STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

NOTICE OF PUBLIC HEARING
DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

OZONE REDESIGNATION PETITION AND MAINTENANCE PLAN
SOUTHEAST MICHIGAN

The Michigan Department of Environmental Quality (MDEQ) has prepared a proposal for a redesignation petition and maintenance plan for the eight counties of Southeast Michigan in association with the 8-hour National Ambient Air Quality Standards (NAAQS) for ozone. At the conclusion of the 2006 ozone season, all monitors in Southeast Michigan measured air quality that meets the NAAQS for ozone. The MDEQ plans to submit the redesignation petition and maintenance plan for Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne counties to the U. S. Environmental Protection Agency to formally request that Southeast Michigan be redesignated to attainment and classified as "maintenance" under the 8-hour NAAQS for ozone.

A public hearing will be held at 10:00 a.m. on July 11, 2007, at the Constitution Hall, Con-Con Conference Room, 525 West Allegan Street, Lansing, Michigan.

Copies of the proposed redesignation petition and maintenance plan can be viewed on the Internet at www.michigan.gov/deqair under "Announcements." The proposed document can also be reviewed and copied at the following location:

WARREN: MDEQ, Southeast Michigan District Office, 27700 Donald Court.
DETROIT: MDEQ, Cadillac Place, Suite 2-300, 3058 West Grand Boulevard.
LANSING: MDEQ, Air Quality Division, Constitution Hall, 3rd floor North, 525 West Allegan Street.

All interested persons are invited to attend the public hearing or provide written comment on the proposed redesignation petition and maintenance plan. It is requested that all statements be submitted in writing for the hearing record. Written comments must be received by 5:00 p.m. on July 11, 2007. Comments may be mailed, faxed, or E-mailed to the following:

Attention: Mary Maupin
MDEQ – Air Quality Division
P.O. Box 30260
Lansing, Michigan 48909
Fax: 517-241-7499
E-mail: maupinm@michigan.gov

Persons needing accommodations for effective partnership in the meeting should contact the Air Quality Division at 517-241-9059 one week in advance to request mobility, visual, hearing, or other assistance.

G. Vinson Hellwig, Chief
Air Quality Division

Proposed Revision to Michigan's State Implementation Plan for Achieving the Ozone National Ambient Air Quality Standard

Request to Redesignate to Attainment Status

Southeast Michigan Counties of
Lenawee, Livingston, Macomb, Monroe, Oakland,
St. Clair, Washtenaw, and Wayne

And

Proposed Maintenance Plan for Southeast Michigan

Michigan Department of Environmental Quality
Air Quality Division

2007

Redesignation and Maintenance Plan Proposal
Date 2007

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1. Introduction

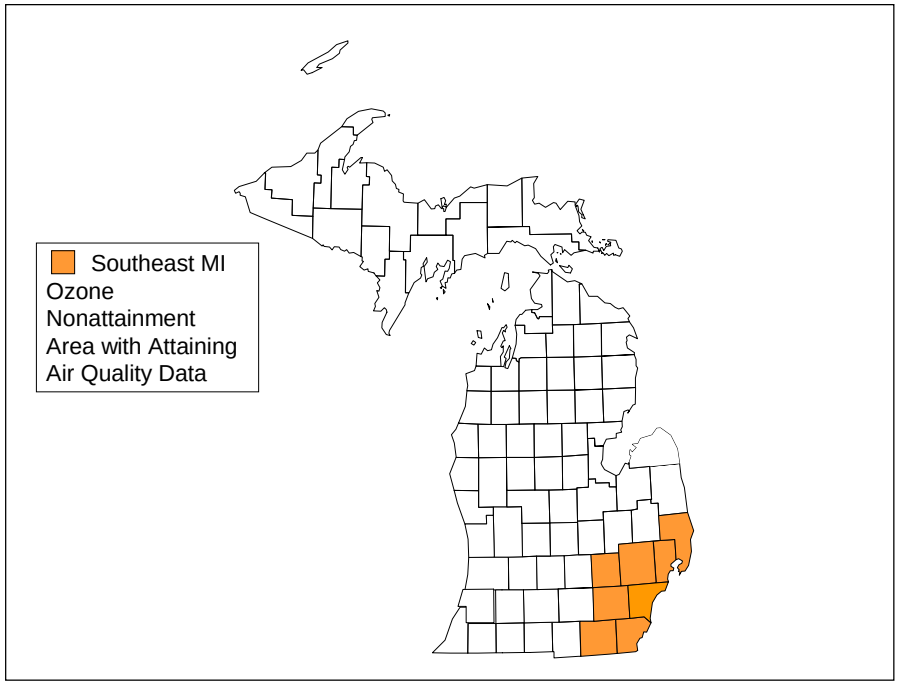
The State of Michigan, through the Michigan Department of Environmental Quality (MDEQ), is asking the U.S. Environmental Protection Agency (EPA) to make a determination that Southeast Michigan is in attainment with the ozone National Ambient Air Quality Standards (NAAQS), to change the legal status of the area from nonattainment to attainment, and to approve the maintenance plan as a revision to the Michigan State Implementation Plan (SIP). The eight counties in the Southeast Michigan ozone nonattainment area are Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne.

