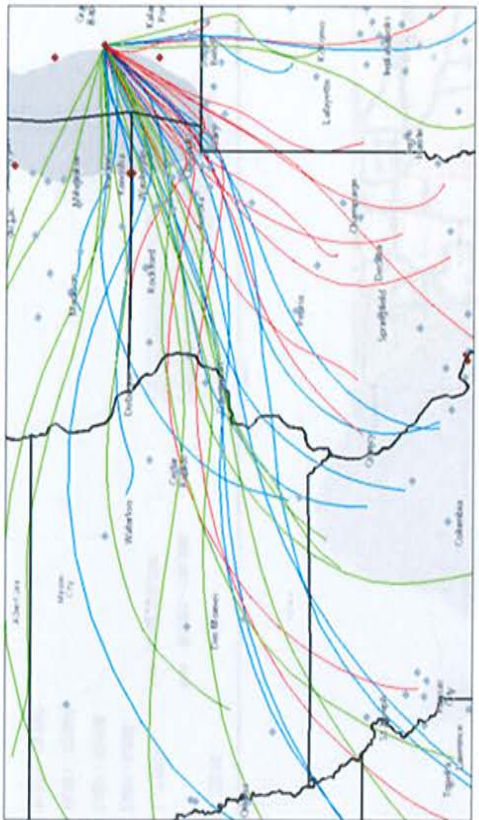
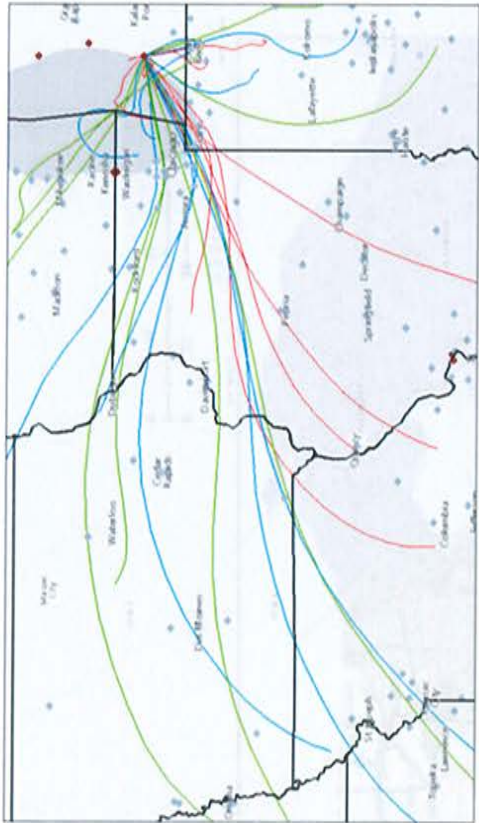


Figure 6. HYSPLIT Model Results for Western Michigan Monitors
 HYSPLIT Trajectory Model Results for the Berrien County Monitor



HYSPLIT Trajectory Model Results for the Muskegon Monitor

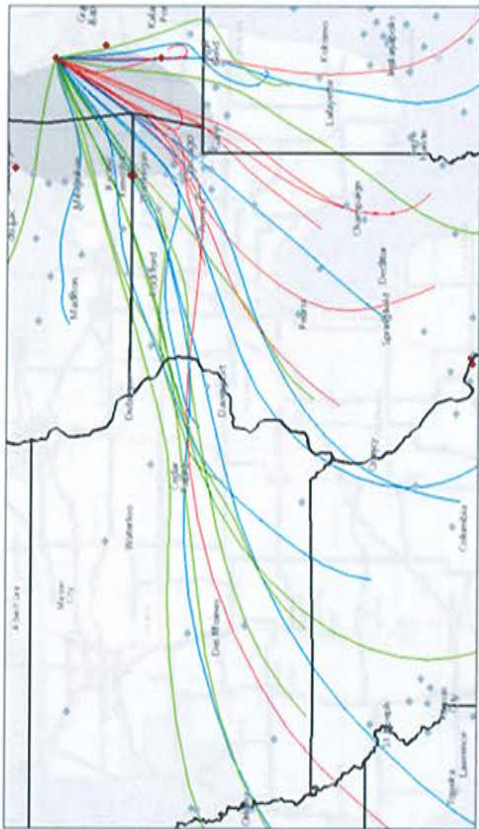
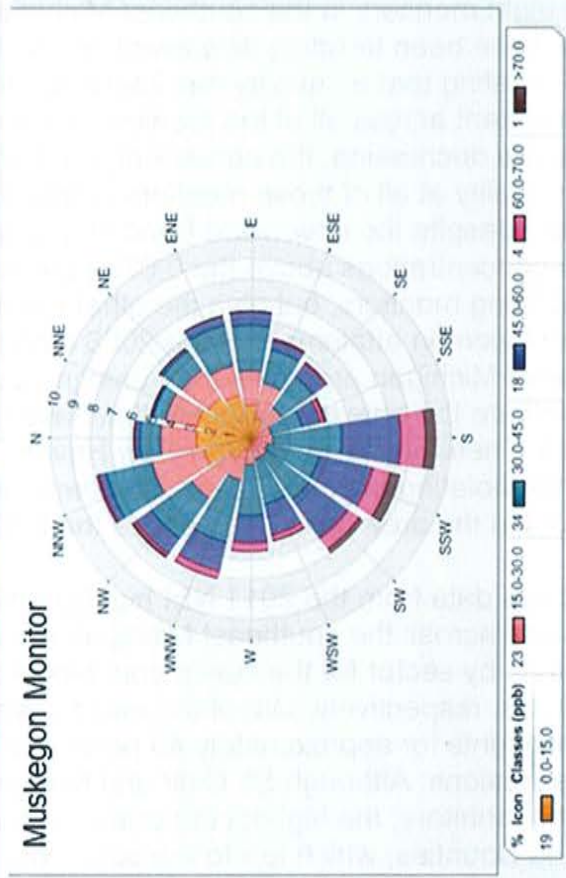


Figure 7. Western Michigan Pollution Roses



Southeast Michigan

The MDEQ is recommending that a seven-county area in southeast Michigan be designated as nonattainment based on the air quality data, emissions data, and meteorological data indicating that most of the southeast Michigan area is likely contributing to the measured ozone violations. Port Huron and New Haven are the two monitors in southeast Michigan that have 2015 design values above the 0.070 ppm ozone standard (Table 2), and these monitors are in St. Clair and Macomb Counties, respectively. In addition to these two counties, the MDEQ recommends that Livingston, Monroe, Oakland, Washtenaw, and Wayne Counties be designated nonattainment.

Historical air quality data provided in Figure 8 display the 8-hour ozone design values for all eight monitors in the southeast Michigan area from 1996 to 2015. Overall, design values have been trending downward across the southeast Michigan area, demonstrating that air quality has improved. In addition, the downward trend appears to be consistent across all of the monitors in the southeast Michigan area. While design values are decreasing, the consistent trend across all of the monitors could indicate that the air quality at all of these monitors is linked, or influenced by similar factors. In addition, despite the downward trend in design values, the data also demonstrate that ozone concentrations above the 0.070 ppm standard have been common at not only the two violating monitors, but also the other monitors in the area (Figure 8). While all of the monitors were in attainment of the 2008 standard of 0.075 ppm, many monitors in the southeast Michigan area have had design values above 0.070 ppm. Allen Park and Ypsilanti are the only two monitors that have had design values below 0.070 ppm prior to 2015. Therefore, even though New Haven and Port Huron are the only monitors currently violating the 2015 ozone standard, air quality data suggests that other monitors in the area have been above the 0.070 ppm standard in the past.

Emissions data from the 2011 NEI highlight the significant amount of ozone precursor emissions across the southeast Michigan area. Table 5 and Table 6 show the annual emissions by sector for the seven counties recommended to be nonattainment for NO_x and VOCs, respectively. Out of the entire state, the seven-county southeast Michigan area accounts for approximately 40 percent of the NO_x emissions and 16 percent of the VOC emissions. Although St. Clair and Macomb Counties are the two counties with violating monitors, the highest emissions of both NO_x and VOCs are from Wayne and Oakland Counties, which are to the south and west of the violating monitors. The sector-specific information (Table 5 and Table 6) indicate that on-road mobile emissions are the primary source of NO_x for most of the counties, with the exception of St. Clair and Monroe, where the highest emitting sector is point sources. For VOCs, nonpoint source emissions are the highest emitting sector for all counties in the recommended nonattainment area. Additionally, emissions in many of the counties immediately surrounding the recommended seven-county nonattainment area are overall lower than the counties in the recommended attainment area (Figure 3). With the exception of Genesee and Ingham Counties, all other counties surrounding the recommended nonattainment area have lower NO_x and VOC emissions than the seven counties. The lower emissions in many of the surrounding counties suggest that they should not be

included in the nonattainment area. With regard to Genesee and Ingham, these counties are more distant from the violating monitors and contain metropolitan areas that are distinct from southeast Michigan. In addition, meteorological data, which will be discussed later, does not show impacts from these counties (Figures 9-13).

County emissions data are generally supported by the population densities in southeast Michigan (Figure 4). The three counties with the highest emissions, Wayne, Oakland, and Macomb, are also the three counties with the most dense populations. The other four counties in the recommended nonattainment area also have some areas of moderate to high population density. The majority of the counties surrounding the recommended nonattainment area have lower population densities, or have population dense areas that do not overlap with the populated areas in the recommended nonattainment area, further supporting the use of the recommended nonattainment area boundaries.

Traffic volumes (Figure 5) and commuting patterns (Table 7) show that on-road mobile emissions are a significant source of ozone precursor emissions. Overall, the Detroit metro area has some of the highest traffic volumes across the state due to the large population size and large workforce in the southeast Michigan area. Across the seven-county southeast Michigan area, over 1.9 million people commute within the area, over 110,000 people commute into the area from outside of it, and approximately 64,000 commute outside of the area from within it, based on data collected from 2006-2010.² Table 7 displays the commuter flows between each of the counties in the recommended nonattainment area. With regard to the two counties with violating monitors, 58.4 percent of the commuters in Macomb County stay within the county, and the majority of the remainder travel to Oakland and Wayne Counties. Nearly two-thirds of St. Clair's population commutes within the county, and the majority of the rest commute to Macomb County. Across the area, Wayne, Oakland, and Macomb are the top counties for receiving commuters. These counties also have the highest onroad NOx emissions. Commuting patterns combined with sector-specific emissions data demonstrate that commuters from across the entire seven-county area are likely contributing to the high NOx emissions in the southeast Michigan area.

HYSPLIT modeling results demonstrate that a number of high ozone events at both the New Haven and Port Huron monitors are influenced by air parcels moving over the southeast Michigan area. Figures 9-12 show daily HYSPLIT results for New Haven and Port Huron for most days where a high ozone value was measured in 2013 and 2014. The only dates without HYSPLIT are July 21, 2014, for the Port Huron monitor and both July 21, 2014, and July 22, 2014, for the New Haven monitor. High ozone measurements were recorded on these dates, but HYSPLIT results were not provided in the USEPA's modeling tool for these dates. Many of the HYSPLIT projections for both monitors show air parcels passing over Wayne, Oakland, Monroe, Washtenaw, Macomb, and Livingston Counties shortly before violations were measured at the monitors. The New Haven projections less consistently show air parcels passing over

² *Quick Facts: Commuting in Southeast Michigan 2006-2010*. May 2013. Southeast Michigan Council of Governments.

the southeast Michigan and Detroit areas than the Port Huron projections. However, both monitors have a few high ozone days where air is projected to have passed over other counties in the southeast Michigan region. The model results, coupled with the NEI data showing high emissions of ozone precursors across the southeast Michigan area, strengthen the argument that the other five counties in the recommended nonattainment area are contributing to violations at the New Haven and Port Huron monitors. HYSPLIT projections also show air parcels passing over counties outside of the recommended nonattainment area, such as Lenawee and Jackson Counties, but these counties have much lower emissions, which supports their exclusion from the recommended nonattainment area.

In addition to the HYSPLIT projections, pollution roses provide further meteorological evidence, by showing the direction from which pollution originated on the high ozone days at the two violating monitors in southeast Michigan (Figure 13). For the New Haven monitor, the pollution rose does not consistently agree with the HYSPLIT results. The New Haven pollution rose indicates that pollution is being transported from the south-southeast direction, as opposed to from the southwest direction, as would be expected if most pollution was coming from other counties in the recommended nonattainment area. However, there is still some pollution coming from the southwest direction and given the HYSPLIT and emissions data, it is still likely that pollution from other counties in the southeast Michigan area is impacting this monitor. On the other hand, the pollution rose for the Port Huron monitor more clearly agrees with the HYSPLIT results and indicates that other counties in the southeast Michigan region are contributing to the ozone violation. The pollution rose for the Port Huron monitor shows pollution coming from the south or the southwest of the monitor, further indicating that the other counties in the recommended nonattainment area are contributing to high ozone in Port Huron.

With regard to the geography and topography of the region, there are some major water bodies surrounding the two violating monitors, including Lake St. Clair, Lake Huron, Lake Erie, and the Detroit River. In particular, for Port Huron, which is directly on the southern end of Lake Huron, there is a possibility that transport over the lake could contribute to high ozone at the monitor, similar to the effect experienced in western Michigan. In addition to the water bodies, Port Huron is on the border of Canada and may be influenced by international emissions that are crossing the border. In the past, high ozone days as a result of transport from Canada have been observed. However, emissions data, pollution roses, and HYSPLIT results for the Port Huron monitor indicate that local sources remain a significant contributor.

The final factor to consider is the jurisdictional boundaries that will be used to define the nonattainment area. Meteorological data indicate that air is being transported from the southwest, across the southeast Michigan area to the violating monitors on many of the high ozone days, while emissions data indicate that high emissions of ozone precursors are also occurring across this area. Overall, these data lead to the conclusion that a multi-county nonattainment area will be most appropriate for southeast Michigan. As a result, the MDEQ is recommending the use of local planning boundaries to define the

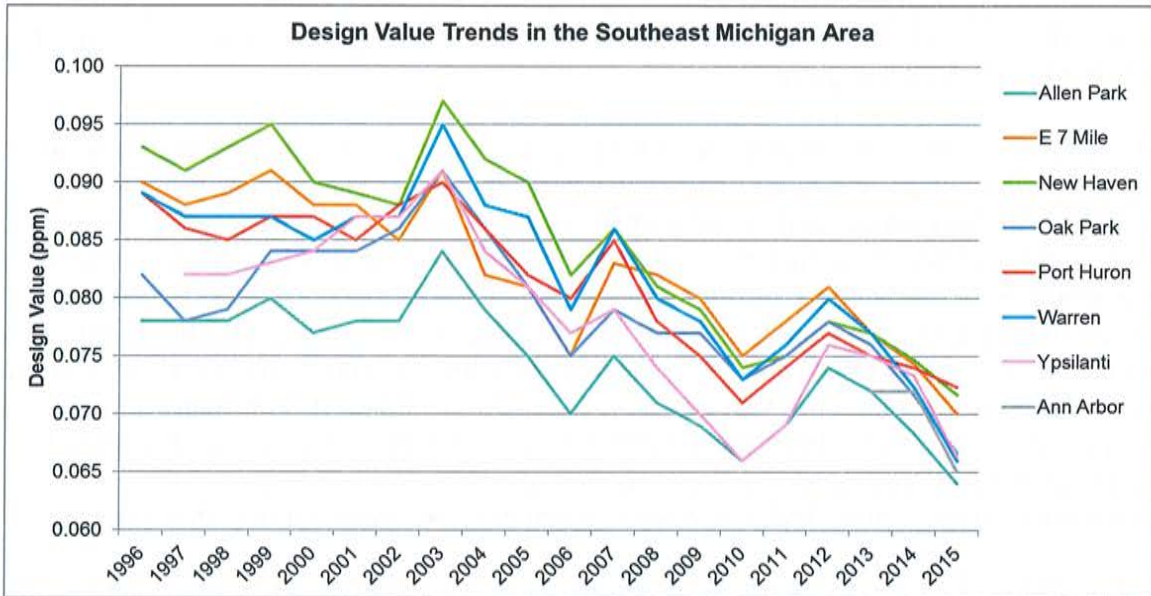
southeast Michigan nonattainment area. The Southeast Michigan Council of Governments (SEMCOG) includes the counties of Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne, and serves as a major planning authority in the southeast Michigan region.

The MDEQ is not recommending the use of current core-based statistical areas, as they do not accurately capture the nature of the ozone issue. Both monitors fall into the Detroit-Warren-Ann Arbor Combined Statistical Area (CSA), which includes Genesee, Lapeer, and Lenawee Counties in addition to the seven counties being recommended for nonattainment. Lenawee County has been included in the southeast Michigan nonattainment area in the past. However, the MDEQ is not recommending its inclusion in this nonattainment area for the 2015 ozone standard, primarily due to the low amount of ozone precursor emissions. Genesee and Lapeer Counties are considered part of the Flint area, which is distinct from the southeast Michigan area. Further justification for why Lenawee, Genesee, and Lapeer Counties should not be included in the nonattainment area is provided in the attainment area analysis later in the document.

As opposed to the Detroit-Warren-Ann Arbor CSA, the SEMCOG planning region boundaries are more appropriate for a number of reasons. The SEMCOG boundaries accurately capture the air quality problem by including the counties offering the most significant contributions to the nonattainment area. SEMCOG also works to coordinate air quality and transportation planning across the seven-county region, which will facilitate air quality planning efforts following a nonattainment designation. In addition, these boundaries have been used as nonattainment area boundaries for other criteria pollutants in the past, such as for the 2006 PM_{2.5} standard. Therefore, the MDEQ is recommending a nonattainment designation for the seven counties in the SEMCOG region, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne.

While the federal CAA directs the states' governors to make these designation recommendations, in an effort to be collaborative, the MDEQ has sought opinions of local governments that would be impacted by these designations. SEMCOG is opposed to a seven-county nonattainment area and would instead like to recommend a four-county nonattainment area consisting of St. Clair, Macomb, Wayne, and Oakland Counties (Appendix A). SEMCOG's argument is that Livingston, Washtenaw, and Monroe Counties are not significant contributors to the nonattainment area due to the air quality data showing attainment, low and decreasing emissions of ozone precursors, relatively low population, and low traffic volumes. In addition, SEMCOG does not agree with the MDEQ interpretation of meteorological data and believes that geography and topography are more important factors than considered in our analysis. Finally, SEMCOG notes that while they coordinate planning across the region, they also conduct planning at the county or community level. While we acknowledge SEMCOG's viewpoint and interpretation of the data, the MDEQ still stands behind our recommendation of a seven-county nonattainment area.

Figure 8. Historical Design Values in Southeast Michigan



Note: Ann Arbor is a CASTNET site and did not follow proper quality control protocols until 2011

Table 5. Emissions of NOx by County and Sector in Southeast Michigan

County	NOx Emissions (tons/ year)					
	Point	Nonpoint	On-road Mobile	Non-road Mobile	Event	Total
Livingston	526	825	4,062	996	4	6,413
Macomb	1,738	2,790	12,634	3,670	1	20,833
Monroe	19,996	1,332	3,476	1,182	0	25,987
Oakland	10,66	4,533	23,694	5,334	11	34,637
St. Clair	19,011	1,503	2,939	1,347	0	24,800
Washtenaw	925	1,474	6,956	2,259	2	11,616
Wayne	19,489	6,307	29,767	6,847	12	62,423
State Total						461,298

Source: National Emissions Inventory, 2011

Table 6. Emissions of VOCs by County and Sector in Southeast Michigan

County	VOC Emissions (tons/ year)					
	Point	Nonpoint	On-road Mobile	Non-road Mobile	Event	Total
Livingston	176	6,633	1,820	1,354	38	10,020
Macomb	2,114	10,846	6,665	2,993	13	22,631
Monroe	432	5,774	1,514	145	1	7,865
Oakland	848	17,068	11,095	6,342	150	35,503
St. Clair	1,102	8,162	1,445	1,564	0	12,273
Washtenaw	319	9,776	2,953	1,756	25	14,829
Wayne	5,544	20,975	13,193	5,016	125	44,852
State Total						939,089

Source: National Emissions Inventory, 2011

Table 7. Commuting Patterns in Southeast Michigan

Commuting From	Commuting Into (%)										Within Region	Out of Region
	Livingston	Macomb	Monroe	Oakland	St. Clair	Washtenaw	Wayne	Washtenaw	Wayne	Washtenaw		
Livingston	42.9	1.3	0.1	19.8	0.0	13.7	12.6	13.7	12.6	12.6	90.4	9.6
Macomb	0.1	58.4	0.1	23.9	0.9	0.3	15.0	0.3	15.0	15.0	98.7	1.3
Monroe	0.1	0.7	49.2	1.5	0.0	6.8	19.6	6.8	19.6	19.6	77.9	22.1
Oakland	0.8	6.7	0.1	69.8	0.1	1.3	18.2	1.3	18.2	18.2	96.9	3.1
St. Clair	0.1	22.7	0.1	5.2	63.7	0.1	4.6	0.1	4.6	4.6	96.4	3.6
Washtenaw	1.5	0.4	0.6	4.0	0.0	77.4	12.5	77.4	12.5	12.5	96.5	3.5
Wayne	0.2	15.2	0.6	14.8	0.0	3.8	74.2	3.8	74.2	74.2	98.6	1.4
Within Region	2.3	15.2	2.0	30.4	2.4	8.8	35.9	8.8	35.9	35.9	96.9	3.1
Out of Region	7.8	9.4	6.4	35.4	3.9	19.2	17.9	19.2	17.9	17.9	100.0	

Source: SEMCOG

Figure 9. Daily HYSPLIT Results for New Haven in 2013

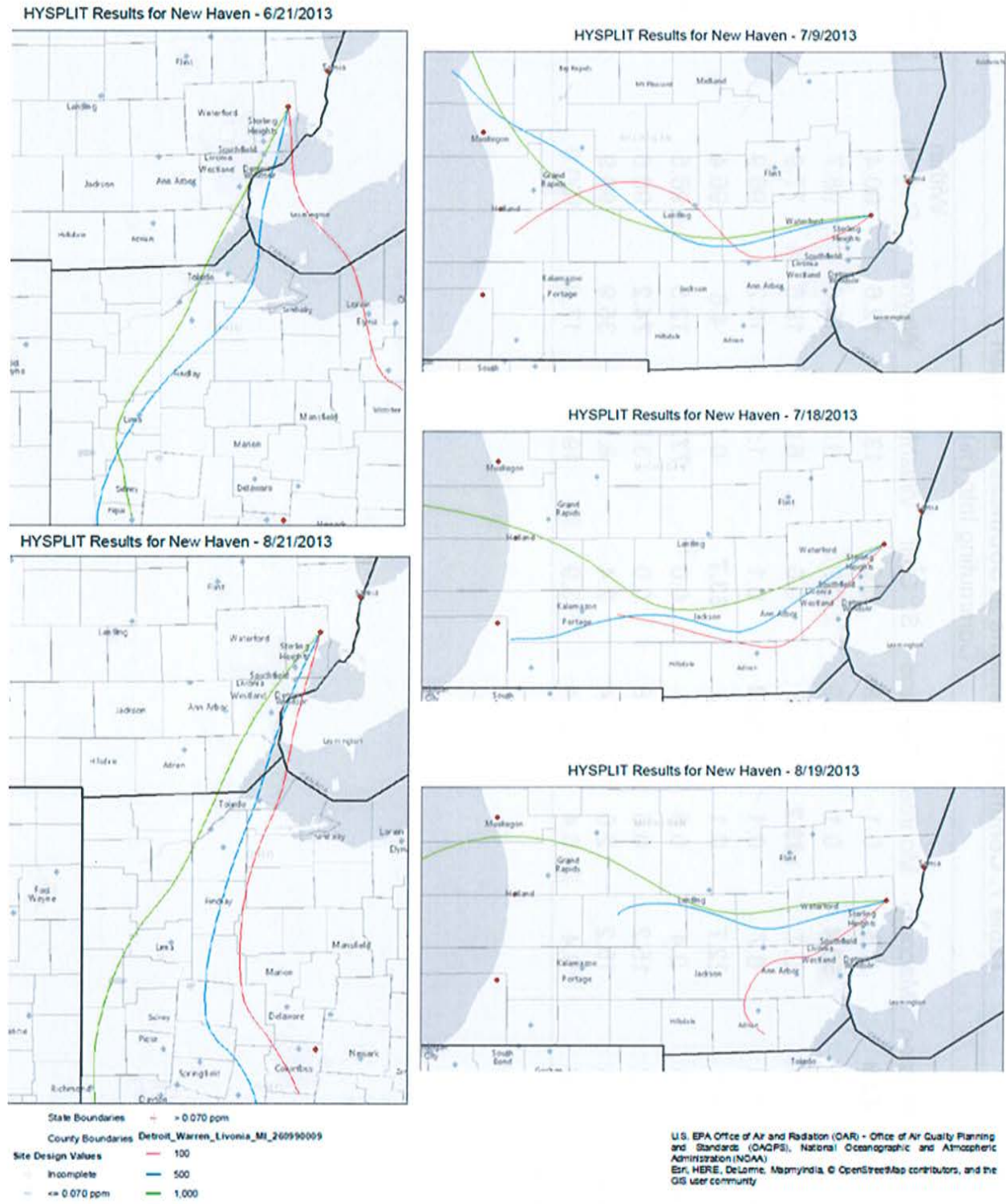


Figure 10. Daily HYSPLIT Results for New Haven in 2014

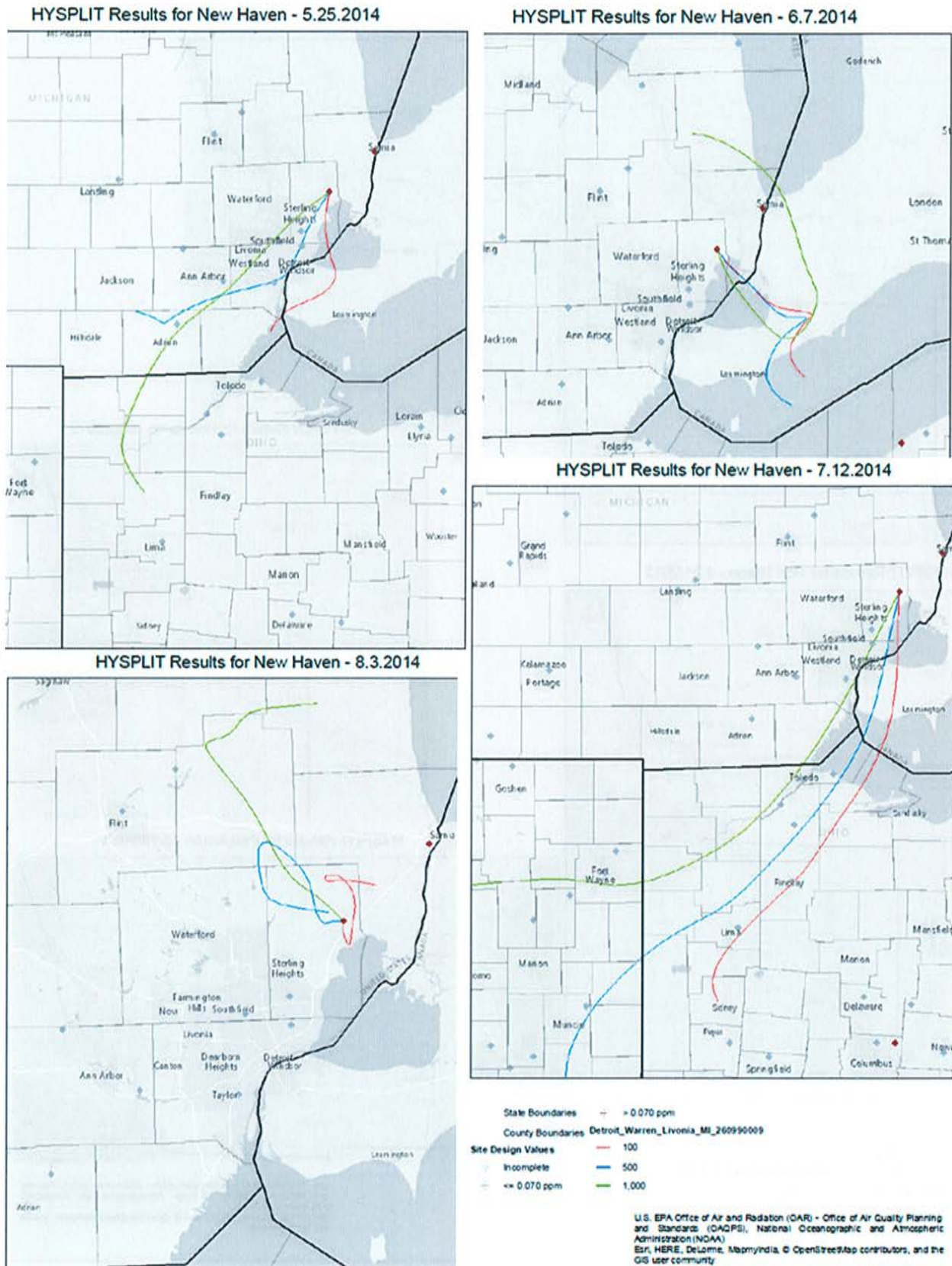


Figure 11. Daily HYSPLIT Results for Port Huron in 2013

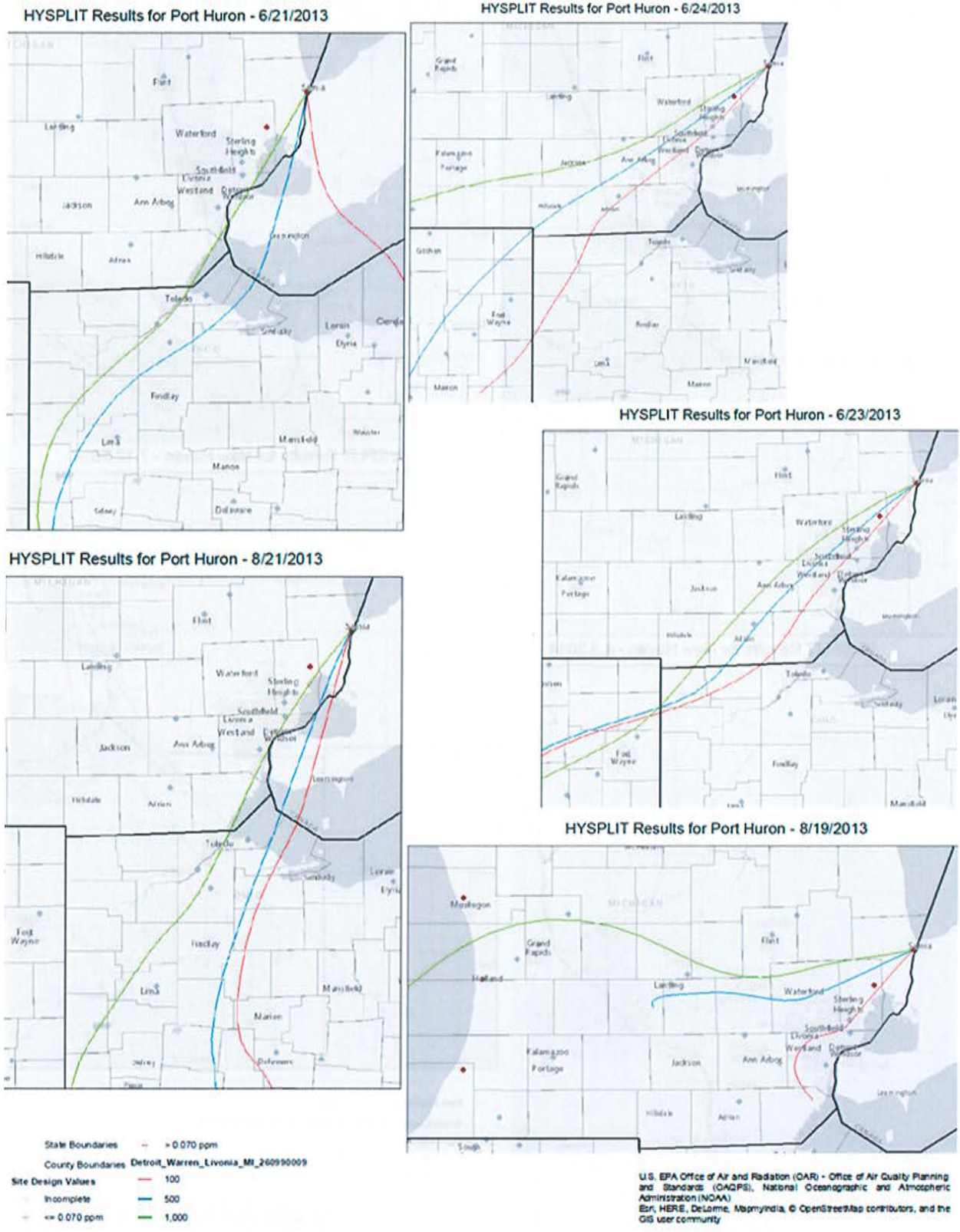
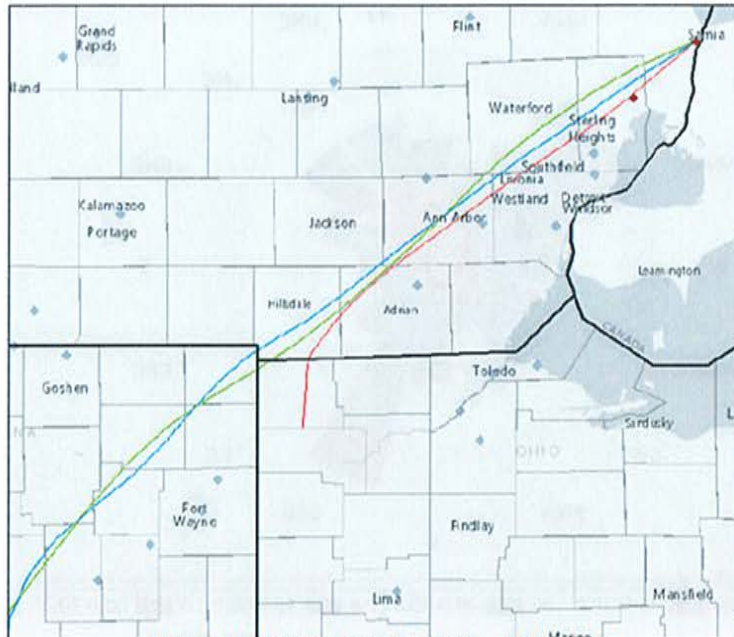
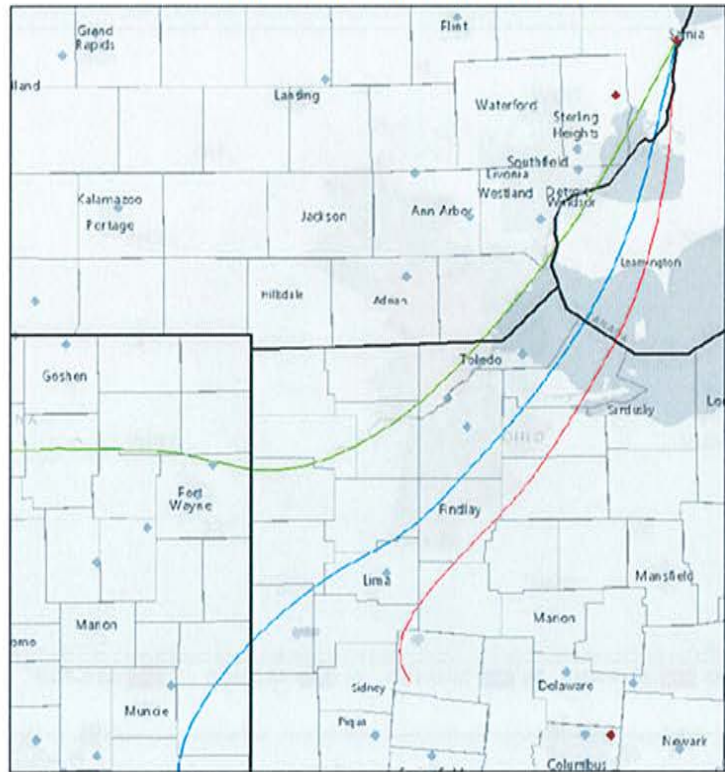


Figure 12. Daily HYSPLIT Results for Port Huron in 2014

HYSPLIT Results for Port Huron - 5/26/2014

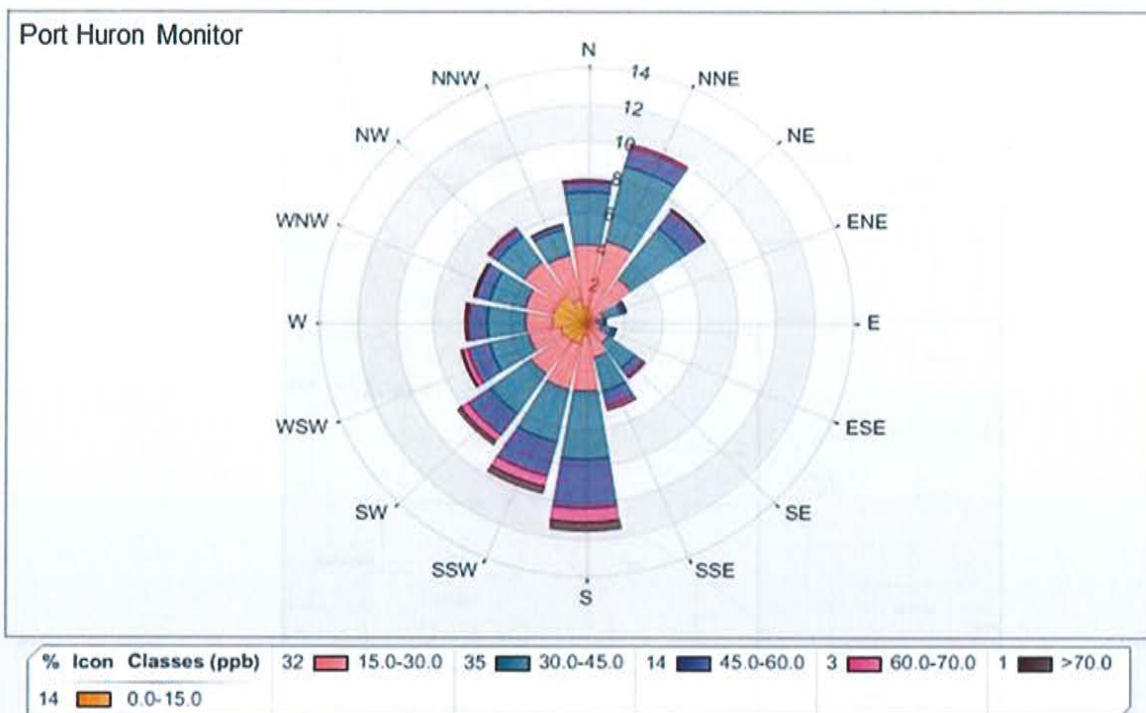
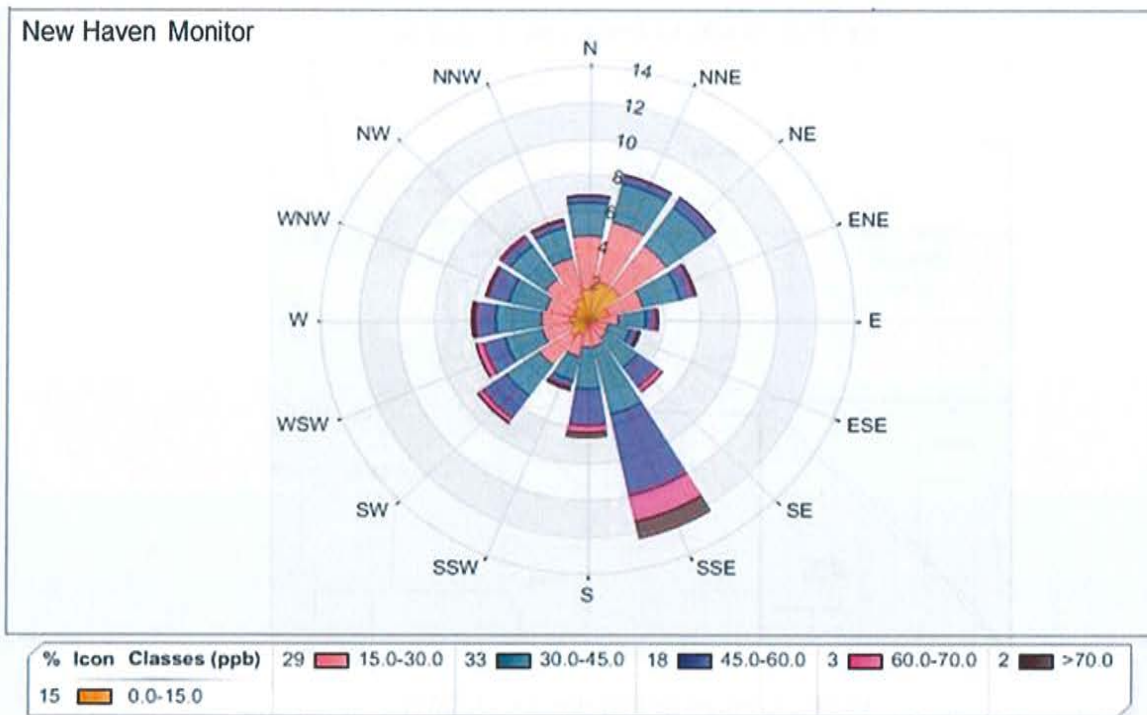


HYSPLIT Results for Port Huron - 7/12/2014



State Boundaries + = 0.070 ppm
 County Boundaries Detroit_Warren_Livonia_MI_240990009
 Site Design Values
 Incomplete = 100
 = 500
 = 1,000
 U.S. EPA Office of Air and Radiation (OAR) - Office of Air Quality Planning and Standards (OAQPS), National Oceanographic and Atmospheric Administration (NOAA)
 Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Figure 13. Pollution Roses for the New Haven and Port Huron Monitors



Attainment Area Analysis

The state of Michigan has 24 ozone monitors that have 2015 design values meeting the 2015 ozone NAAQS of 0.070 ppm. Based on this monitoring data and the weight-of-evidence analysis below, the MDEQ is recommending the following counties as attainment areas defined by Section 107(d)(1)(A) of the CAA as an area that “meets the national primary or secondary ambient air quality standard for the pollutant” (Figure 1): Benzie, Cass, Chippewa, Clinton, Eaton, Genesee, Huron, Ingham, Kalamazoo, Kent, Lenawee, Manistee, Mason, Missaukee, Ottawa, Tuscola, and Wexford. An analysis of each recommended attainment area follows.

Benzie County

Based on the weight-of-evidence that Benzie County is rural, is impacted mostly by transported emissions, has low NO_x and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the pollution roses and HYSPLIT outputs, and it contains a shoreline monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Benzie County.

Benzie County (Figure 14) is a rural county in Michigan’s Lower Peninsula with a population of less than 20,000 based on the 2010 U.S. Census and a population density of 55 people per square mile. Benzie County is part of the three-county Traverse City Micropolitan Statistical Area but for designation purposes, it should be considered separate from the statistical area based on the following facts. First, the only ozone monitor in this statistical area is the Benzonia/Frankfort monitor in Benzie County. This monitor is not centrally located in the Traverse City Micropolitan Statistical Area but does serve as a good surrogate for Benzie County. Second, as shown in Figure 15, Benzie County has low traffic volume interactions with the rest of the Traverse City Micropolitan Statistical Area. Third, the population density map (Figure 4) shows that the majority of the population in this statistical area is located in Grand Traverse County, not in Benzie County. Therefore, the MDEQ is only recommending Benzie County, noted in green in Figure 14, for this attainment area.