The EPA established a revised NAAQS for ozone, the 8-hour ozone standard, in 1997. The EPA designated areas in Michigan as attainment or nonattainment of the 8-hour standard in April 2004. The designations were based on design values derived from air quality monitoring data for the years 2001-2003. Design values over 0.084 parts per million (ppm) are considered to be violating the standard, too high to be protective of health. The EPA designated 25 counties in Michigan as nonattainment.

Air quality monitoring data collected in the 2002-2004 period showed improved ozone design values in 11 of the original 25 counties. For the period 2003-2005, an additional 5 counties had attainment level design values. These 16 counties have now been redesignated as attainment for the 8-hour ozone standard. Now, the most

recent ozone data, for 2004-2006, shows attainment level ozone design values for the eight counties of Southeast Michigan.

Figure 1.1
Southeast Michigan Counties for Ozone Attainment Redesignation
Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne



2. Redesignation Package Components

Section 107 of the CAA establishes requirements to be met in order for an area to be qualified for redesignation to attainment including:

- A determination that the area has attained the 8-hour ozone NAAQS;
- An approved SIP for the area under Section 110 (k) of the CAA;
- A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and applicable federal requirements;
- A fully approved maintenance plan under Section 175A; and
- A determination that all Section 110 and Part D requirements have been met.

This document summarizes compliance with each required component of an attainment redesignation.

3. Demonstration of Attainment of the Standard

The MDEQ maintains a comprehensive network of ozone air quality monitors throughout Michigan with the primary objective being to determine compliance with the ozone NAAQS. The MDEQ submits network reviews to the EPA Region 5 annually to ensure that air monitoring operations comply with all applicable federal requirements. Figure 3.1 shows the locations of ozone monitors in Southeast Michigan.

Figure 3.1
Locations of Ozone Monitors

Data from air quality monitors indicates whether or not violations of the ozone NAAQS are occurring. The design value (DV) is the three-year average of the fourth highest 8-hour average values, based on data from each of the monitoring sites in an attainment or nonattainment area. For the period 2004-2006, the design value is less than 0.08 ppm for the Southeast Michigan area. Table 3.1 shows the design value for 2006 confirming attainment of the NAAQS.

Table 3.1
Southeast Michigan 2006 Monitor Data Design Value for Ozone NAAQS
In Parts Per Million (ppm)

County	Monitors	4th High 2004	4th High 2005	4th High 2006	DV 2006	DV 3-Year Ave Rounded
Lenawee	Tecumseh 260910007	0.074	0.082	0.074	0.076	0.08
Macomb	New Haven 260990009	0.081	0.088	0.0.078	0.082	0.08
Oakland	Oak Park 261250001	0.075	0.078	0.072	0.075	0.08
	Warren 260991003	0.071	0.089	0.078	0.079	0.08
St. Clair	Port Huron 261470005	0.074	0.088	0.078	0.080	0.08
Washtenaw	Ypsilanti 261610008	0.071	0.083	0.082	0.078	0.08
Wayne	Allen Park 261630001	0.065	0.077	0.068	0.070	0.07
	E-7 Mile 261630019	0.066	0.080	0.078	0.074	0.07
	Linwood 261630016	0.066	0.079	0.069	0.071	0.07
	SW HS 261630015			0.067		

Table 3.2 shows historic 8-hour ozone design values at each site in the area to be redesignated.

Table 3.2
Historic 8-Hour Ozone Design Values
ppm
*4th highest 8-hour average and 3-year average truncated
**Final site average rounded

Site	AirsID	Year	4th Highest 8-hr max*	Site Design Value	Site DV Avg **
Tecumseh	260910007	1993	0.074	7-6-93 sampling began	
Tecumseh	260910007	1994	0.084		
Tecumseh	260910007	1995	0.089	0.082	0.08
Tecumseh	260910007	1996	0.085	0.086	0.09
Tecumseh	260910007	1997	0.076	0.083	0.08
Tecumseh	260910007	1998	0.086	0.082	0.08
Tecumseh	260910007	1999	0.083	0.081	0.08
Tecumseh	260910007	2000	0.082	0.083	0.08
Tecumseh	260910007	2001	0.086	0.083	0.08
Tecumseh	260910007	2002	0.089	**0.085**	**0.09**
Tecumseh	260910007	2003	0.088	**0.087**	**0.09**
Tecumseh	260910007	2004	0.074	0.083	0.08
Tecumseh	260910007	2005	0.082	0.081	0.08
Tecumseh	260910007	2006	0.074	0.076	0.08
New Haven	260990009	1992	0.082	7-14-80 sampling began	
New Haven	260990009	1993	0.085		
New Haven	260990009	1994	0.097	**0.088**	**0.09**
New Haven	260990009	1995	0.092	**0.091**	**0.09**
New Haven	260990009	1996	0.091	**0.093**	**0.09**
New Haven	260990009	1997	0.090	**0.091**	**0.09**
New Haven	260990009	1998	0.098	**0.093**	**0.09**
New Haven	260990009	1999	0.096	**0.094**	**0.09**
New Haven	260990009	2000	0.075	**0.089**	**0.09**
New Haven	260990009	2001	0.095	**0.088**	**0.09**
New Haven	260990009	2002	0.095	**0.088**	**0.09**
New Haven	260990009	2003	0.102	**0.097**	**0.10**
New Haven	260990009	2004	0.081	**0.092**	**0.09**
New Haven	260990009	2005	0.088	**0.090**	**0.09**
New Haven	260990009	2006	0.078	0.082	0.08
Warren	260991003	1992	0.081	1-1-77 sampling began	
Warren	260991003	1993	0.083		
Warren	260991003	1994	0.087	0.083	0.08
Warren	260991003	1995	0.090	**0.086**	**0.09**

Site	AirsID	Year	4th Highest 8-hr max*	Site Design Value	Site DV Avg **
Warren	260991003	1996	0.090	**0.089**	**0.09**
Warren	260991003	1997	0.081	**0.087**	**0.09**
Warren	260991003	1998	0.090	**0.087**	**0.09**
Warren	260991003	1999	0.090	**0.087**	**0.09**
Warren	260991003	2000	0.077	**0.085**	**0.09**
Warren	260991003	2001	0.094	**0.087**	**0.09**
Warren	260991003	2002	0.092	**0.087**	**0.09**
Warren	260991003	2003	0.101	**0.095**	**0.10**
Warren	260991003	2004	0.071	**0.088**	**0.09**
Warren	260991003	2005	0.089	**0.087**	**0.09**
Warren	260991003	2006	0.078	0.079	0.08
Oak Park	261250001	1992	0.081	1-9-81 sampling began	
Oak Park	261250001	1993	0.075		
Oak Park	261250001	1994	0.087	0.081	0.08
Oak Park	261250001	1995	0.084	0.082	0.08
Oak Park	261250001	1996	0.074	0.081	0.08
Oak Park	261250001	1997	0.076	0.078	0.08
Oak Park	261250001	1998	0.089	0.079	0.08
Oak Park	261250001	1999	0.088	0.084	0.08
Oak Park	261250001	2000	0.075	0.084	0.08
Oak Park	261250001	2001	0.090	0.084	0.08
Oak Park	261250001	2002	0.093	**0.086**	**0.09**
Oak Park	261250001	2003	0.090	**0.091**	**0.09**
Oak Park	261250001	2004	0.075	**0.086**	**0.09**
Oak Park	261250001	2005	0.078	0.081	0.08
Oak Park	261250001	2006	0.072	0.075	0.08
Port Huron	261470005	1992	0.075	2-28-81 sampling began	
Port Huron	261470005	1993	0.087		
Port Huron	261470005	1994	0.086	0.082	0.08
Port Huron	261470005	1995	0.094	**0.089**	**0.09**
Port Huron	261470005	1996	0.086	**0.088**	**0.09**
Port Huron	261470005	1997	0.079	**0.086**	**0.09**
Port Huron	261470005	1998	0.091	**0.085**	**0.09**
Port Huron	261470005	1999	0.091	**0.087**	**0.09**
Port Huron	261470005	2000	0.080	**0.087**	**0.09**
Port Huron	261470005	2001	0.084	**0.085**	**0.09**
Port Huron	261470005	2002	0.100	**0.088**	**0.09**
Port Huron	261470005	2003	0.086	**0.090**	**0.09**
Port Huron	261470005	2004	0.074	**0.086**	**0.09**
Port Huron	261470005	2005	0.088	0.082	0.08
Port Huron	261470005	2006	0.078	0.080	0.08
Ypsilanti	261610008	2000	0.078	4-1-2000 sampling began 0.084	0.08