The Benzonia/Frankfort monitor has a 2015 design value of 0.068 ppm, in attainment with the 2015 ozone NAAQS. The most recent 2016 monitoring data (Table 23 on page 66) also shows attainment. This monitor is shown in Figure 14 as the point of convergence of the HYSPLIT trajectories and is a shoreline monitor similar to ones in the western Michigan recommended nonattainment areas. The HYSPLIT output shows that the impact on this monitor is due to transport of air masses from the Chicago area similar to those in the western Michigan nonattainment areas. The distance from the Chicago area and the protrusions of the western Michigan shoreline are the only difference between the violating monitors in western Michigan and the non-violating Benzonia/Frankfort monitor and most likely the cause of the variation in monitored data.

The NOx and VOC emissions based on the 2011 NEI in Benzie County (Table 8) are relatively low compared with the areas shown to influence the nonattaining monitors in the state, as demonstrated in the Nonattainment Designation section of this document. For instance, Cook County, the major contributor to the western Michigan nonattaining monitors, produces over 117 times more NOx and over 17 times more VOC emissions than Benzie County. Also, the southeast Michigan recommended nonattainment area produces over 194 times more NOx and over 27 times more VOC emissions than Benzie County.

Benzie County is also positioned far north of the recommended nonattainment areas in western Michigan. The HYSPLIT outputs (Figure 6 and Figures 9-12) and pollution roses (Figures 7 and 13) for the recommended nonattainment areas demonstrate that the emissions from Benzie County are not a major influence on the nonattaining monitors in these areas.

Figure 14. Benzie County Recommended Attainment Area

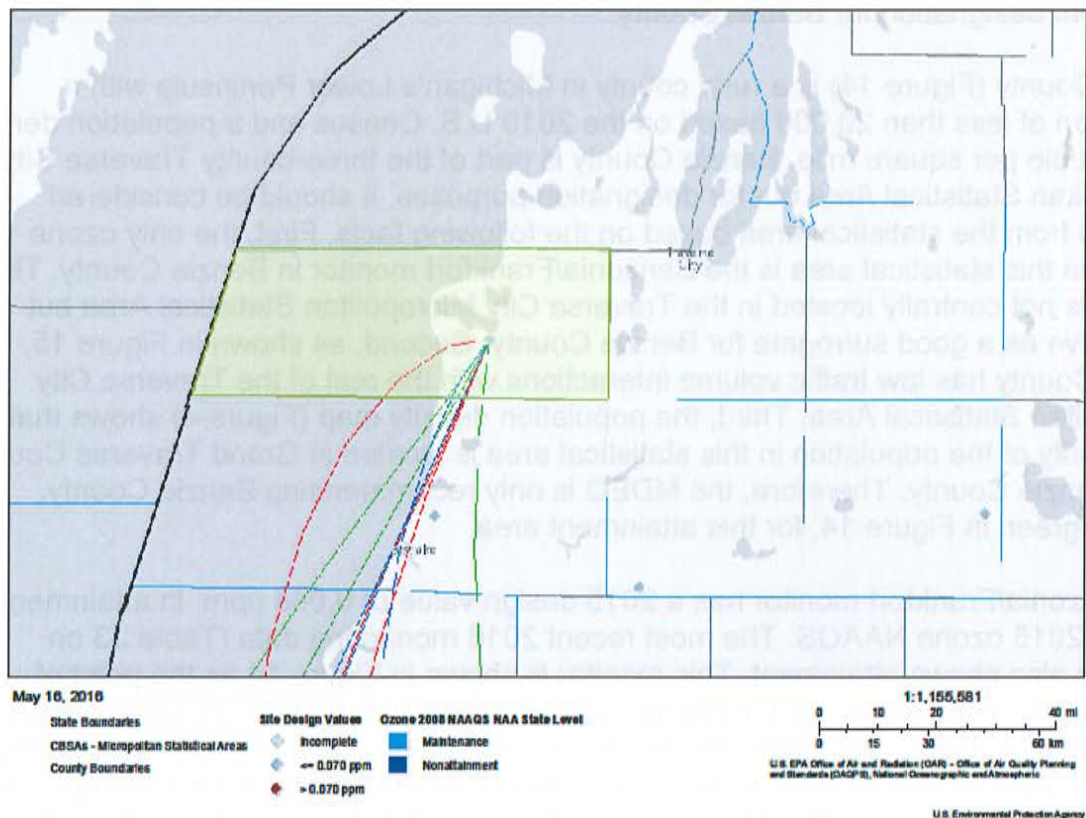


Figure 15. Benzie County Traffic Volumes

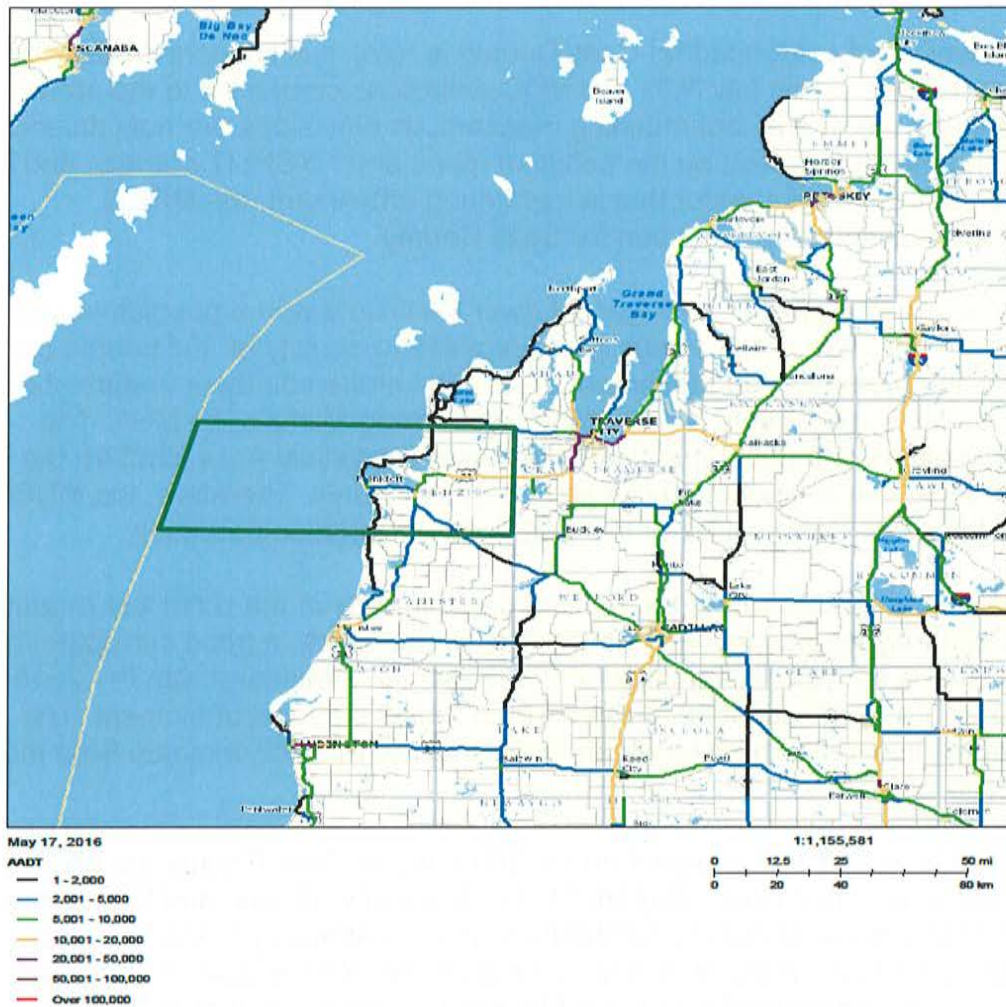


Table 8. Benzie County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Benzie County	959	5,395 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Cass County

Based on the weight-of-evidence that Cass County is rural, it is impacted mostly by transported emissions, it has low NO_x and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the pollution roses and HYSPLIT outputs, and it contains a centrally located monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Cass County.

Cass County is a rural county in Michigan's Lower Peninsula with a population just over 50,000 based on the 2010 U.S. Census and a population density of 104 people per square mile. The recommended attainment area is the entire county boundary shown in green in Figure 16. Cass County is part of the South Bend-Mishawaka MSA. The MDEQ only maintains one monitor in this Core-Based Statistical Area (CBSA), the Cassopolis monitor, which is centrally located in Cass County. Therefore, the MDEQ will only address the Cass County area of this CBSA for designation purposes.

The Cassopolis monitor, shown as the point of convergence of the HYSPLIT output in Figure 16, is centrally located in Cass County and is, therefore, a good surrogate for the entire county. It has a 2015 design value of 0.068 ppm, in attainment with the 2015 ozone NAAQS. The most recent 2016 data (Table 23) also shows attainment. The HYSPLIT model shows that the air masses impacting the monitor originate from Indiana and the Chicago area.

The emission of NO_x and VOCs based on the 2011 NEI in Cass County are given in Table 9 and show low emissions compared to Cook County, Illinois, and the southeast Michigan areas (the areas shown to contribute to the nonattaining monitors). Cook County produces 51 times more NO_x and 13 times more VOC emissions than Cass County. Also, the recommended southeast Michigan nonattainment area produces 85 times more NO_x and 22 times more VOC emissions than Cass County.

Based on the pollution roses (Figure 7) and HYSPLIT output (Figure 6), Cass County's emissions do not influence the nonattaining monitors in the western Michigan recommended nonattainment areas. Also, based on the pollution roses (Figure 13) and HYSPLIT outputs (Figures 9-12 and 17), Cass County's emissions do not influence the nonattaining monitors in the recommended southeast Michigan nonattainment area.

Figure 16. Cass County Recommended Attainment Area

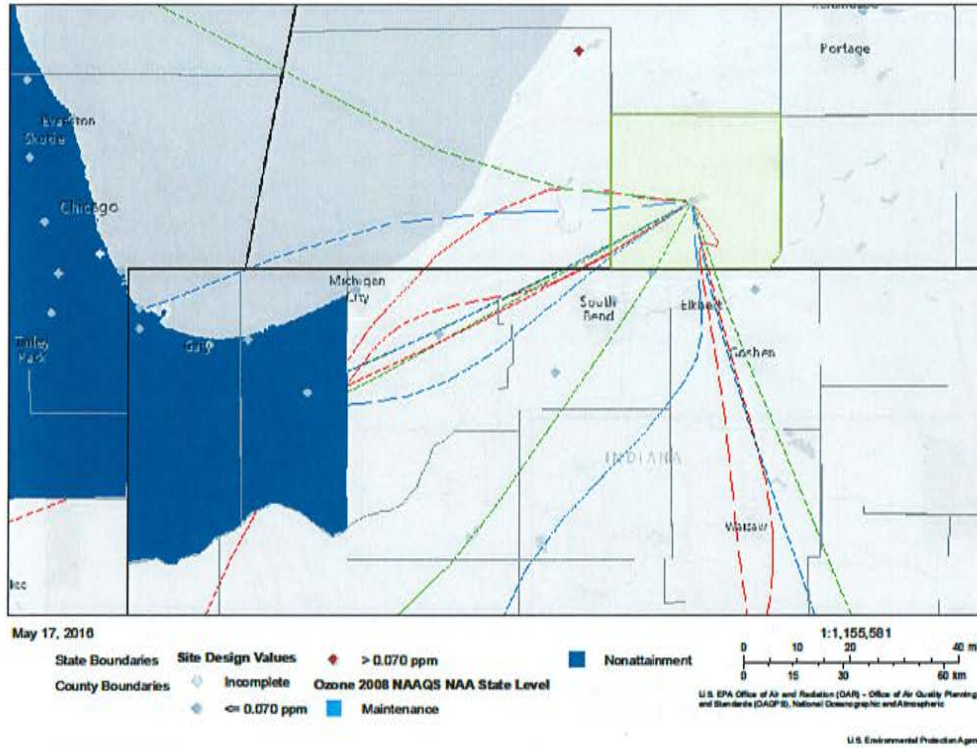


Table 9. Cass County NOx and VOC Emission Comparison

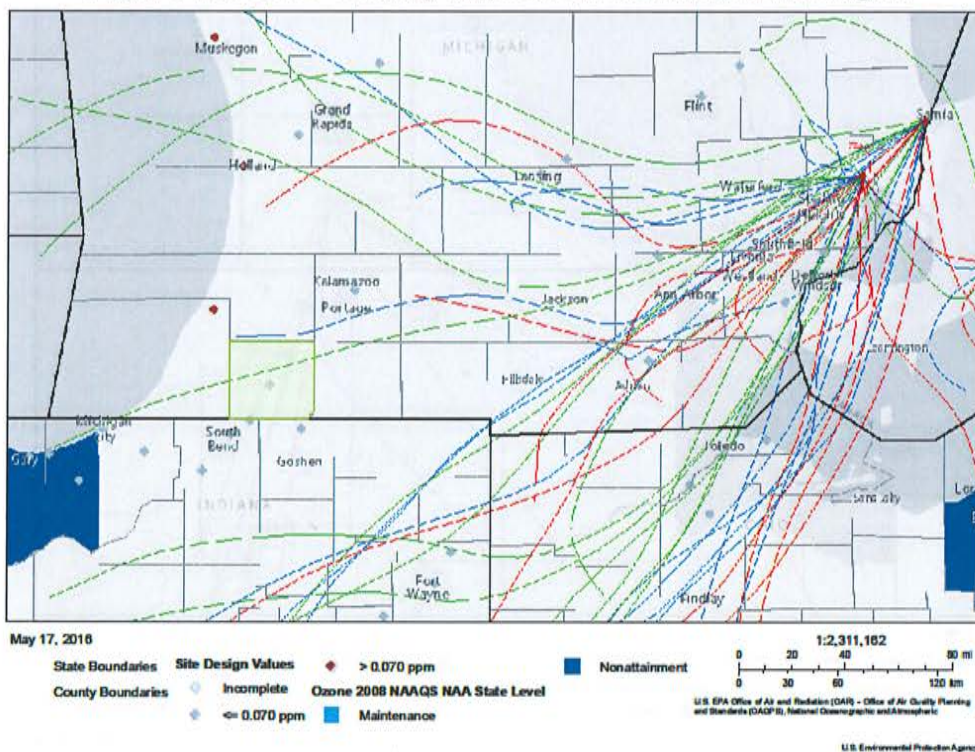
Area	NOx Emissions*	VOC Emissions*
Cass County	2,186	6,646 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Figure 17. Cass County Impact on Southeast Michigan



Chippewa County

Based on the weight-of-evidence that Chippewa County is rural, is its own Micropolitan Statistical Area, has low NOx and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattainment monitors in the state based on pollution roses and HYSPLIT outputs, and it contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Chippewa County.

Chippewa County is in a rural portion of Michigan's Upper Peninsula with a population of less than 40,000 based on the 2010 U.S. Census and a population density of 14.3 people per square mile. It is the sole county in the Sault Ste. Marie Micropolitan Statistical Area. The MDEQ recommends the entire Chippewa County boundary for this attainment area, shown in green in Figure 18.

There is one monitor in this county, the Sault Ste. Marie tribal monitor, noted in Figure 18 with the blue dot. This monitor has a 2015 design value of 0.059 ppm in attainment with the 2015 ozone NAAQS. The most recent 2016 data from this monitor (Table 23) also shows attainment. The pollution rose (Figure 19) shows that most pollution impacts on this monitor originate from the southeast and northwest.

The emissions of NOx and VOCs based on the 2011 NEI in Chippewa County are given in Table 10 and show low emissions for this area compared to the areas shown to

contribute to the nonattaining monitors in the state, Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 50 times more NO_x and 4 times more VOC emissions than Chippewa County. The southeast Michigan area produces 82 times more NO_x and 7 times more VOC emissions than Chippewa County.

Based on the HYSPLIT outputs (Figures 6 and 9-12) and the pollution roses (Figures 7 and 13), Chippewa County's emissions do not influence any nonattaining monitors.

Figure 18. Chippewa County Recommended Attainment Area

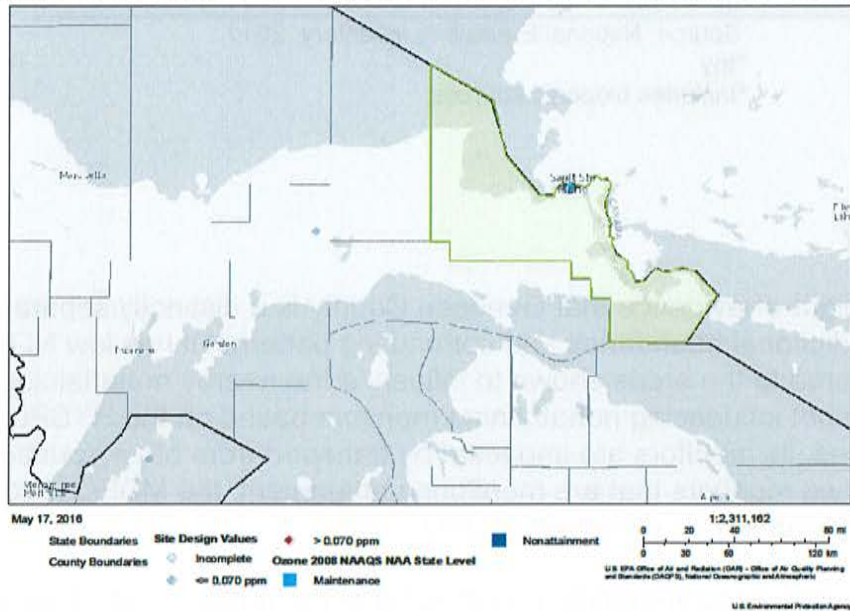


Figure 19. Sault Ste. Marie Monitor Pollution Rose

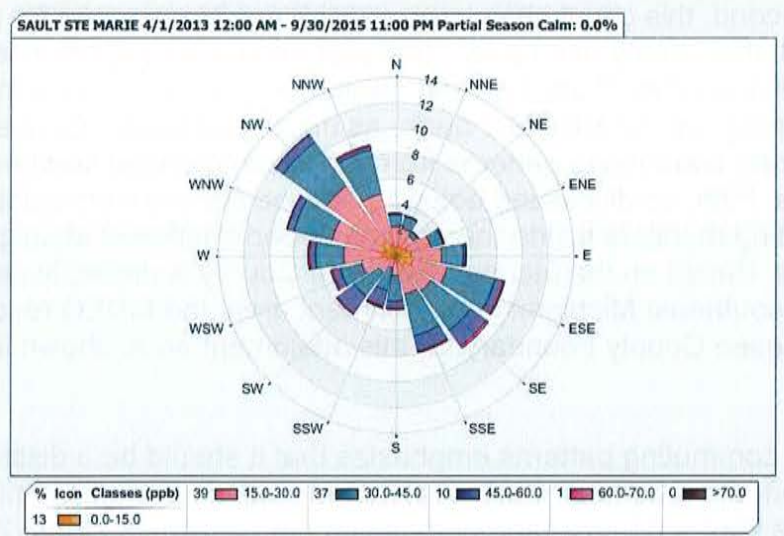


Table 10. Chippewa County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Chippewa County	2,251	20,748 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Genesee County

Based on the weight-of-evidence that Genesee County is a distinctly separate county with its own jurisdictional boundaries and commuting patterns, it has low NOx and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing nonattaining monitors based on the HYSPLIT outputs and pollution roses, its monitors are impacted by transport from other counties, and the county contains two monitors that are monitoring attainment, the MDEQ recommends an attainment designation for Genesee County.

Genesee County is located immediately northwest of the recommended southeast Michigan nonattainment area and should be considered a distinctly separate area for ozone designations. First, this county is its own MSA, separate from the Detroit-Warren-Dearborn MSA. Second, this county has been considered its own area for past NAAQS designations. Third, this county has its own transportation planning commission, the Genesee County Metropolitan Planning Commission, and does not combine transportation planning with SEMCOG. Fourth, as discussed below, Genesee County has distinctly separate commuting patterns from the recommended southeast Michigan nonattainment area. Fifth, as discussed below, Genesee County's emissions are not impacting the violating monitors inside the recommended southeast Michigan nonattainment area. Based on the fact that Genesee County is distinctly separate from the recommended southeast Michigan nonattainment area, the MDEQ recommends using only the Genesee County boundary for this attainment area, shown in green in Figure 20.

Genesee County's commuting patterns emphasize that it should be a distinctly separate attainment area from the recommended southeast Michigan nonattainment area. Based on the U.S. Census 2009-2013 average commuting data shown in Figure 21, 75 percent of Genesee County residents remain inside the county for work each day. This means only 25 percent of Genesee County's population commutes outside of that county. Of that 25 percent, the top three counties that Genesee County residents

commute to are: Oakland County with just over 11 percent; Saginaw County with 2.8 percent; and Livingston County with 2.3 percent. This yields only a 13 percent link to the recommended southeast Michigan nonattainment area. Figure 22 shows that of commuters entering or traveling inside Genesee County for work each day, 82 percent of those live in Genesee County. Only 18 percent of commuters are from other counties. Of that 18 percent, the top three contributing counties are: Oakland County with 4.8 percent; Lapeer County with 2.5 percent; and Shiawassee County with 2.4 percent. This is only a 4.8 percent link to the recommended southeast Michigan nonattainment area. The fact that for Genesee County, the vast majority of commuters are contained inside the county and of the linked counties, only one is in the recommended southeast Michigan nonattainment area (and that county only has 4.8-13 percent commuting interactions with Genesee County) demonstrates that Genesee County should be distinctly separate from the recommended southeast Michigan nonattainment area for designation purposes.

There are two monitors in Genesee County; Flint, which is centrally located, and Otisville, which is on the northeastern edge of the county. They are shown as the point of convergence of the HYSPLIT output in Figure 20. Both of these monitors show attainment with the 2015 ozone NAAQS and have 2015 design values of 0.066 ppm and 0.067 ppm respectively. The most recent 2016 data (Table 23) also shows attainment at these monitors. The HYSPLIT output shows the majority of air masses impacting these monitors originating from Ohio and Indiana.