Site	AirsID	Year	4th Highest 8-hr max*	Site Design Value	Site DV Avg **
Ypsilanti	261610008	2001	0.092	**0.082**	**0.09**
Ypsilanti	261610008	2002	0.091	**0.087**	**0.09**
Ypsilanti	261610008	2003	0.091	**0.091**	**0.09**
Ypsilanti	261610008	2004	0.071	0.084	0.08
Ypsilanti	261610008	2005	0.083	0.081	0.08
Ypsilanti	261610008	2006	0.082	0.078	0.08
Allen Park	261630001	1992	0.070	1-1-80 sampling began	
Allen Park	261630001	1993	0.069		
Allen Park	261630001	1994	0.074	0.071	0.07
Allen Park	261630001	1995	0.078	0.073	0.07
Allen Park	261630001	1996	0.082	0.078	0.08
Allen Park	261630001	1997	0.075	0.078	0.08
Allen Park	261630001	1998	0.079	0.078	0.08
Allen Park	261630001	1999	0.087	0.080	0.08
Allen Park	261630001	2000	0.067	0.077	0.08
Allen Park	261630001	2001	0.080	0.078	0.08
Allen Park	261630001	2002	0.088	0.078	0.08
Allen Park	261630001	2003	0.085	0.084	0.08
Allen Park	261630001	2004	0.065	0.079	0.08
Allen Park	261630001	2005	0.077	0.075	0.08
Allen Park	261630001	2006	0.068	0.070	0.07
Linwood	261630016	1992	0.078	1-1-80 sampling began	
Linwood	261630016	1993	0.067		
Linwood	261630016	1994	0.092	0.079	0.08
Linwood	261630016	1995	0.077	0.078	0.08
Linwood	261630016	1996	0.079	0.082	0.08
Linwood	261630016	1997	0.079	0.078	0.08
Linwood	261630016	1998	0.086	0.081	0.08
Linwood	261630016	1999	0.084	0.083	0.08
Linwood	261630016	2000	0.077	0.082	0.08
Linwood	261630016	2001	0.087	0.083	0.08
Linwood	261630016	2002	0.092	**0.085**	**0.09**
Linwood	261630016	2003	0.084	**0.087**	**0.09**
Linwood	261630016	2004	0.066	0.080	0.08
Linwood	261630016	2005	0.079	0.076	0.08
Linwood	261630016	2006	0.069	0.071	0.07
E. 7 Mile	261630019	1992	0.077	4-1-77 sampling began	
E. 7 Mile	261630019	1993	0.083		
E. 7 Mile	261630019	1994	0.094	0.084	0.08
E. 7 Mile	261630019	1995	0.091	**0.089**	**0.09**
E. 7 Mile	261630019	1996	0.086	**0.090**	**0.09**
E. 7 Mile	261630019	1997	0.088	**0.088**	**0.09**
E. 7 Mile	261630019	1998	0.093	**0.089**	**0.09**

Site	AirsID	Year	4th Highest 8-hr max*	Site Design Value	Site DV Avg **
E. 7 Mile	261630019	1999	0.092	**0.091**	**0.09**
E. 7 Mile	261630019	2000	0.080	**0.088**	**0.09**
E. 7 Mile	261630019	2001	0.092	**0.088**	**0.09**
E. 7 Mile	261630019	2002	0.083	**0.085**	**0.09**
E. 7 Mile	261630019	2003	0.098	**0.091**	**0.09**
E. 7 Mile	261630019	2004	0.066	0.082	0.08
E. 7 Mile	261630019	2005	0.080	0.081	0.08
E. 7 Mile	261630019	2006	0.078	0.074	0.07
SW High School	261630015	2006	0.067	4-1-06 sampling began	

The completeness criteria for ambient monitoring data are specified in *Title 40 of the Code of Federal Regulations (CRF), Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix I*; and quality assurance criteria are specified in *40 CFR, Section 58.10, Quality Assurance.* A minimum completeness of 75 percent annually and 90 percent over a three-year period is required. Data completeness information is presented in Table 3.3.

Table 3.3
Data Completeness
in Percent (%)

Site	Airs ID	Year	Valid Days Measured	Annual % Complete	3-Year % Complete
Tecumseh	26091007	2004	183	100	97
		2005	182	99	
		2006	171	93	
New Haven	260990009	2004	179	98	99
		2005	183	100	
		2006	183	100	
Warren	260991003	2004	183	100	97
		2005	170	93	
		2006	181	99	
Oak Park	261250001	2004	183	100	96
		2005	172	94	
		2006	170	93	
Port Huron	261470005	2004	179	98	99
		2005	183	100	
		2006	183	100	
Ypsilanti	261610008	2004	180	98	

		2005	176	96	95
		2006	167	91	
Allen Park	261630001	2004	181	99	94
		2005	163	89	
		2006	172	94	
Linwood	261630016	2004	174	95	93
		2005	160	87	
		2006	180	98	
E. 7 Mile	261630019	2004	172	94	88
		2005	137	75	
		2006	173	95	
SW HS	261630015	2006	183	100	

All monitors in Southeast Michigan meet the annual completeness criteria; however, the East 7 Mile monitor in Wayne County has a three-year average completeness of less than 90 percent. Subject to the approval of the EPA Regional Administrator, meteorological or ambient data on missing days may be sufficient to demonstrate that meteorological conditions were not conducive to concentrations above the level of the standards. Missing days assumed less than the standard are counted for the purpose of meeting the completeness criteria.

The MDEQ explored the possible range of ozone concentrations that would have occurred at the East 7 Mile monitor on days when collected data was invalidated due to air conditioning problems in 2004 -2006. Data from nearby upwind monitors were substituted for the invalidated data. Allen Park, South West High School, Oak Park and Warren were used as substitution sites. The appropriate site to use in each instance was determined by meteorological data, including wind speed and wind direction. Table 3.4 shows the ten highest 8-hour average ozone readings after the missing data substitution. Table 3.5 shows the recalculated three-year average of

the 4th highest 8-hour average maximum ozone concentrations. This analysis yielded a design value of 0.0728 ppm for the East 7 Mile monitor for 2004 – 2006, a value that is lower than the design value derived before the substitution.

Table 3.4
East 7 Mile Monitor
Highest 8-hour Ozone Averages Each Year
ppm

2004		2005		2006	
Date	8 Hour Max	Date	8 Hour Max	Date	8 hour Max
6/7/2004	0.0759	6/28/2005	97	6/16/2006	0.0840
7/21/2004	0.0711	5/13/2005	74	6/17/2006	0.0836
9/22/2004	0.0684	4/21/2005	74	7/16/2006	0.0831
5/12/2004	0.0668	9/20/2005	73	6/6/2006	0.0785
4/29/2004	0.0648	5/19/2005	71	5/28/2006	0.0755
8/1/2004	0.0598	5/9/2005	65	7/1/2006	0.0754
7/11/2004	0.0585	5/11/2005	65	8/6/2006	0.0754
4/17/2004	0.0584	4/11/2005	63	7/17/2006	0.0736
9/12/2004	0.0578	8/31/2005	63	7/8/2006	0.0734

Table 3.5
East 7 Mile
Recalculated 3-year Average of 4th Highest 8-hour Maximums
ppm

E 7 Mile 26-163-0019	
Year	ppm
2004	0.0668
2005	0.0730
2006	0.0785
Average	0.0728

4. State Implementation Plan Approval and Compliance with CAA Section 110 and Part D Requirements

The Southeast Michigan nonattainment area is classified as a marginal nonattainment area under Subpart 2 of the Clean Air Act (CAA). Section 110 of the CAA delineates general SIP requirements and Part D contains requirements specific to Subpart 1 and Subpart 2 marginal nonattainment areas. Southeast Michigan meets all applicable requirements for ozone redesignation under these provisions.