Genesee County's NO_x and VOC emissions based on the 2011 NEI in Genesee County are given in Table 11 and show lower emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 9 times more NO_x and 5 times more VOC emissions than Genesee County. The southeast Michigan area produces 15 times more NO_x and 8 times more VOC emissions than Genesee County.

Overall, Genesee County is not likely impacting the recommended nonattainment areas. For the western Michigan recommended nonattainment areas, the HYSPLIT output (Figure 6) and pollution roses (Figure 7) do not show any impact from Genesee County. For the southeast Michigan recommended nonattainment area, the emissions from the county also do not impact the violating monitors, based on the HYSPLIT outputs and pollution roses. Specifically, the HYSPLIT outputs in Figures 9-12 show no air masses moving through or originating from Genesee County that impact the southeast Michigan violating monitors during high ozone level days. Also, the pollution roses in Figure 13 shows that on high ozone days at the violating monitors there is very low pollution coming from the north-northwest direction, which is the direction of Genesee County relative to the recommended southeast nonattainment area.

Figure 20. Genesee County Recommended Attainment Area

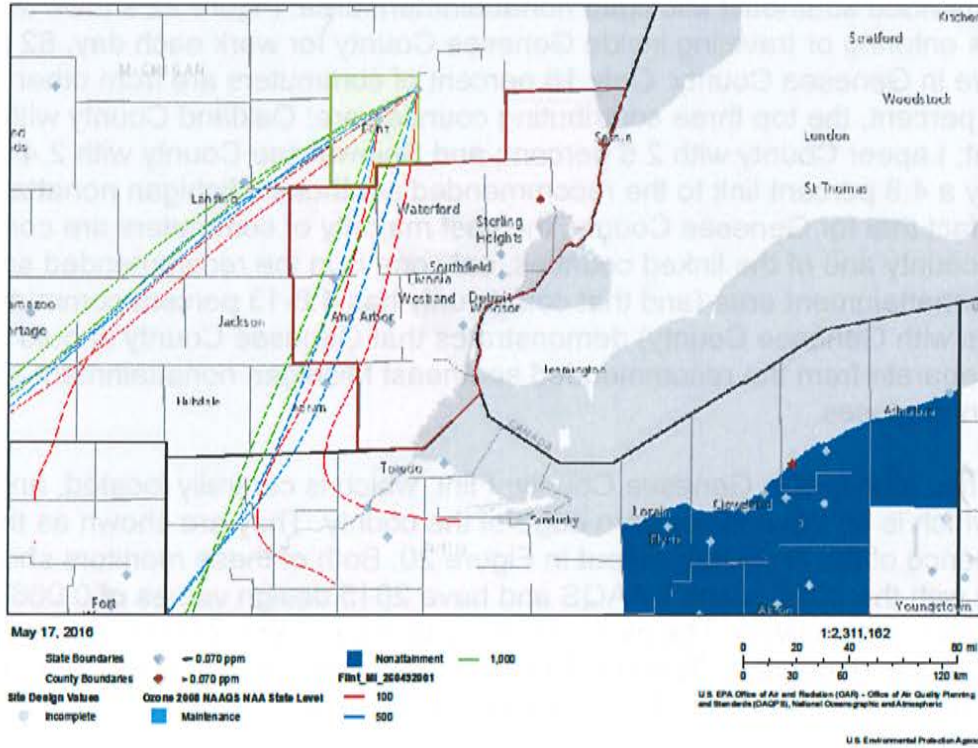
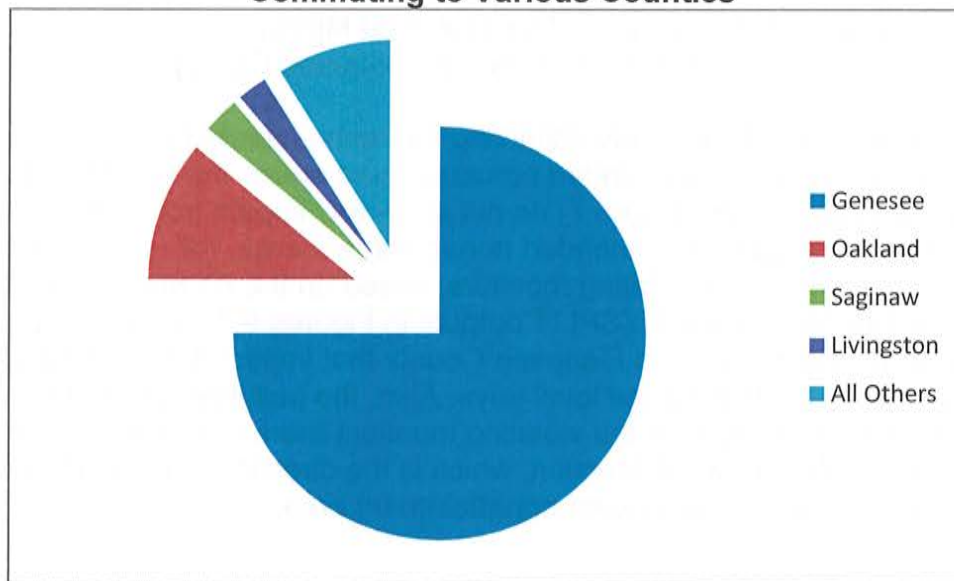
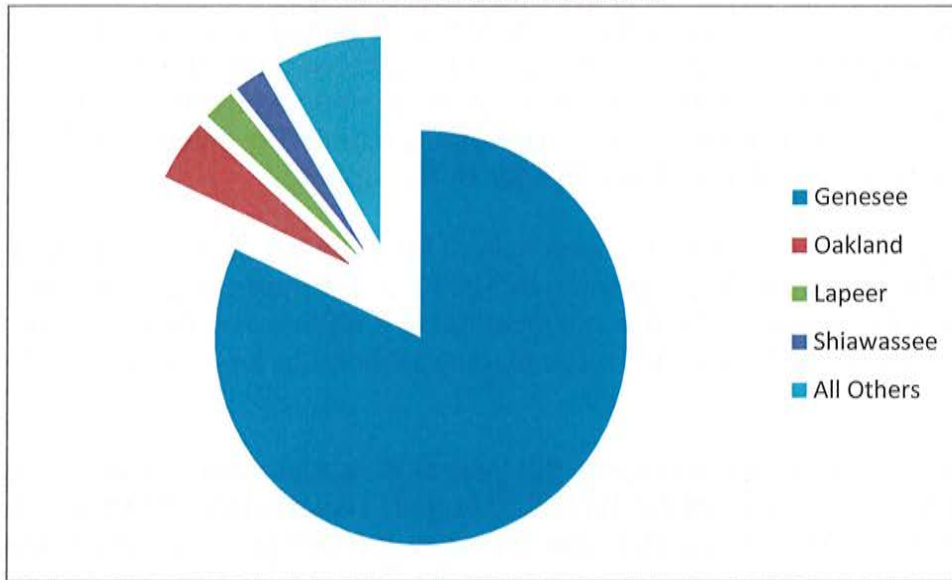


Figure 21. Percentage of Genesee County Residents Commuting to Various Counties



Source: U.S. Census 2009-2013 average commuting data

Figure 22. Percentage of Commuters Entering Genesee County From Various Counties



Source: U.S. Census 2009-2013 average commuting data

Table 11. Genesee County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Genesee County	12,293	17,814 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Huron County

Based on the weight-of-evidence that Huron County is a rural county, it has low NO_x and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the HYSPLIT outputs and pollution roses, its monitor is impacted by transport from other counties, and the county contains a monitor that is monitoring attainment, the MDEQ recommends a designation of attainment for Huron County.

Huron County is a rural area on the east side of Michigan's Lower Peninsula with a population of less than 40,000 based on the 2010 U.S. Census and a population density of 15.2 people per square mile. It is not included in a CBSA. The MDEQ recommends using the county boundary for the Huron County attainment area, shown in green in Figure 23.

There is one monitor in Huron County, the Harbor Beach monitor, shown in Figure 23 as the point of convergence of the HYSPLIT output. This monitor shows attainment of the 2015 ozone NAAQS with a 2015 design value of 0.065 ppm. The most recent 2016 monitoring data (Table 23) also shows attainment. The HYSPLIT output in Figure 23 shows that the majority of the air masses impacting the Harbor Beach monitor originate from the recommended southeast Michigan nonattainment area.

The sources of emissions based on the 2011 NEI in Huron County (Table 12) show very low emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 33 times more NO_x and 20 times more VOC emissions than Huron County. The southeast Michigan area produces 54 times more NO_x and 20 times more VOC emissions than Huron County. Also, the HYSPLIT outputs (Figures 6 and 9-12) and pollution roses (Figures 7 and 13) from the recommended nonattainment areas show that Huron County emissions do not influence the nonattaining monitors.

Figure 23. Huron County Recommended Attainment Area

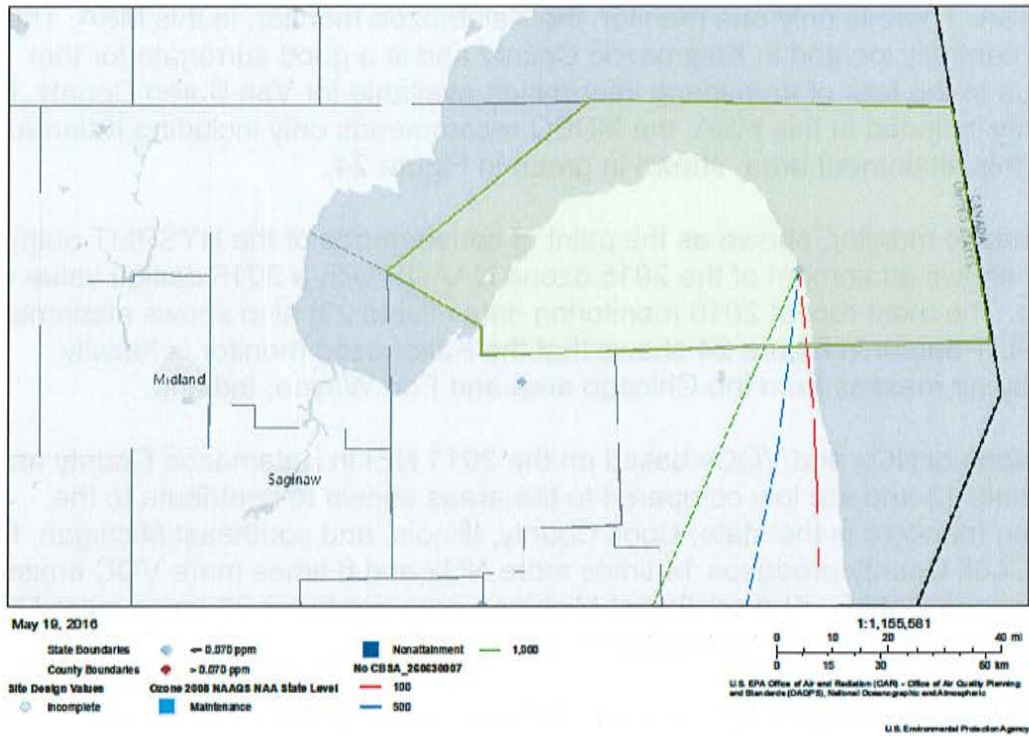


Table 12. Huron County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Huron County	3,420	7,163 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic emissions

Kalamazoo County

Based on the weight-of-evidence that Kalamazoo County has low NOx and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the HYSPLT outputs and pollution roses, its monitor is impacted by transport from other counties, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Kalamazoo County.

Kalamazoo County is located in southwestern Michigan and is part of the Kalamazoo-Portage MSA. There is only one monitor, the Kalamazoo monitor, in this MSA. The monitor is centrally located in Kalamazoo County and is a good surrogate for that county. Due to the lack of monitoring information available for Van Buren County, the other county included in this MSA, the MDEQ recommends only including Kalamazoo County in this attainment area, shown in green in Figure 24.

The Kalamazoo monitor, shown as the point of convergence of the HYSPLIT output in Figure 24, shows attainment of the 2015 ozone NAAQS with a 2015 design value of 0.067 ppm. The most recent 2016 monitoring data (Table 23) also shows attainment. The HYSPLIT output in Figure 24 shows that the Kalamazoo monitor is heavily impacted by air masses from the Chicago area and Fort Wayne, Indiana.

The emissions of NO_x and VOCs based on the 2011 NEI in Kalamazoo County are given in Table 13 and are low compared to the areas shown to contribute to the nonattaining monitors in the state; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 14 times more NO_x and 6 times more VOC emissions than Kalamazoo County. The southeast Michigan area produces 23 times more NO_x and 11 times more VOC emissions than Kalamazoo County.

The HYSPLIT output (Figure 6) along with pollution roses (Figure 7) from the recommended western Michigan nonattainment areas show no influence from Kalamazoo County emissions on the nonattaining monitors. The HYSPLIT outputs in Figures 9-12 and 25, and the pollution roses in Figure 13 from the recommended southeast Michigan nonattainment area also demonstrates very little influence from Kalamazoo County emissions on the nonattaining monitors in that area compared to the emissions from the entire southeast Michigan area and Ohio. For example, Figure 25 shows air masses that impact the nonattaining monitors in the recommended southeast Michigan nonattainment area on high ozone days; only one air mass that impacts these monitors even passes through Kalamazoo County. This indicates that the emissions inside Kalamazoo County have little interaction with the air masses that travel to and eventually impact the nonattaining monitors.

Figure 24. Kalamazoo County Recommended Attainment Area

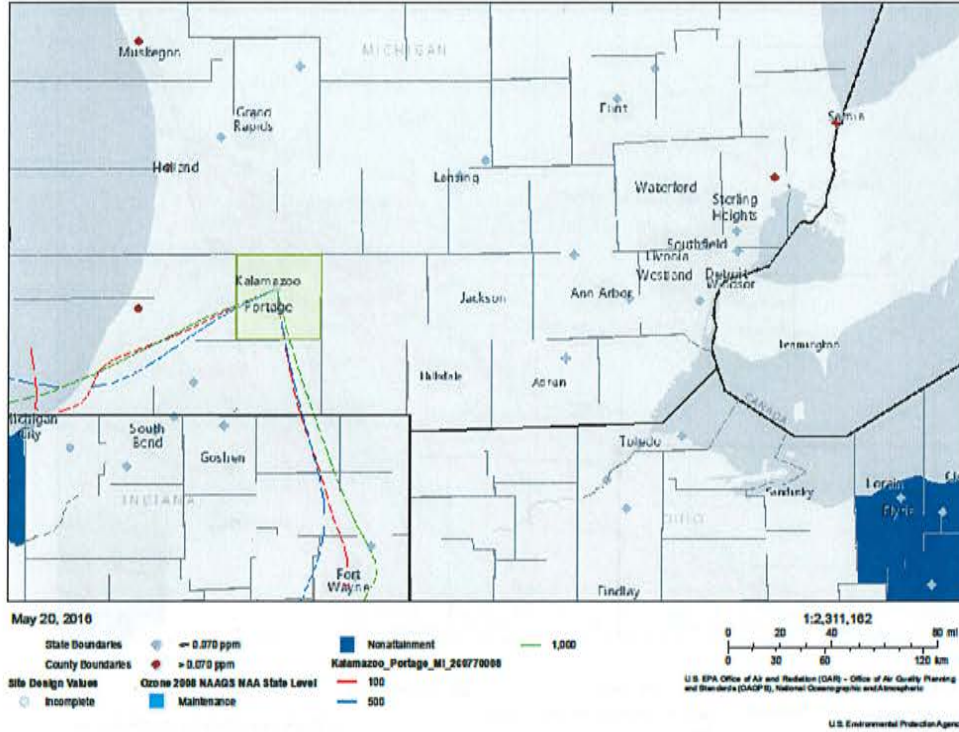


Table 13. NOx and VOC Emissions around Kalamazoo County

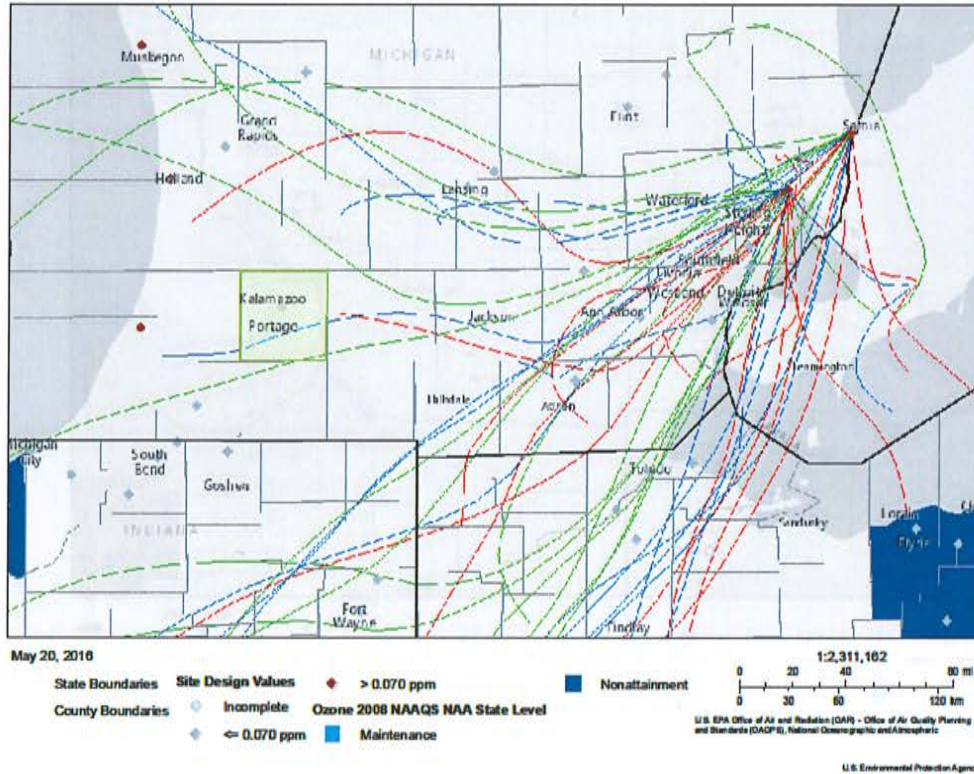
County	NOx Emissions*	VOC Emissions*
Kalamazoo	7,804	13,342 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic emissions

Figure 25. Kalamazoo County Impact on Nonattainment Areas



Kent and Ottawa Counties

Based on the weight-of-evidence that Kent and Ottawa Counties are connected by population, transportation trends, and commuting patterns; that they have low NO_x and VOC emissions compared to the areas shown to impact the nearby nonattaining monitors; that their emissions are not impacting nonattaining monitors based on HYSPLIT outputs and pollution roses; that their monitors are impacted by transport from other counties; and that the counties contain three monitors that are monitoring attainment, the MDEQ recommends a designation of attainment for Kent and Ottawa Counties.

Kent and Ottawa Counties are located on the west side of Michigan's Lower Peninsula. These counties are part of the Grand Rapids-Wyoming-Muskegon MSA. There are three monitors in Kent and Ottawa Counties (shown as blue dots in Figure 26) but no monitor in Barry or Montcalm Counties, the other counties in this MSA. The HYSPLIT output in Figure 26 for the Grand Rapids monitor shows that it is a good surrogate for Kent and Ottawa Counties as the direction of air mass movements on high ozone days pass through both counties, but it is not a good surrogate for the other two counties in this MSA due to their locations from the monitor. Figure 4 demonstrates that Kent and Ottawa Counties contain the majority of the population within this MSA. Figure 3 demonstrates that the majority of the NO_x and VOC emissions in this MSA are also

contained within these two counties. The traffic patterns in Figure 5 and commuting patterns also reinforce that Kent and Ottawa Counties should be tied together for designation purposes. According to the U.S. Census 2009-2013 average commuting data (Figure 27), 93 percent of the population of Kent County and 61 percent of the population of Ottawa County stay in their respective counties for work. Of those that do commute, 4.6 percent of Kent County commuters travel to Ottawa County and 27 percent of Ottawa County commuters travel to Kent County for work. Based on these facts, only Kent and Ottawa Counties are being recommended by the MDEQ for this attainment area; see the green area in Figure 26.

There are three monitors in Kent and Ottawa Counties; Evans, Grand Rapids, and Jenison. The Grand Rapids and Jenison monitors are shown as the points of convergence of the HYSPLIT output in Figure 26 and the Evans monitor as the blue dot without a HYSPLIT output. They are all monitoring attainment of the 2015 ozone NAAQS with 2015 design values of 0.067 ppm each. The most current 2016 data (Table 23) also shows attainment. The HYSPLIT output for the Grand Rapids monitor (Figure 26) along with the pollution rose for each monitor (Figure 28) shows that the majority of impact on these monitors is from transport over Lake Michigan.

The emissions of NO_x and VOCs from Kent and Ottawa Counties are stated in Table 14 and show lower emissions than the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 3 times more NO_x and 2 times more VOC emissions than Kent and Ottawa Counties combined. Also, the southeast Michigan area produces 5 times more NO_x and 3 times more VOC emissions than Kent and Ottawa Counties combined.

Even with the higher combined emissions from Kent and Ottawa Counties, the HYSPLIT outputs (Figure 6) along with pollution roses (Figure 7) for the recommended western Michigan nonattainment areas shows no influence on the nonattaining monitors from these counties. Figures 9-12 and 29 also show that Kent and Ottawa Counties have few air masses that would influence the nonattaining monitors in the recommended southeast Michigan nonattainment area, especially when compared in magnitude to the air masses originating from southeast Michigan and Ohio, which encompass almost all of the air masses tracked during high ozone days.