Southeast Michigan, excluding Lenawee County, was originally classified as a moderate nonattainment area under the 1-hour ozone NAAQS. The area was redesignated to attainment in 1995 (*60 Federal Register (FR) 12459*). The EPA determined that all ozone SIP requirements had been met in approving the attainment redesignation for the 1-hour ozone standard. New nonattainment area requirements for the 8-hour NAAQS required to be completed for an attainment redesignation include only a new baseline emission inventory. Michigan's 8-hour ozone inventory was submitted to EPA in July 2006. The attainment inventory contained within this request is the 2005 base M inventory compiled for the Lake Michigan Air Directors Consortium (LADCO) planning efforts. The interim and maintenance future year inventories for 2009 and 2018 are from the 2002 LADCO base K inventory, except for the Onroad mobile projections that were compiled by Southeast Michigan Council of Governments (SEMCOG).

Michigan's SIP contains all required emission control programs related to ozone under Section 110 of the CAA. Programs for emissions limitations, permitting, emissions inventories and statements, emission fees, enforcement authorities, and ambient monitoring have been implemented in Michigan and are included in the SIP.

Redesignation approval is not contingent on state adoption of certain Part D requirements found in Section 172 (c) (1) – (9) that have not come due prior to the date of this submission. Conformity and New Source Review requirements are not prerequisites for redesignation. However, Michigan has submitted to the EPA required Conformity revisions to the SIP, and does administer a New Source Review permitting program.

5. Demonstration of Improvement in Air Quality

Improvement in air quality must be reasonably attributed to emissions reductions of the ozone precursor pollutants nitrogen oxides (NOx) and volatile organic compounds (VOCs) that are permanent and enforceable. An examination of NOx and VOC emissions from a period of nonattainment (2002) to attainment (2005) indicates a decline in overall emissions during this time period. The source of the emissions data is the EPA final 2002 National Emission Inventory (NEI) that was processed by LADCO to yield summer day county totals (2002 base K inventory) and the 2005 inventory (base M) also processed by LADCO. Both nonroad and onroad emissions were calculated specifically for 2005 using the latest version of the Mobile and National Mobile Inventory Model (NMIM) models. Details regarding this data are included in Appendices A and B. Table 5.1 identifies emission reductions by source category for the subject counties. Both VOC and NOx emissions decreased from 2002 to 2005 for the Southeast Michigan area.

Table 5.1
Southeast Michigan
Emission Reduction Demonstration Inventories
2002 and 2005
All units are in tons per day

VOC Emissions

Livingston	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	0.81	7.51	6.60	10.47	25.39
2005	0.66	11.92	5.00	9.61	27.19
Macomb	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	12.52	35.22	21.80	26.04	95.58
2005	9.62	38.72	16.50	22.89	87.73
Monroe	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	8.33	9.63	6.90	9.66	34.52
2005	11.16	9.85	5.20	9.56	35.77
Oakland	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	10.06	55.05	45.30	52.58	162.99
2005	9.80	55.34	34.00	46.35	145.49
St. Clair	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	4.68	7.52	6.20	11.76	30.16
2005	5.55	5.20	4.70	11.35	26.80
Washtenaw	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	1.88	16.35	13.60	13.82	45.65
2005	1.42	17.23	10.30	12.47	41.42
Wayne	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	21.48	78.79	68.00	45.46	213.73
2005	24.27	82.11	50.40	39.97	196.75
SEMCOG Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	59.76	210.07	168.40	169.79	608.02
2005	62.48	220.37	126.10	152.20	561.15
Lenawee	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	1.14	4.93	3.50	4.72	14.29
2005	1.21	8.89	2.50	4.37	16.97
NAA Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	60.90	215.00	171.90	174.51	622.31
2005	63.69	229.26	128.60	156.57	578.12

NOx Emissions

Livingston	Point Total	Area Total	Onroad	Nonroad	Total
2002	2.82	0.68	21.10	4.63	29.23
2005	1.89	1.00	16.20	4.38	23.47
Macomb	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	2.60	4.32	54.00	19.72	80.64
2005	2.70	2.36	40.60	19.27	64.93
Monroe	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	141.21	0.62	21.60	7.63	171.06
2005	113.03	0.93	16.40	7.69	138.05
Oakland	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	3.11	6.58	119.10	26.78	155.57
2005	3.36	4.19	88.90	25.52	121.97
St. Clair	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	97.12	0.95	15.30	7.47	120.84
2005	80.88	0.67	11.60	7.83	100.98
Washtenaw	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	3.11	1.62	40.80	10.59	56.12
2005	3.15	0.97	30.90	9.99	45.01
Wayne	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	70.60	9.52	176.90	44.71	301.73
2005	61.57	5.38	130.80	45.09	242.84
SEMCOG Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	320.57	24.29	448.80	121.53	915.19
2005	266.58	15.50	335.40	119.77	737.25
Lenawee	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	0.35	0.46	7.10	3.90	11.81
2005	0.37	0.73	5.40	3.54	10.04
NAA Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2002	320.92	24.75	455.90	125.43	927.00
2005	266.95	16.23	340.80	123.31	747.29

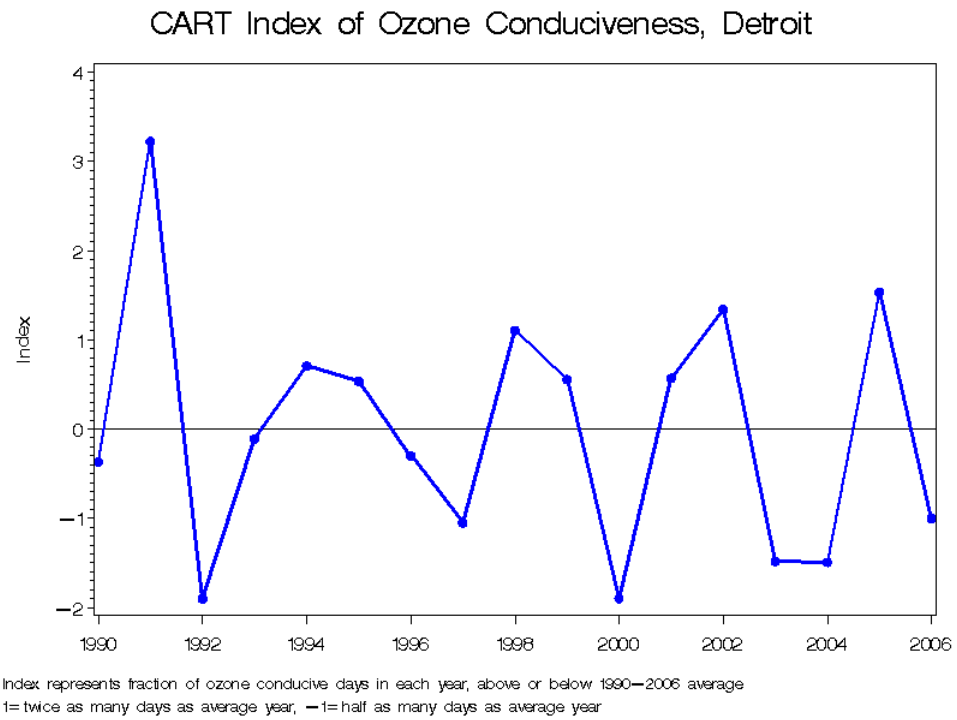
Reductions in emissions between 2002 and 2005 can be attributed to state, regional, and federal emissions control programs. The Federal Motor Vehicle Control Program has produced significant emission reductions from onroad and nonroad motor

vehicles throughout the country. Phase in of federal "Tier 2" standards began in 2004. Light-duty passenger vehicles standards, including sport utility vehicles, minivans, and pickup trucks, gasoline sulfur content regulations, nonroad diesel engine standards, and heavy-duty diesel vehicles standards all contributed to a reduction in emissions of NOx and VOCs. Additionally, electric generating units (EGUs) in Southeast Michigan have reduced emissions of NOx due to the Acid Rain program and the NOx SIP Call. These reductions are permanent and enforceable and have contributed to the overall improvement in ozone levels.

Actual ozone levels, adjusted for meteorological conduciveness, are another indicator of overall improvement in air quality. Ozone trend analysis is complicated by the dependence of ozone formation on meteorology, including temperature, dewpoint, pressure, relative humidity, solar radiation, cloud cover, morning and afternoon mixing height, wind direction, wind speed, lake breeze indicator, as well as conditions and changes from the previous day. To discern trends in ozone concentrations, the data can be adjusted to remove the impact from meteorological confounders. LADCO used a statistical technique, called Classification and Regression Tree (CART) analysis, to partition ozone values into various categories of ozone conducive meteorology. This determined the ozone forming potential of each year's meteorology.[1] Figure 5.1 shows that the years 2005, 2002, 2001, 1998, 1999, 1995, 1994, and 1991 were more conducive for ozone formation than the average.