Figure 26. Kent and Ottawa Counties Recommended Attainment Areas

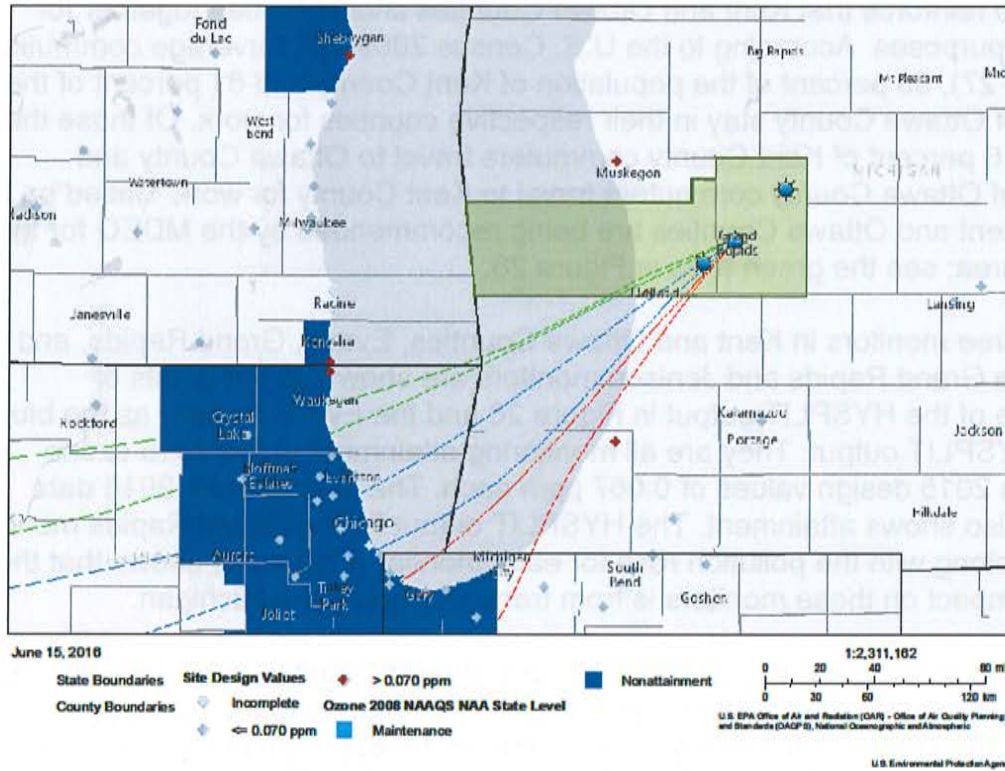
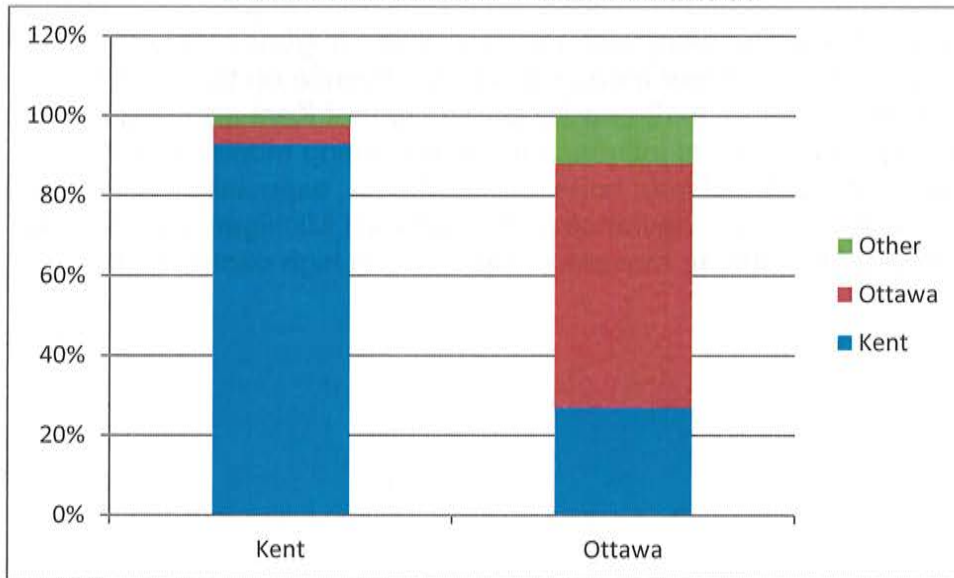


Figure 27. Percentage of Commuting Interaction Between Kent and Ottawa Counties



Source: U.S. Census 2009-2013 average commuting data

Figure 28. Evans, Grand Rapids, and Jenison Monitors Pollution Roses

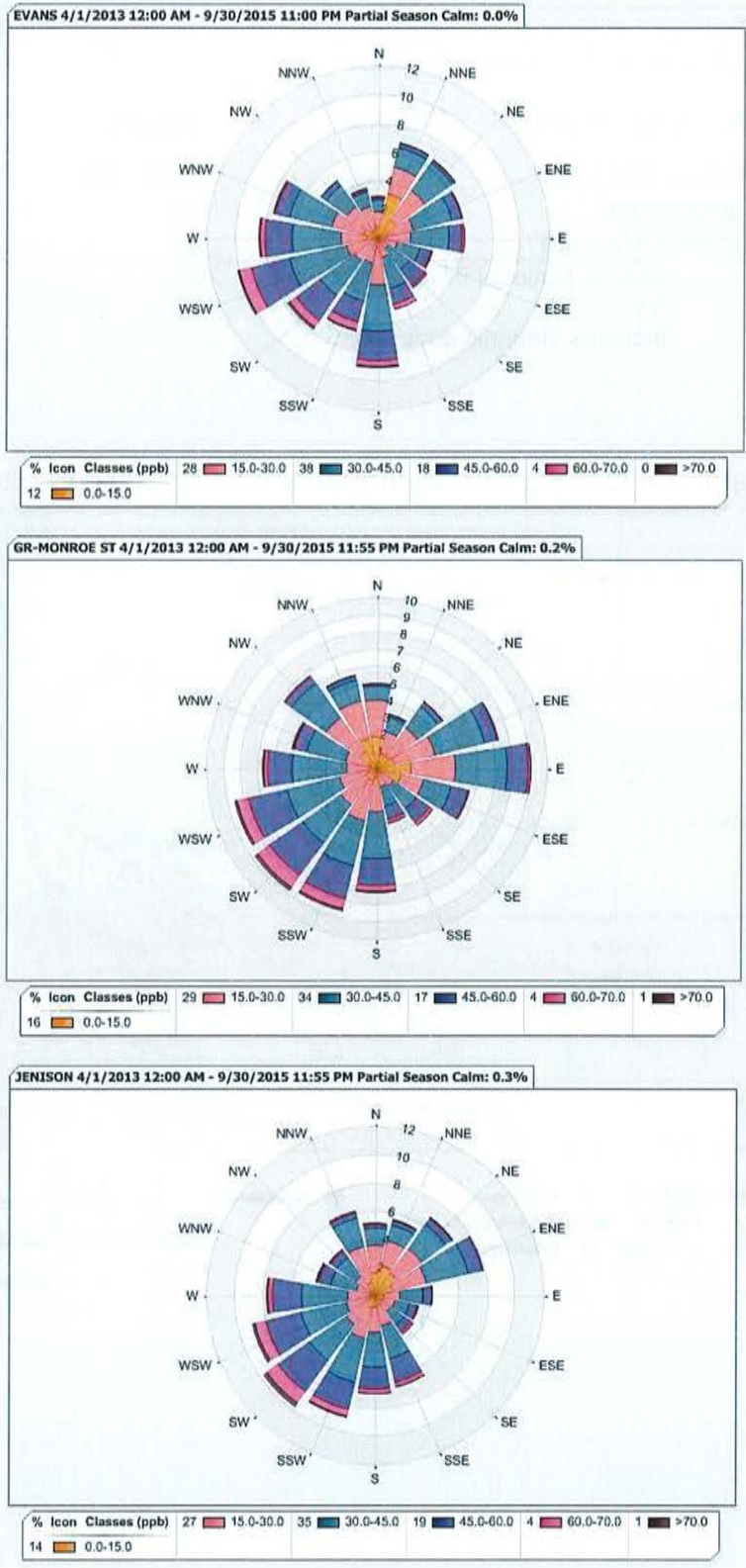


Table 14. Kent and Ottawa Counties NOx and VOC Emission Comparison

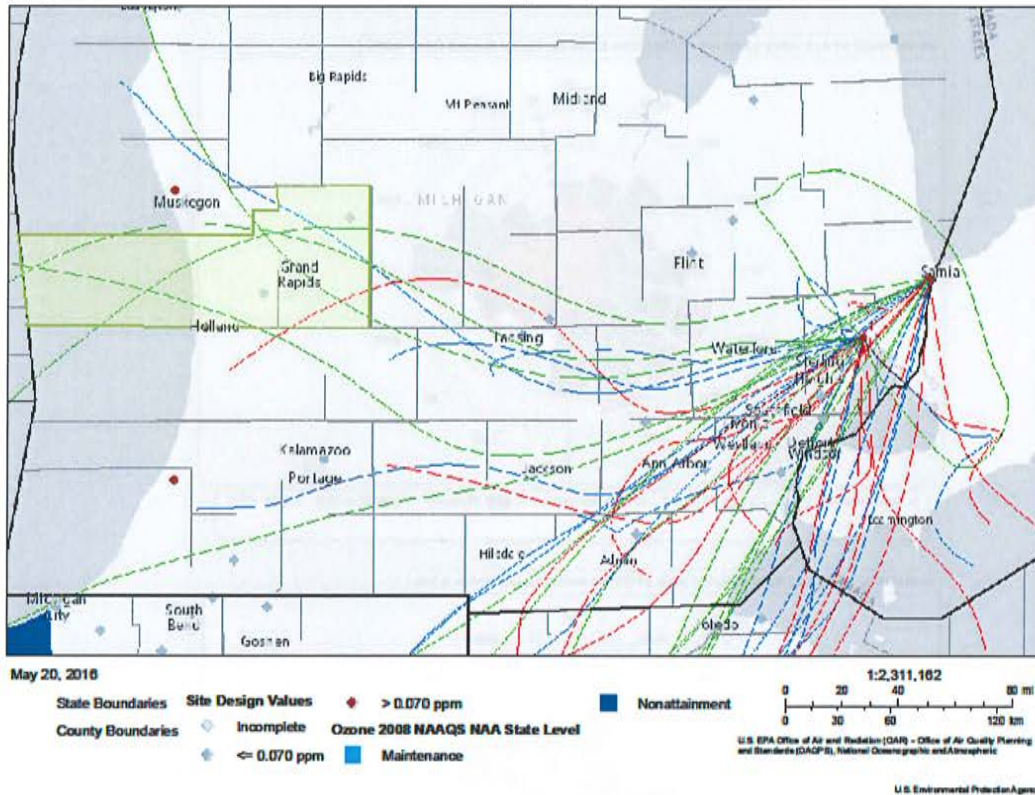
Area	NOx Emissions*	VOC Emissions*
Kent & Ottawa Counties	33,782	42,467 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic emissions

Figure 29. Kent and Ottawa County Impacts on Nonattainment Areas



Lansing-East Lansing Area

Based on the weight-of-evidence that Clinton, Eaton, and Ingham Counties are a single MSA with shared jurisdictional boundaries and connected traffic patterns, they have been linked together for past NAAQS designation processes, they have low NO_x and VOC emissions compared to the areas that are shown to influence the nearby nonattaining monitors, their emissions are not influencing the nonattaining monitors in western Michigan and are only minimally influencing the nonattaining monitors in southeast Michigan based on the HYSPLIT outputs and pollution roses, and these counties contain two monitors that are monitoring attainment, the MDEQ recommends an attainment designation for the Lansing-East Lansing area.

The Lansing-East Lansing MSA contains Clinton, Eaton, and Ingham Counties. These counties are tied together through this MSA and traffic volumes (Figure 5). Together these counties use the Tri-County Regional Planning Commission for transportation planning purposes. These counties have also historically been linked together during the designation process by the USEPA. For those reasons, the recommended attainment area boundary is the entire Lansing-East Lansing MSA (Clinton, Eaton, and Ingham Counties) shown in green in Figure 30.

There are two centrally located monitors inside this recommended attainment area, Rose Lake and Lansing, shown as blue dots in Figure 30. Both of these monitors are in attainment of the 2015 ozone NAAQS with 2015 design values of 0.064 ppm and 0.065 ppm, respectively. The most recent 2016 data (Table 23) also shows that these monitors are in attainment. The pollution rose for the Lansing monitor (Figure 31) shows the majority of the pollution impacting this monitor comes from the southwest.

The emissions of NO_x and VOCs based on the 2011 NEI in Clinton, Eaton, and Ingham Counties are given in Table 15 and show moderate emissions for this area compared with the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 5 times more NO_x and 3 times more VOC emissions than Clinton, Eaton, and Ingham Counties combined. Also, the southeast Michigan area produces 9 times more NO_x and 5 times more VOC emissions than Clinton, Eaton, and Ingham Counties combined.

The HYSPLIT outputs (Figure 6) and pollution roses (Figure 13) show that the Lansing-East Lansing area has no influence on the nonattaining monitors in the recommended western Michigan nonattainment areas. Also, the HYSPLIT output in Figure 32 and the pollution roses in Figure 13 from the recommended southeast Michigan nonattainment areas show that Clinton, Eaton, and Ingham Counties may have some transport influence on the violating monitors in this area, but it is low compared to the influence of the entire southeast Michigan and Canadian areas. Looking at the HYSPLIT output in Figure 32, the majority of the air masses impacting the nearby nonattaining monitors originate in or pass through Canada, Ohio, or southeast Michigan; only 7 air masses even pass through the Lansing-East Lansing area, demonstrating the area's low impact on those nonattaining monitors.

Figure 30. Lansing-East Lansing Recommended Attainment Area

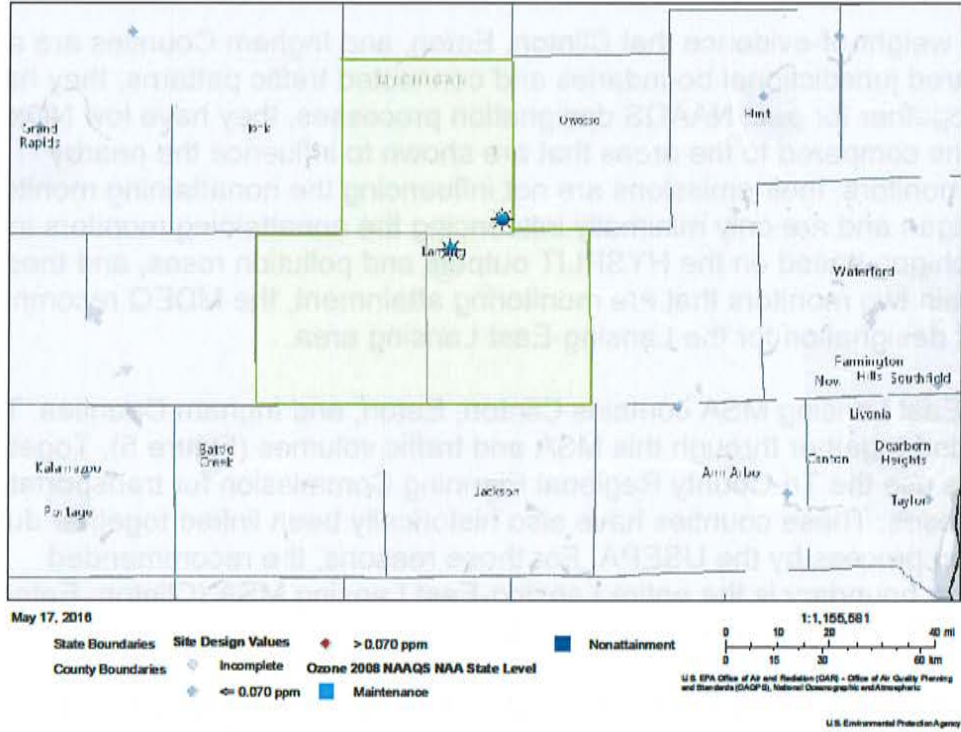
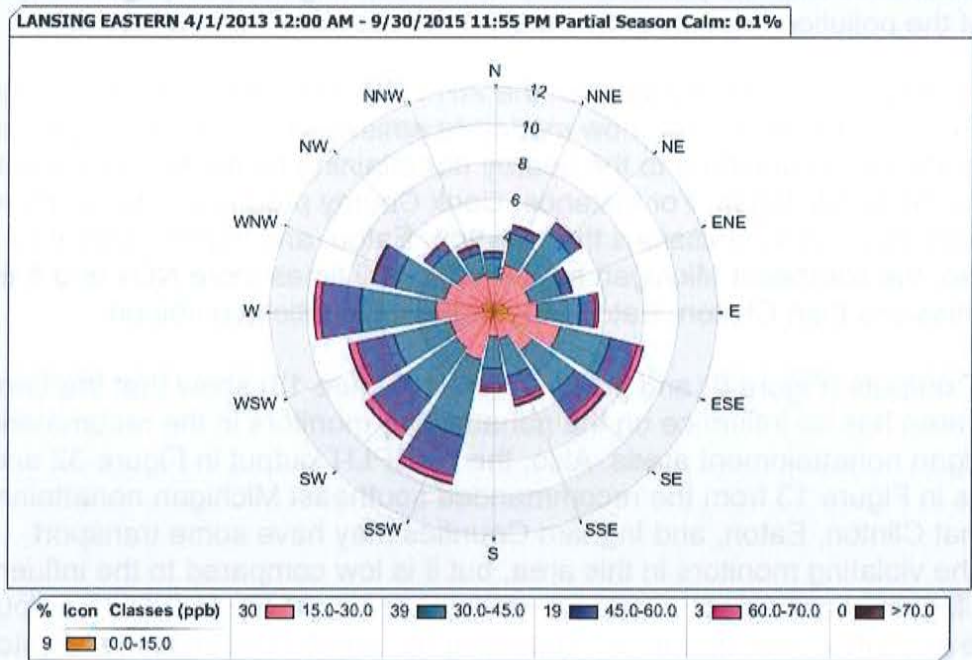


Figure 31. Lansing Monitor Pollution Rose

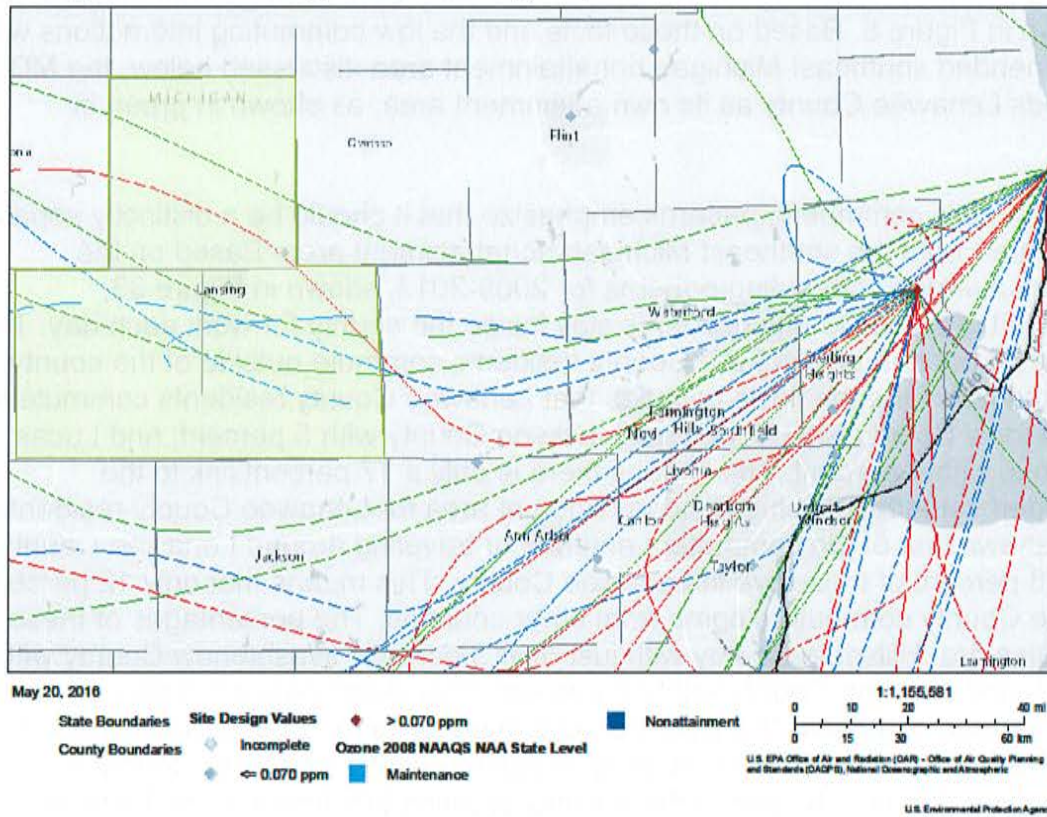


**Table 15. Clinton, Eaton, and Ingham Counties
NOx and VOC Emission Comparison**

Area	NOx Emissions*	VOC Emissions*
Clinton, Eaton, & Ingham Counties	19,280	25,328°
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011
*tpy

Figure 32. Lansing-East Lansing Impact on Nonattainment Areas



Lenawee County

Based on the weight-of-evidence that Lenawee County comprises its own Micropolitan Statistical Area, has low traffic interactions with neighboring counties, has low NO_x and VOC emissions compared to the areas that are shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors in western Michigan and are only minimally influencing the nonattaining monitors in southeast Michigan based on the HYSPLIT outputs and pollution roses, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Lenawee County.

Lenawee County is a rural county located in the eastern Lower Peninsula of Michigan, bordering Ohio. It has a population based on the 2010 U.S. Census of just over 98,000 with a population density of 132 people per square mile. It is the only county in the Adrian Micropolitan Statistical Area. Lenawee County has low traffic interactions with neighboring counties, including the recommended southeast Michigan nonattainment area, shown in Figure 5. Based on these facts and the low commuting interactions with the recommended southeast Michigan nonattainment area discussed below, the MDEQ recommends Lenawee County as its own attainment area, as shown in green in Figure 35.

Lenawee County's commuting patterns emphasize that it should be a distinctly separate attainment area from the southeast Michigan nonattainment area. Based on the U.S. Census average commuting patterns for 2009-2013, shown in Figure 33, 64 percent of Lenawee County residents stay inside the county for work each day. That means only 36 percent of Lenawee County residents commute outside of the county. The percentages of the top three counties that Lenawee County residents commute to are: Washtenaw County with 17 percent; Jackson County with 5 percent; and Lucas County, Ohio, with 4 percent. This means there is only a 17 percent link to the recommended southeast Michigan nonattainment area for Lenawee County residents. Figure 34 shows that of the commuters entering or traveling around Lenawee County for work, 88 percent of those live in Lenawee County. This means that only 12 percent of Lenawee County commuters come from other counties. The percentages of these top three counties are: Hillsdale County with just over 3 percent; Washtenaw County with 2.8 percent; and Jackson County with 2.5 percent. This yields only a 2.8 percent link to the recommended southeast Michigan nonattainment area for outside commuters in Lenawee County. The fact that the majority of commuting for Lenawee County is contained inside that county, and of the outside counties that interact with Lenawee County only one is in the recommended southeast Michigan nonattainment area (and that county only has 2.8-17 percent commuting interactions with Lenawee County) demonstrates that Lenawee County should be distinctly separate from the recommended southeast Michigan nonattainment area for designation purposes.

The Tecumseh monitor, shown in Figure 35 as the point of convergence of the HYSPLIT output, is the sole monitor in Lenawee County. The monitor was placed in this county to study the levels of pollution transported into the state from Ohio. The Tecumseh monitor has a 2015 design value of 0.065 ppm showing attainment of the

2015 ozone NAAQS. It is also currently monitoring attainment with the most recent 2016 data shown in Table 23. The HYSPLIT output (Figure 35) shows that air masses impacting this monitor originate from the surrounding counties and from Ohio.

The NOx and VOC emissions based on the 2011 NEI in Lenawee County are listed in Table 16 and are low compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 25 times more NOx and 10 times more VOC emissions than Lenawee County. Also, the southeast Michigan area produces 42 times more NOx and 17 times more VOC emissions than Lenawee County.

The HYSPLIT outputs (Figure 6) and pollution roses (Figure 7) for the recommended western Michigan nonattainment areas show that Lenawee County emissions do not influence those monitors. Figures 9-12 and 36 also show that air masses originating from Lenawee County only have a minor influence on the nonattaining monitors in the southeast Michigan recommended nonattainment area. The HYSPLIT output shows some possible transport from Lenawee County into the southeast Michigan area, similar to the Lansing-East Lansing area impact, but Figures 9-12 and 36 demonstrate that the majority of air masses impacting the southeast Michigan area come either directly from southeast Michigan, from Ohio, or over Lake Erie. This means that any impact on these monitors by Lenawee County's emissions is negligible when compared to the impact from other areas.

Figure 33. Percentage of Lenawee County Residents Commuting to Various Counties

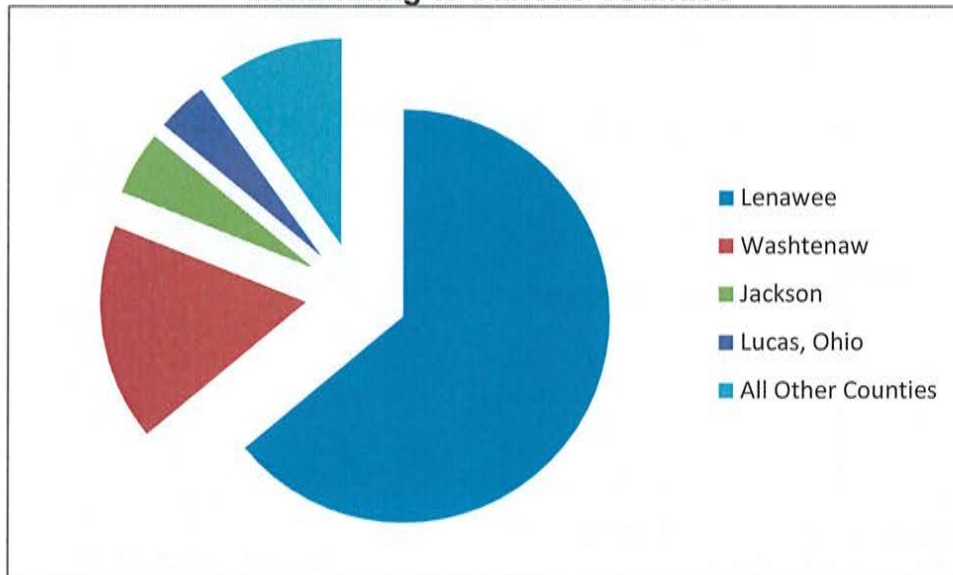


Figure 34. Percentage of Commuters Entering Lenawee County From Various Counties

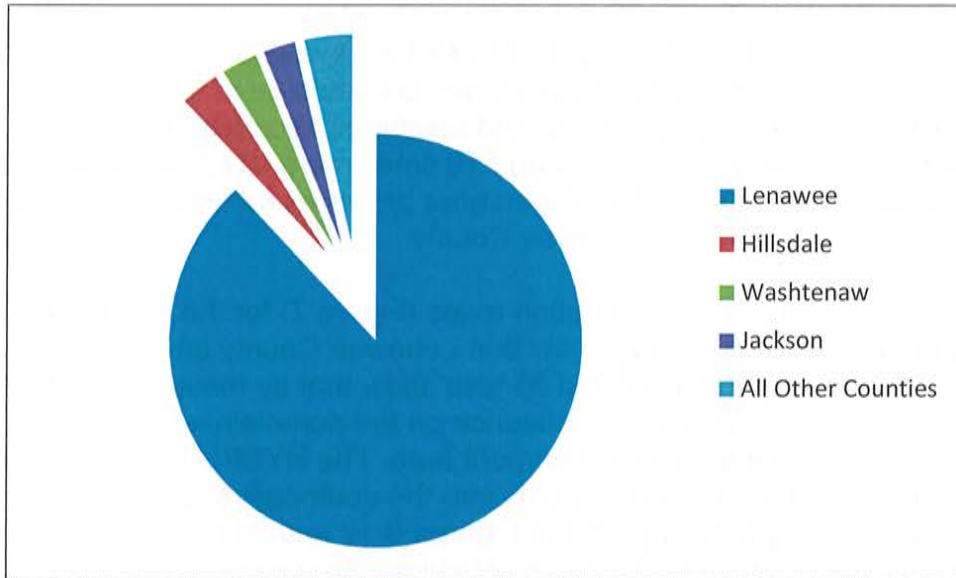


Figure 35. Lenawee County Recommended Attainment Area

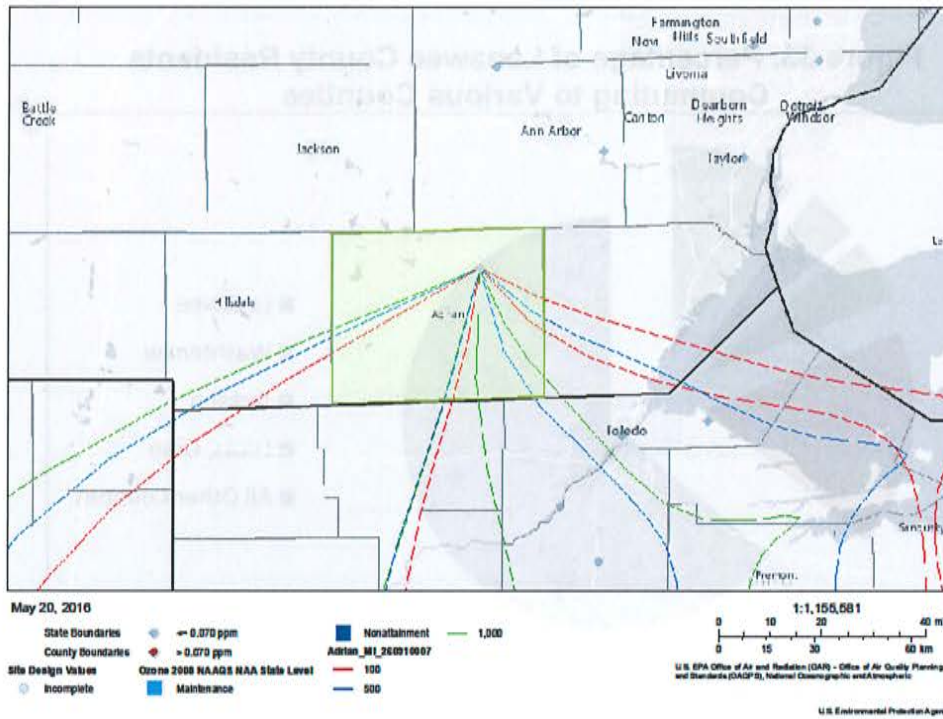


Table 16. Lenawee County NOx and VOC Emission Comparison

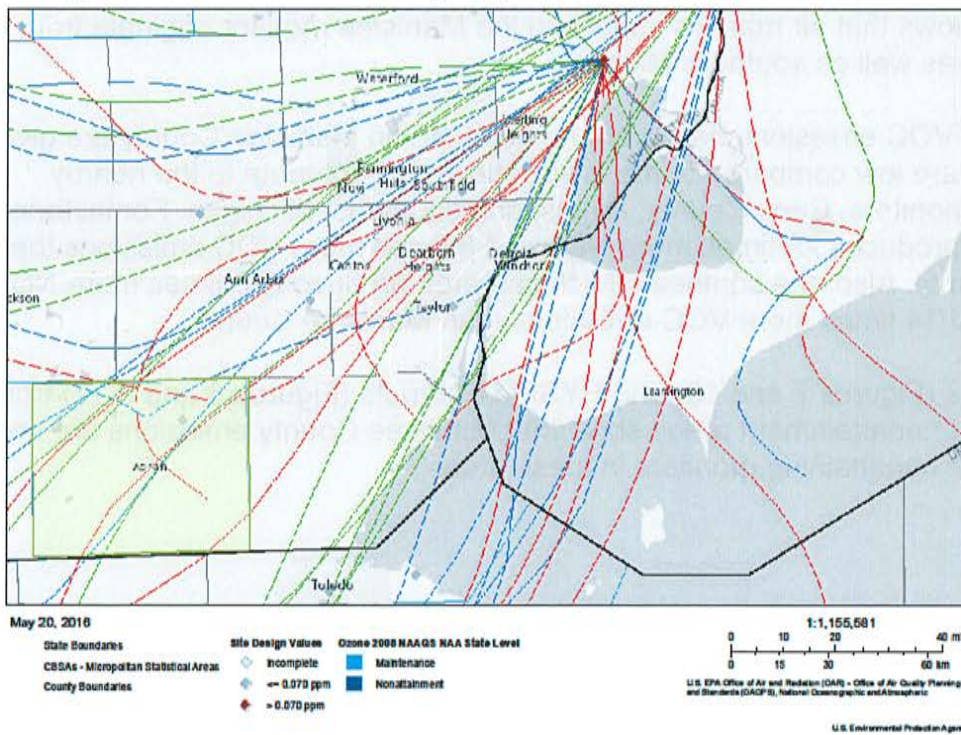
Area	NOx Emissions*	VOC Emissions*
Lenawee County	4,436	8,529 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic emissions

Figure 36. Lenawee County Impact on Nonattainment Areas



Manistee County

Based on the weight-of-evidence that Manistee County is rural, has low NO_x and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions do not influence the nonattaining monitors based on the HYSPLIT and pollution roses, its monitor is impacted by transport from other counties, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Manistee County.

Manistee County is a rural county in western Michigan with a population of less than 25,000 based on the 2010 U.S. Census and a population density of 45 people per square mile. This county is not a part of a CBSA. The MDEQ recommends the attainment area boundary as the entire Manistee County, shown in green in Figure 37.

There is one monitor in Manistee County, the Manistee tribal monitor, shown as the point of convergence of the HYSPLIT output in Figure 37. This monitor is in attainment of the 2015 ozone NAAQS with a 2015 design value of 0.067 ppm. The most recent 2016 monitoring data (Table 23) also shows attainment. The HYSPLIT output (Figure 37) shows that air masses impacting the Manistee monitor originate from the Chicago area as well as southern Michigan.

The NO_x and VOC emissions based on the 2011 NEI in Manistee County are given in Table 17 and are low compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 29 times more NO_x and 8 times more VOC emissions than Manistee County. Also, the southeast Michigan area produces 49 times more NO_x emissions and 14 times more VOC emissions than Manistee County.

Pollution roses (Figures 7 and 13) and HYSPLIT outputs (Figures 6 and 9-12) from the recommended nonattainment areas show that Manistee County emissions are not influencing the nonattaining monitors in these areas.

Figure 37. Manistee County Recommended Attainment Area

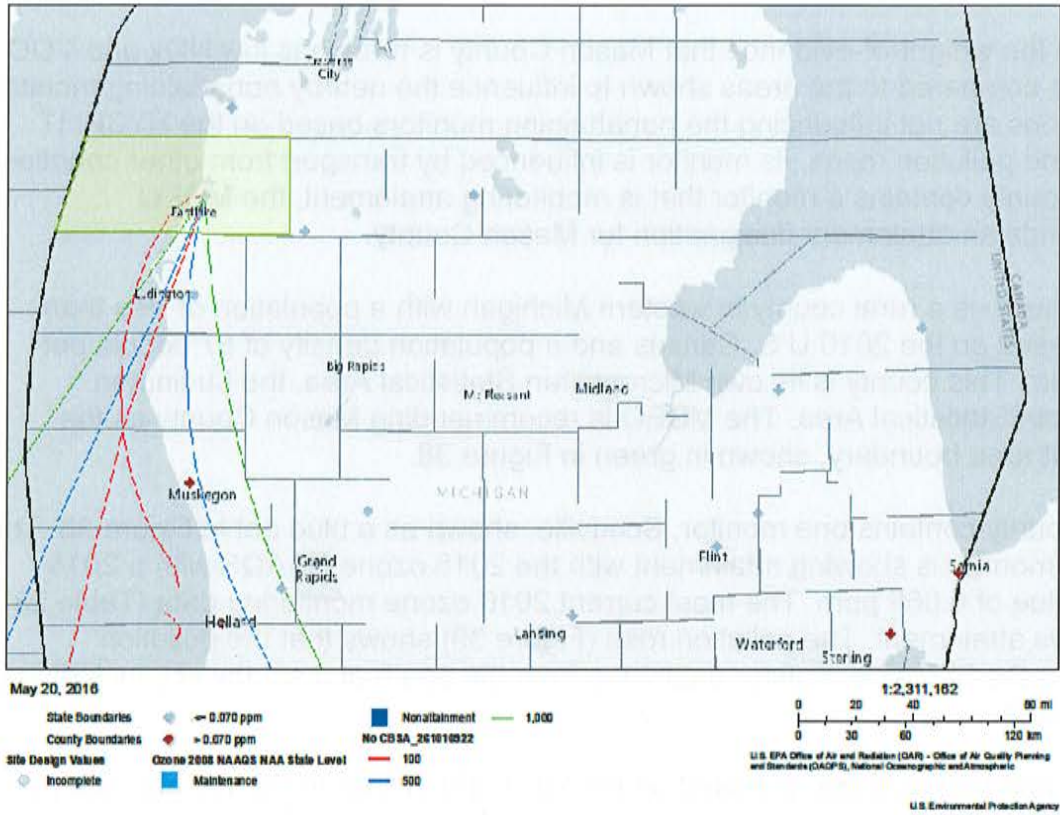


Table 17. Manistee County NOx and VOC Emission Comparison

County	NOx Emissions*	VOC Emissions*
Manistee	3,770	10,596 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Mason County

Based on the weight-of-evidence that Mason County is rural, has low NO_x and VOC emissions compared to the areas shown to influence the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the HYSPLIT outputs and pollution roses, its monitor is influenced by transport from other counties, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Mason County.

Mason County is a rural county in western Michigan with a population of less than 29,000 based on the 2010 U.S. Census and a population density of 57 people per square mile. This county is its own Micropolitan Statistical Area, the Ludington Micropolitan Statistical Area. The MDEQ is recommending Mason County as the attainment area boundary, shown in green in Figure 38.

Mason County contains one monitor, Scottville, shown as a blue dot in Figure 38. The Scottville monitor is showing attainment with the 2015 ozone NAAQS with a 2015 design value of 0.068 ppm. The most current 2016 ozone monitoring data (Table 23) also shows attainment. The pollution rose (Figure 39) shows that the pollution influencing the Scottville monitor originates from the south and southwest, including the Chicago area.

The NO_x and VOC emissions based on the 2011 NEI in Mason County are given in Table 18 and show very low emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 80 times more NO_x and 10 times more VOC emissions than Mason County. Also, the southeast Michigan area produces 132 times more NO_x and 17 times more VOC emissions than Mason County.

Pollution roses (Figures 7 and 13) and HYSPLIT outputs (Figures 6 and 9-12) from the recommended nonattainment areas also show that emissions from Mason County are not influencing the nonattaining monitors in these areas.

Figure 38. Mason County Recommended Attainment Area

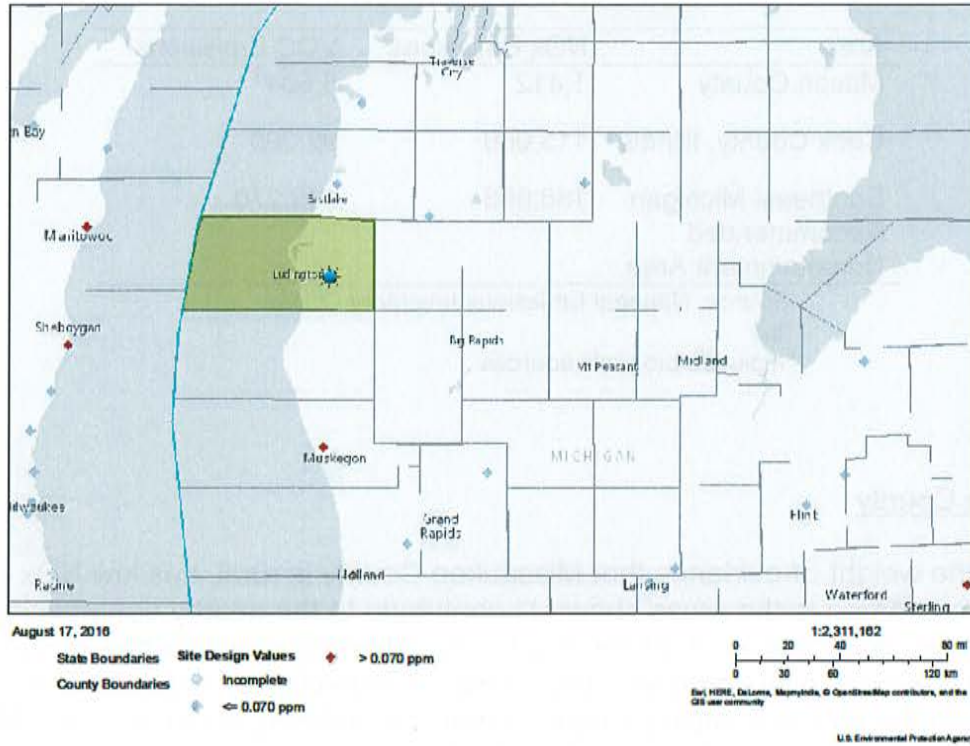


Figure 39. Scottville Monitor Pollution Rose

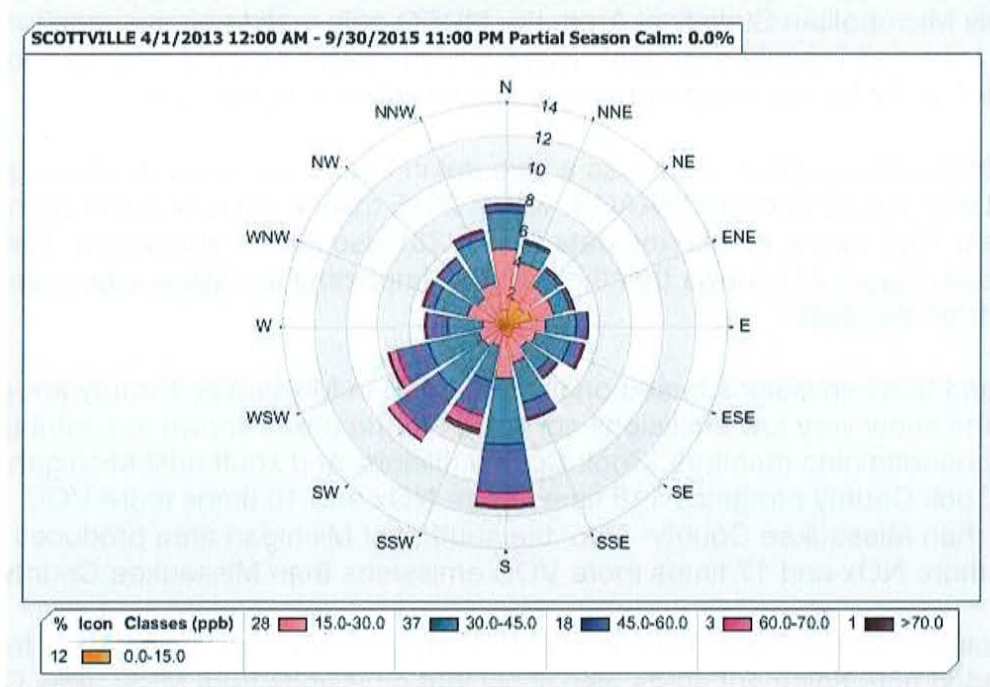


Table 18. Mason County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Mason County	1,412	8,504 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Missaukee County

Based on the weight-of-evidence that Missaukee County is rural, has low NOx and VOC emissions compared to the areas shown to contribute to the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the HYSPLIT output and pollution roses, the monitor is impacted by transport from other counties, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Missaukee County.

Missaukee County is a rural county in the middle of Michigan’s Lower Peninsula with a population of less than 15,000 based on the 2010 U.S. Census and a population density of 27 people per square mile. This county is part of the Cadillac Micropolitan Statistical Area. In this Micropolitan Statistical Area, the MDEQ only maintains one monitor, Houghton Lake, in Missaukee County. Therefore, the MDEQ is only recommending Missaukee County for this attainment area, shown in green in Figure 40.

The Houghton Lake monitor, shown as a blue dot in Figure 40, is demonstrating attainment with the 2015 ozone NAAQS, with a 2015 design value of 0.064 ppm. The most current 2016 ozone monitoring data (Table 23) also shows attainment. The pollution rose (Figure 41) shows that the pollution impacting the Missaukee monitor originates from the west.

The NOx and VOC emissions based on the 2011 NEI in Missaukee County are given in Table 19 and show very low emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For instance, Cook County produces 118 times more NOx and 10 times more VOC emissions than Missaukee County. Also, the southeast Michigan area produces 195 times more NOx and 17 times more VOC emissions than Missaukee County.

Pollution roses (Figures 7 and 13) and HYSPLIT outputs (Figures 6 and 9-12) from the recommended nonattainment areas also show that emissions from Missaukee County are not influencing the nonattaining monitors in these areas.

Figure 40. Missaukee County Recommended Attainment Area

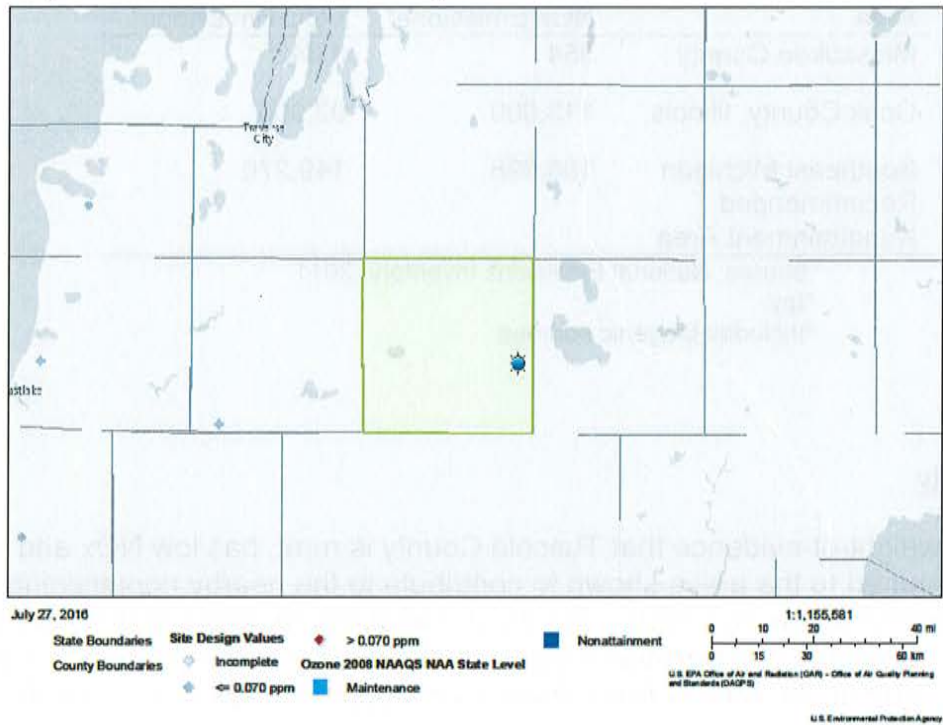
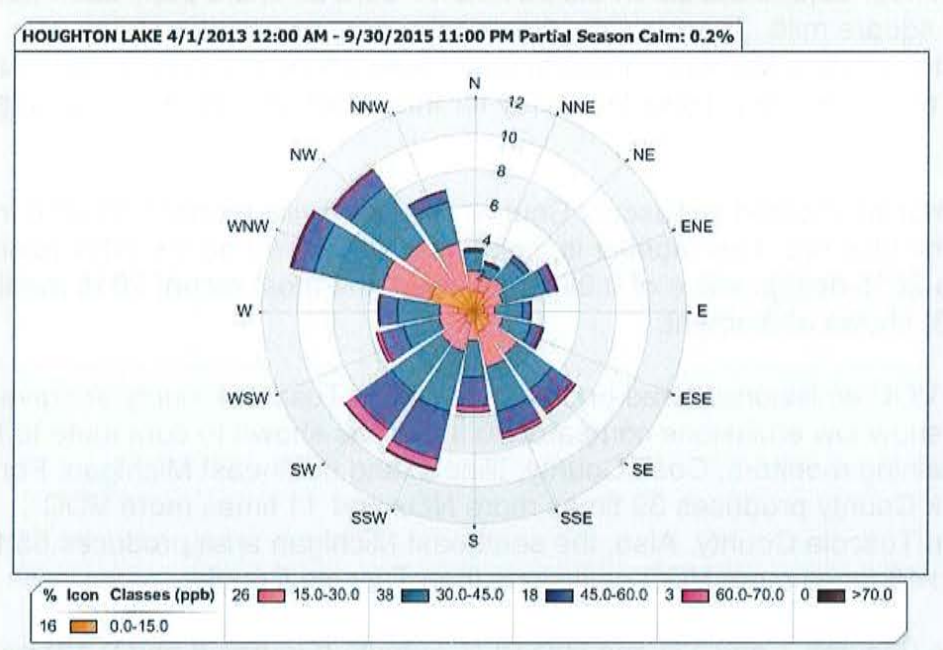


Figure 41. Houghton Lake Monitor Pollution Rose



**Table 19. Missaukee County NOx and VOC
Emission Comparison**

Area	NOx Emissions*	VOC Emissions*
Missaukee County	954	8,642 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Tuscola County

Based on the weight-of-evidence that Tuscola County is rural, has low NOx and VOC emissions compared to the areas shown to contribute to the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors in the state based on the HYSPLIT outputs and pollution roses, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Tuscola County.

Tuscola County is a rural county on the south side of Michigan's Lower Peninsula with a population just over 55,000 based on the 2010 U.S. Census and a population density of 69 people per square mile. Tuscola County is on the northern border of the recommended southeast Michigan nonattainment area and is not located within a CSA. The MDEQ is recommending Tuscola County for this attainment area, shown in green in Figure 42.

There is one monitor located in Tuscola County, the Unionville monitor, located in Figure 42 as the blue dot. This monitor is monitoring attainment on the 2015 ozone NAAQS with a 2015 design value of 0.063 ppm. Also, the most recent 2016 monitoring data (Table 23) shows attainment.

The NOx and VOC emissions based on the 2011 NEI in Tuscola County are given in Table 20 and show low emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For example, Cook County produces 39 times more NOx and 11 times more VOC emissions than Tuscola County. Also, the southeast Michigan area produces 65 times more NOx and 18 times more VOC emissions than Tuscola County.

Pollution roses (Figures 7 and 13) and HYSPLIT outputs (Figures 6 and 9-12) from the recommended nonattainment areas show that NOx and VOC emissions from Tuscola County are not influencing the nonattaining monitors in these areas.

Figure 42. Tuscola County Recommended Attainment Area

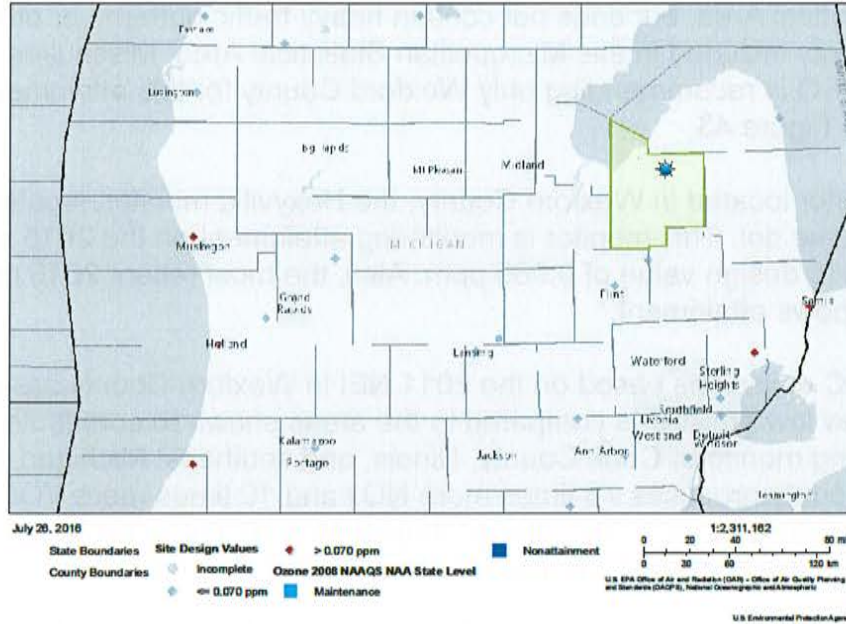


Table 20. Tuscola County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Tuscola County	2,859	8,290 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Wexford County

Based on the weight-of-evidence that Wexford County is rural, has low NOx and VOC emissions compared to the areas shown to contribute to the nearby nonattaining monitors, its emissions are not influencing the nonattaining monitors based on the HYSPLIT output and pollution roses, and the county contains a monitor that is monitoring attainment, the MDEQ recommends an attainment designation for Wexford County.

Wexford County is a rural county in the northwest corner of Michigan's Lower Peninsula with a population just under 33,000 based on the 2010 U.S. Census and a population

density of 58 people per square mile. Wexford County is located within the Cadillac Micropolitan Statistical Area, but does not contain heavy traffic patterns or other ties with the other county included in this Micropolitan Statistical Area, Missaukee County; therefore, the MDEQ is recommending only Wexford County for this attainment area, shown in green in Figure 43.

There is one monitor located in Wexford County, the Hoxbyville monitor, located in Figure 43 as the blue dot. This monitor is monitoring attainment on the 2015 ozone NAAQS with a 2015 design value of 0.065 ppm. Also, the most recent 2016 monitoring data (Table 23) shows attainment.

The NO_x and VOC emissions based on the 2011 NEI in Wexford County are given in Table 21 and show low emissions compared to the areas shown to contribute to the nearby nonattaining monitors; Cook County, Illinois, and southeast Michigan. For example, Cook County produces 78 times more NO_x and 10 times more VOC emissions than Wexford County. Also, the southeast Michigan area produces 128 times more NO_x and 17 times more VOC emissions than Wexford County.

Pollution roses (Figures 7 and 13) and HYSPLIT outputs (Figures 6 and 9-12) from the recommended nonattainment areas show that emissions from Wexford County are not influencing the nonattaining monitors in these areas.

Figure 43. Wexford County Recommended Attainment Area

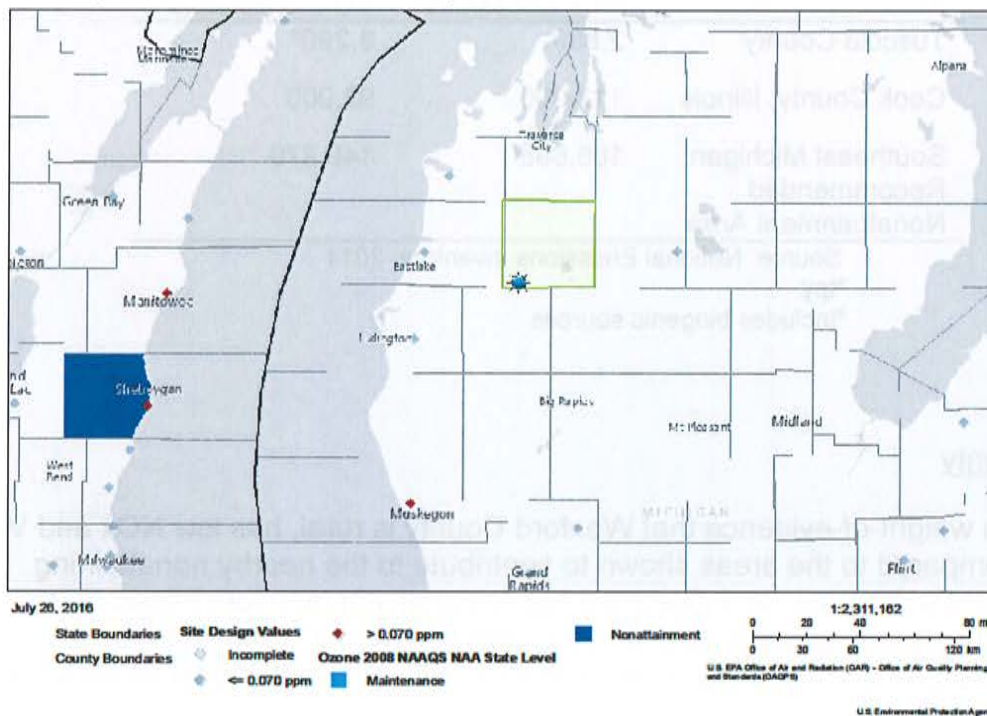


Table 21. Wexford County NOx and VOC Emission Comparison

Area	NOx Emissions*	VOC Emissions*
Wexford County	1,448	8,634 ^o
Cook County, Illinois	113,000	92,000
Southeast Michigan Recommended Nonattainment Area	186,698	149,270

Source: National Emissions Inventory, 2011

*tpy

^oIncludes biogenic sources

Preliminary 2016 Data

While the above recommendations are made based on 2013-2015 monitoring data, the USEPA will be making the final designations based on 2014-2016 monitoring data. Therefore, in the USEPA's ozone designation guidance, they recommend that states consider any preliminary 2016 ozone data that may be available to them. At the time of writing this document, preliminary data from the 2016 ozone season was available through August 14, 2016. The preliminary 2016 design values, calculated using 2014, 2015, and preliminary 2016 data are shown in Table 23, with the violating monitors in red. All of the 2016 data is preliminary and has not been fully validated.

The preliminary 2016 data indicates that the Coloma, East 7 Mile, Holland, Muskegon, New Haven, Port Huron, and Seney monitors will all be in violation of the 2015 ozone NAAQS. With the exception of the Seney monitor in Schoolcraft County, all of these monitors are in recommended nonattainment areas based on 2013-2015 data. Therefore, the recommended southeast Michigan nonattainment area and three single-county western Michigan nonattainment areas remain the same. In addition to these recommended nonattainment areas, the MDEQ tentatively recommends that Schoolcraft County be designated as a single-county nonattainment area, which is further discussed in the analysis below.

Since preliminary 2016 data is currently only available through mid-August, it is possible that the 2016 design values will change by the time the USEPA makes their final designations. While many of the monitors in Michigan are currently measuring attainment of the 2015 ozone standard, the design values of many of these monitors are in the range of 0.065-0.070 ppm. Therefore, there is a possibility that more monitors may violate the 2015 standard at the end of the 2016 ozone season and final designations may differ from the MDEQ recommendations.

Schoolcraft County

The MDEQ tentatively recommends that Schoolcraft County, shown in green in Figure 44, be designated as a single-county nonattainment area based on preliminary 2016 data and the likelihood that the violation is the result of transported rather than local emissions. Monitoring data from the Seney monitor, located in Figure 44 as the blue dot, has been validated through June 2016 and already, the 2016 fourth highest value results in a 2014-2016 design value that exceeds 0.070 ppm. As of August 2016, the preliminary 2016 design value for the Seney monitor is 0.071 ppm, and therefore, Schoolcraft County will not be in attainment of the 2015 ozone NAAQS.

Population and emissions data highlight the minimal amount of ozone precursor emissions in Schoolcraft County. Schoolcraft is a rural county in the Upper Peninsula of Michigan with a population of less than 9,000 and a population density of 4.4 people per square mile, based on the 2010 U.S. Census. Emissions of ozone precursors in Schoolcraft County are low, representing 0.35 percent and 1.8 percent of the statewide NO_x and VOC emissions, respectively. Table 22 shows the emissions data for NO_x and VOCs by sector in Schoolcraft County. Across all sectors, NO_x emissions are very low, with on-road mobile emissions representing the highest emitting sector at 717 tpy. As a means of comparison, on-road mobile emissions in Wayne County are 29,767 tpy (Table 5), over 40 times higher than the emissions in Schoolcraft County. Emissions of VOCs are higher, but biogenic emissions represent a large portion of that, with 11,100 tpy of the 16,422 tpy of VOC emissions coming from that category. Next to biogenic emissions, non-road mobile sources and events, such as fires, are the next largest emission categories. Overall, emissions and emissions-related data indicate that there are very few emissions from anthropogenic sources in Schoolcraft County and it is unlikely that ozone violations are a result of local emissions.

Similar to the situation in western Michigan, transport of ozone precursor emissions from across Lake Michigan is likely a key factor in the violation at the Seney monitor. Schoolcraft County is the only county in Michigan's Upper Peninsula with a measured ozone exceedance, and it is located far from any other recommended nonattainment areas. HYSPLIT results (Figure 44) do not show any neighboring counties to be contributing to high ozone at the Seney monitor, and many air parcels are projected to come from out-of-state metropolitan areas or parts of the Lower Peninsula of Michigan. Due to the higher emissions in metropolitan areas across Lake Michigan and HYSPLIT showing air coming from the direction of those areas, it is likely that out-of-state emissions are a major contributor to ozone violations at the Seney monitor. Finally, Schoolcraft County is not part of a CBSA or other jurisdictional boundaries, and the county boundaries are the best option for the recommended nonattainment area.

Table 22. Emissions of NOx and VOC by Sector in Schoolcraft County

Sector	NOx Emissions (tpy)	VOC Emissions (tpy)
Point	500	15
Nonpoint (excludes biogenic)	81	526
Biogenic	109	11,100
On-Road Mobile	717	236
Non-Road Mobile	140	2,309
Event	104	2,236
Total	1,651	16,422
State Total	461,298	939,089

Source: National Emissions Inventory, 2011

Figure 44. Schoolcraft County Recommended Attainment Area

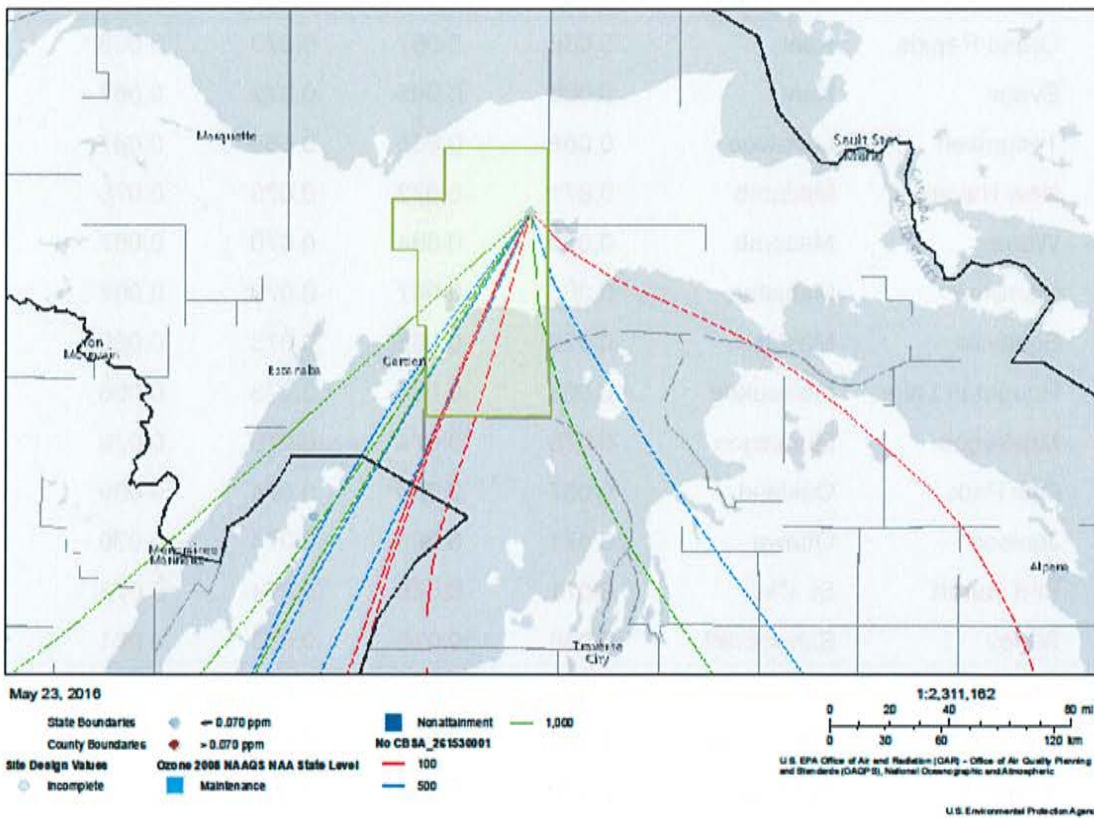


Table 23. Preliminary 2016 Design Values as of August 14, 2016

Monitor ID	Monitor	County	4 th Highest Ozone Concentration (ppm)			3-Year Design Value
			2014	2015	2016*	
260050003	Holland	Allegan	0.077	0.072	0.076	0.075
260190003	Frankfort	Benzie	0.069	0.067	0.075	0.070
260210014	Coloma	Berrien	0.073	0.072	0.079	0.074
260270003	Cassopolis	Cass	0.066	0.068	0.076	0.070
260330901	Sault St. Marie	Chippewa	0.058	0.059	0.061	0.059
260370001	Rose Lake	Clinton	0.066	0.064	0.072	0.067
260490021	Flint	Genesee	0.068	0.066	0.073	0.069
260492001	Otisville	Genesee	0.068	0.067	0.072	0.069
260630007	Harbor Beach	Huron	0.066	0.067	0.071	0.068
260650012	Lansing	Ingham	0.065	0.064	0.071	0.066
260770008	Kalamazoo	Kalamazoo	0.067	0.067	0.073	0.069
260810020	Grand Rapids	Kent	0.066	0.067	0.073	0.068
260810022	Evans	Kent	0.066	0.065	0.072	0.067
260910007	Tecumseh	Lenawee	0.068	0.065	0.069	0.067
260990009	New Haven	Macomb	0.071	0.072	0.076	0.073
260991003	Warren	Macomb	0.068	0.064	0.070	0.067
261010922	Manistee	Manistee	0.066	0.067	0.070	0.067
261050007	Scottville	Mason	0.070	0.066	0.073	0.069
261130001	Houghton Lake	Missaukee	0.063	0.064	0.073	0.066
261210039	Muskegon	Muskegon	0.075	0.074	0.079	0.076
261250001	Oak Park	Oakland	0.067	0.066	0.074	0.069
261390005	Jenison	Ottawa	0.071	0.065	0.074	0.070
261470005	Port Huron	St. Clair	0.071	0.075	0.074	0.073
261530001	Seney	Schoolcraft	0.068	0.070	0.073	0.071
261579991	Unionville	Tuscola	0.063	0.064	0.071	0.066
261619991	Ann Arbor	Washtenaw	0.067	0.064	0.074	0.068
261610008	Ypsilanti	Washtenaw	0.070	0.064	0.067	0.067
261630001	Allen Park	Wayne	0.064	0.064	0.070	0.066
261630019	East 7 Mile	Wayne	0.073	0.070	0.073	0.072
261659991	Hoxyville	Wexford	0.066	0.064	0.071	0.067

*2016 data is not yet fully validated.

Appendix A

Communication from Southeast Michigan Council of
Governments

Regarding Ozone Designation in SEMCOG Region

September 8, 2016

Mary Maupin
Michigan Department of Environmental Quality
Air Quality Division
P.O. Box 30260
Lansing, Michigan 48909-7760

Re: Ozone Designation in SEMCOG Region

via email

Dear Ms. Maupin,

The Southeast Michigan Council of Governments (SEMCOG) has reviewed the MDEQ's DRAFT Recommended Area Designations in Michigan for the Revised 2015 Ozone National Ambient Air Quality Standard (DRAFT Recommendations Document), and disagrees that the entire 7-county SEMCOG region be designated as a nonattainment area for ozone. Among other things, the draft document provides relatively little data to support conclusions that will unnecessarily and prematurely prejudice our region. This letter provides relevant data for the five-factor analysis as well as outlines an alternative approach that we believe can better meet the needs of both the MDEQ and our region at this time.

First of all, SEMCOG urges MDEQ to revise the DRAFT Recommendations Document to tentatively recommend a 4-county (Macomb, Oakland, St. Clair, & Wayne) nonattainment area based on the currently available data. Providing an official 7-county recommendation makes it very difficult for our region to pursue a smaller nonattainment area in the future, even if a smaller nonattainment area is proper based on the final 2014-2016 data and possibly the initial 2017 data. Without a complete data set, it is prudent and reasonable to start with the smaller designation area that could easily be expanded to a larger area later in the process (i.e., if the data and circumstances warrant it).

From a procedural standpoint, beginning with a 7-county nonattainment area recommendation enables EPA to simply accept that recommendation without having to show that Monroe, Washtenaw, or Livingston significantly contribute to the monitored ozone nonattainment at Port Huron, New Haven, and eventually East 7-Mile. By contrast, starting with a 4-county nonattainment area recommendation—coupled with expressly reserving the right to modify this initial recommendation when more relevant data and analyses are available—will preserve and protect the State of Michigan's flexibility going forward in the process.

In addition, the Clean Air Act does not instruct the State to review each county in the CMSA/CBSA and prove that it does not contribute anything to monitored nonattainment (i.e., proving the negative). EPA's February 25, 2016 guidance for recommending ozone nonattainment areas states: "The EPA emphasizes it does not intend the statistical area boundary

to be a presumed nonattainment area boundary.” This marks a retreat from previously presuming area-wide nonattainment when a single nonattaining monitor was located in the area. Thus, rather making a broad assumption based on a past designation process, the State should focus on identifying evidence that a county significantly contributes to nonattainment before recommending its inclusion in the ozone nonattainment area. If the DRAFT Recommendations Document adopts a more modest initial recommendation to EPA, MDEQ and its partners will have a meaningful opportunity to further explore the best nonattainment area boundary between now and next summer.

Five-Factor Analysis Discussion

Below is a synopsis of important information and relevant data in accordance with the February 25, 2016 EPA Memorandum titled, “*Area Designations for the 2015 Ozone National Ambient Air Quality Standards*” (EPA Guidance).

1) Air Quality Data Factor

The EPA Guidance clearly states that this factor is based on monitored violations of the NAAQS at each air quality monitoring site.

Table 1 shows the design values for the 2013 – 2015 and the 2014 – 2016 timeframes. These design value results plainly show no design value violations with the 70 ppb standard for those monitors located in Washtenaw County.

Table 1. Air Quality Monitoring Site Design Values

Air Quality Monitor Site	2013 – 2015 Design Value	2014 – 2016 ¹ Design Value
Allen Park	0.064	0.065
E 7 Mile	0.070	0.072
New Haven	0.072	0.073
Oak Park	0.067	0.067
Port Huron	0.072	0.073
Warren	0.066	0.067
Ypsilanti	0.066	0.068
Ann Arbor	0.066	0.069

¹Preliminary Data as of August 14, 2016; Has not been validated.

We understand that 2016 data is not validated at this time; however, this data demonstrates the importance of initially recommending the 4-county nonattainment area with the option to adjust the area once 2016 data either verifies or conflicts with the initial area recommendation.

Additionally, the DRAFT Recommendations Document states: “The historical design values indicate that although design values have been decreasing in the area, there have also been regular exceedances of the ozone standards at all of the monitors in southeast Michigan.” Referencing exceedances in the past that are not in accordance with the design values for 2013 – 2015 or 2014 – 2016 are irrelevant to this Air Quality Data Factor outlined in the EPA Guidance and should not be used as a basis for expanding beyond those areas where warranted by the data results.

Finally, it is important to consider the temperature trends of the days with high ozone. Table 2 shows that while 2016 has experienced similar (if not more) “hot” days as compared to 2011, the number of days violating the standard is significantly lower. The fewer days violating the standards indicate that factors, other than temperature, are benefitting the lower ozone levels. Examples of these factors can include lower emissions and vehicle miles traveled which are described in more detail in the next section.

Table 2. Southeast Michigan Ozone Summary (2011 – 2016)

Year	Number of Days 8-hr O ₃ Max ≥ 70 ppb			Number of Days 8-hr O ₃ Max ≥ 80 ppb			Number of Days T _{max} ≥ 90F	
	<u>MDEQ-AQD Monitoring Site</u>			<u>MDEQ-AQD Monitoring Site</u>			<u>National Weather Service Site</u>	
	East 7 Mile	New Haven	Port Huron	East 7 Mile	New Haven	Port Huron	Detroit Metro AP	Flint Bishop AP
2011	19	12	8	4	3	2	23	22
2012	23	27	15	7	5	4	30	29
2013	3	6	5	0	0	0	7	12
2014	4	7	3	1	1	0	4	2
2015	4	5	8	1	0	0	10	10
2016 ²	10	7	4	2	1	1	21	33

² Preliminary data through August 31st.

2) Emissions Data Factor

Similar to the Air Quality Data Factor, the Emissions Data Factor does not account for the most recent 2014 data set. Recognizing the downward trends in both NO_x and VOC emissions since 2002 (e.g., NO_x at 39% and VOC at 48%), and also since 2008, warrants a more restrained determination of the nonattainment area.

Tables 3 and 4 below provide demonstrate the significant contributions from the 4-counties in comparison to the remaining counties. Excluding Livingston, Monroe and Washtenaw Counties from the recommended nonattainment area, especially until 2014 emissions inventory data is validated for use, is a reasonable approach. If, at that time, the data shows that the three counties significantly contribute NO_x and VOC emissions, then the MDEQ may reassess the initial nonattainment designation.

Table 3. NOx and VOC Emissions & Percent Reduction between 2011 & 2008 by County

County	2011 [tons/yr]		2008 [tons/yr]		% NOx Reduction	% VOC Reduction
	NOx	VOC	NOx	VOC		
Livingston	6,295	5,686	7,612	6,487	17.3	12.3
Macomb	21,215	20,552	25,235	24,789	15.9	17.1
Monroe	25,858	5,994	50,627	10,450	48.9	42.6
Oakland	34,679	30,124	47,551	41,464	27.1	27.3
St. Clair	27,467	6,581	32,113	7,993	14.5	17.7
Washtenaw	11,431	10,173	15,192	12,589	24.8	19.2
Wayne	66,199	41,912	88,550	59,277	25.2	29.3
Region	193,144	121,022	266,879	163,048	27.6	25.8

Source: U.S. EPA National Emissions Inventory.

Additionally, Table 4 demonstrates that the 3 counties of Livingston, Monroe and Washtenaw are not significant contributors of both NOx and VOC emissions using 2011 emissions inventory data.

Table 4. Emissions Grouped by Contributing Counties

County Groups	2011 NOx	% of total 2011 NOx	2011 VOC	% of total 2011 VOC
Livingston, Monroe, Washtenaw	43,584	23%	21,853	18%
Macomb, Oakland, St. Clair, Wayne	149,560	77%	99,168	82%
	193,144		121,022	

Source: U.S. EPA National Emissions Inventory.

Additionally, permanent and enforceable reductions in both NOx and VOC emissions between 2008 and 2011 have contributed to this significant downward trend in ozone which should be recognized as part of the attainment determination. This downward trend has continued through the 2015 as shown in Table 5 due to fewer facilities and the permanent reductions from nearby sources, including DTE Monroe and DTE Trenton Channel. For example, the Monroe County NOx emissions have dropped by 12,300 tons/year from 2011 emissions due to the Monroe Unit 2 SCR installation and retirement of the J.R. Whiting Power Plant. These emissions will continue to decline for the foreseeable future. Thus, using the 2011 emissions data to designate a 7-county nonattainment area is not accurate based on known information and confirmed data further validating a more reasonable initial 4-county nonattainment designation.

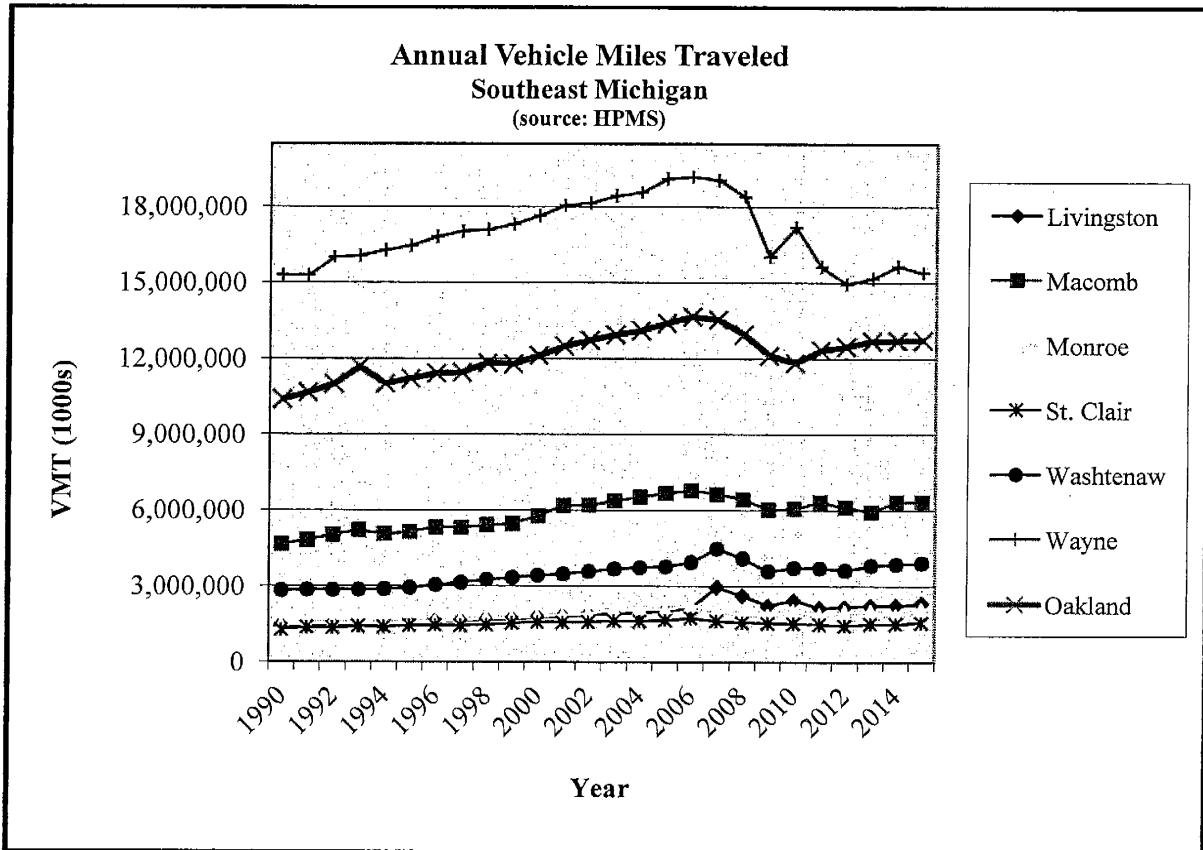
Furthermore, applying the same rationale to Livingston and Washtenaw Counties as was used for the Lansing area in the DRAFT Recommendations Document will promote a consistent approach within that document for attainment or nonattainment. For example, as noted in Table 5, the Lansing area has much higher NOx and VOC emissions with an indication that it has little influence on southeast Michigan monitors. It would reason that the “lack of

causation” rationale for excluding the Lansing area from the southeast Michigan nonattainment area should also apply to both Livingston and Washtenaw Counties.

Table 5. DRAFT Recommendations Document Attainment/Nonattainment Rationale

County / Metropolitan Area	Preliminary Ozone NAAQS Designation	2011 Annual Emissions NOx (tons/yr)	VOC (tons/yr)	Adjusted 2015 Nox Emissions (tons/yr)	MDEQ basis for Including / Excluding
Lansing Area	Attainment	19,280	25,328	NA	Moderate NOx / VOC emissions, Little Influence on SE Michigan nonattaining monitors
Lenawee County	Attainment	4,436	8,529	NA	Low NOx / VOC emissions, Minor influence on SE Michigan nonattaining monitors
Livingston County	Nonattainment	6,295	5,686	NA	Part of SEMCOG planning area, Some contribution to SE Michigan nonattaining monitors
Washtenaw County	Nonattainment	11,431	10,173	NA	Part of SEMCOG planning area, Some contribution to SE Michigan nonattaining monitors
Monroe County	Nonattainment	25,858	5,994	13,558	Part of SEMCOG planning area, Moderate NOx emissions contribute to nonattaining monitors

Other representative data for this Emissions Data Factor can include an indication of annual vehicle miles traveled (VMT). Figure 1 shows VMT by county since 1990. An evaluation of these data points between 2015 and 2007 indicates that all the counties are at or below pre-recession levels. While southeast Michigan may have the highest traffic volumes in the state, traffic volumes are still lower than the 2007-2008 timeframe. If anything, improved fuel efficiency, carpooling and lower VMT support our recommended 4-county designation area.



Further data to support the minimal impact from transportation can be garnered from EPA nationwide inventories for different studies. Table 6¹ shows the total on-road vehicle emissions (i.e. emissions from cars, light trucks, and medium- and heavy-duty trucks) along with the reduction since 1970. There are many important observations from this validated data. First of all, on-road emissions for VOC and NOx have declined by 84% and 56% respectively between 1970 and 2011. Secondly, the EPA predicts that between 2011 and 2017 nationwide on-road VOC and NOx emissions will decrease by approximately 50%. If we apply that nationwide conservative 50% reduction estimate to the SEMCOG region that has not experienced increases in traffic volumes and population, it further justifies a 4-county nonattainment designation at this time.

¹ Data from and discussion about Table 6 were obtained from George Wolff and the EPA Docket No. EPA-HQ-OAR-2008-0699, Alliance of Automobile Manufacturers Comments on the EPA's Proposed Revisions to the National Ambient Air Quality Standards. Specific data was then referenced from EPA documents: 1970 to 2000 from <http://www.epa.gov/ttn/chieftrends/index.html>, 2005, 2017 and 2030 from <http://www.epa.gov/otaq/documents/tier3/454r13002.pdf>, 2007 from <http://www.epa.gov/ttn/naqs/standards/pm/data/201212aqm.pdf>

**Table 6. U.S On-road VOC and NOx Emissions since 1970
(1000 tons/year)**

Year	VOC		NOx	
	On-road		On-road	
	Emissions	Reduction	Emissions	Reduction
1970	16,910	0.0%	12,624	0.0%
1980	13,869	18.0%	11,493	9.0%
1990	9,388	44.5%	9,592	24.1%
2000	5,325	68.5%	8,394	33.6%
2005	3,268	80.7%	8,235	34.8%
2007	3,223	80.9%	7,563	40.1%
2011	2,738	83.8%	5,592	55.7%
2017	1,353	92.0%	2,967	76.5%
2025	1,060	93.7%	1,492	88.2%
2030	700	95.9%	1,372	90.1%

Finally, population data provides another indicator for the Emissions Data Factor. While Livingston, Monroe and Washtenaw make up about 40% of the land area in the SEMCOG region, the population of these three counties is only 14% of the total population in the 7-county area based on the 2010 US Census.

3) Meteorological Data Factor

After reviewing the HYSPLIT models for both New Haven and Port Huron, it is clear that the majority of the trajectories originate outside of the SEMCOG region, including areas from western Indiana, southern Ohio and the Chicago area. Furthermore, there are trajectories that cross Lake Erie, Lake Huron and Lake St. Clair with some traversing Canada. While we understand that one could assume that NOx and VOC are “picked up” in all of these counties, the extensive number of counties these trajectories cross makes it less likely that Livingston, Washtenaw and Monroe are significant contributors, especially when evaluated with the other factors. Also, it was clear from Table 5, that higher precursor emissions are emitting from outside the SEMCOG region in areas that are recommended as attainment. Using the MDEQ rationale that they should be nonattainment because the trajectories cross these areas, then it would stand to reason that many of the other counties across mid- and western Michigan would also be nonattainment.

4) Geography & Topography Factor

Lake Huron, Lake St. Clair and Lake Erie are all significant geographic features that need to be addressed in more detail. Additionally, 40% of Canada’s chemical industry is located in Sarnia. The HYSPLIT trajectories demonstrate that there are lake effects and the chemical industry in Sarnia would likely have a larger impact than the more rural SEMCOG counties of Livingston, Monroe and Washtenaw.

5) Jurisdictional Factor

Finally, it is important to note that while the SEMOG 7-county region provides numerous planning support activities for transportation, environment and economic development, the counties are very different and warrant different approaches to each of these topics.

Livingston, Monroe and Washtenaw Counties are more rural in nature and have significantly different priorities than Macomb, Oakland, St. Clair and Wayne Counties. SEMCOG has a history of supporting community and county planning activities based on their priorities.

We appreciate your consideration of both the alternative approach and the additional information provided as part of the five-factor analysis. We look forward to continued discussions once the revised DRAFT Recommendations Document is complete. Additionally, we welcome a follow-up conference call with our staff and representatives from the SEMAQS group.

Sincerely,

A handwritten signature in black ink that reads "Kathleen Lomako". The signature is written in a cursive style with a horizontal line extending to the right from the end of the name.

Kathleen Lomako
Executive Director

Appendix B

Resolution from Allegan County Board of Commissioners
Opposing a Nonattainment Designation for Allegan County

S T A T E O F M I C H I G A N

BOARD OF COMMISSIONERS OF THE COUNTY OF ALLEGAN

RESOLUTION—OPPOSE DESIGNATION OF ALLEGAN AND OTHER MICHIGAN
SHORELINE COUNTIES NON-ATTAINMENT AREAS UNDER THE CLEAN AIR ACT

WHEREAS, the Macatawa Area Coordinating Council, of which Allegan County and the road commission are members, have been notified of potential action by the Michigan Department of Environmental Quality (MDEQ) to name Allegan, Berrien, Muskegon and Schoolcraft counties non-attainment areas under provisions of the clean air act; and

WHEREAS, the data collection point for designating Allegan County is located in the far northwest corner of the county, three miles inland from Lake Michigan; and

WHEREAS, the Environmental Protection Agency in 2015 arbitrarily lowered the set point for determining non-attainment areas from .75 ppb to .70 ppb thus potentially pushing Allegan County into a non-attainment status, and

WHEREAS, the impact upon the economic health of Allegan County residents resulting from such a non-attainment designation could be severe and long-lasting, resulting in sanctions that could include mandatory emission testing for residents' vehicles, denial of road funding until mitigation efforts are in place, and new emission capture requirements for business and industry; and

WHEREAS, MDEQ personnel concede transport air from industrialized areas across Lake Michigan are "99%" likely responsible for the readings obtained by the monitoring device 100 yards inside Allegan County's northern border and not as a result of actions by Allegan County residents; and

WHEREAS, the relied-upon data to place Allegan County in a non-attainment status with the potential to cause unnecessary and severe economic hardship is narrow and does not represent the true air quality of the entire land mass that is Allegan County.

THEREFORE BE IT RESOLVED by the Allegan County Board of Commissioners, that the MDEQ and the EPA are hereby requested to

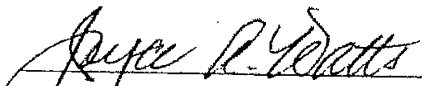
halt any action based upon this data until such time as additional data collection points are established throughout the county; and

BE IT FURTHER RESOLVED, that copies of this resolution be sent to Governor Rick Snyder, MDEQ Director Heidi Grether, U.S. Representatives Fred Upton and Bill Huizenga, U.S. Senators Gary Peters and Debbie Stabenow, State Senator Schuitmaker and State Rep. Whiteford, requesting their assistance in halting this action until data more representative of the entire County is collected and evaluated by federal and state agencies; and

BE IT FINALLY RESOLVED that copies of this resolution be sent to the Boards of Commissioners in Berrien, Muskegon and Schoolcraft counties and the Board of Directors of the Michigan Association of Counties and the Road Commissions of said counties.

Moved by Commissioner Storey, seconded by Commissioner Kapenga to adopt the resolution as made. Motion carried.

ATTEST, A TRUE COPY

 _____, Clerk-Register

APPROVED: August 25, 2016

cc: Admin. - Finance - Human Resources