[1] Kenski, Donna, CART Analysis for Ozone Trends and Meteorological Similarity, Lake Michigan Air Directors Consortium, May 10, 2007

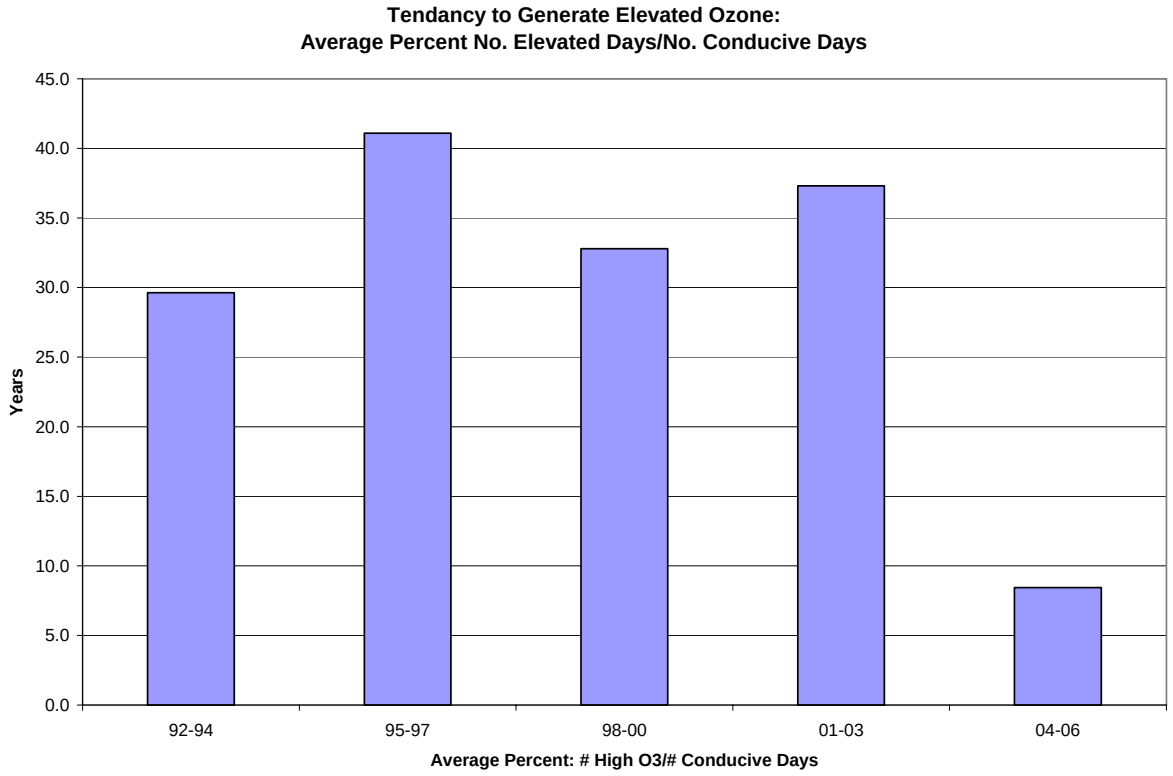
Figure 5.1



The MDEQ divided the number of days in which 8-hour ozone values were elevated at ambient air quality monitors by the number of days with conducive meteorology. The ratios were converted to percentages to increase clarity. This analysis revealed that 46 percent of the ozone conducive days in 1992 had elevated levels of ozone. In 2006, only four percent of the days with conducive conditions had high ozone values. Because there is year-to-year fluctuation, an average of the percent of high ozone days over three years was calculated. This removed some of the uncertainty inherent in the yearly results. Figure 5.2 shows that during the period 1992 to 2003, 30 to 40 percent of ozone conducive days formed elevated ozone, but during the period 2004-2006 the percentage drops to 8.

Ozone concentrations in 2005 were moderate despite better than average ozone conducive meteorology. In 2006, ozone concentrations were much lower compared to days with similar conditions in years past. The year 2006 was the second lowest ozone concentration year in the last 27 years despite having warmer than average temperatures, moderate wind speeds, and high solar radiation. The LADCO CART analysis and the MDEQ analysis of number of high ozone concentrations on meteorologically conducive days reinforces the demonstration that decreases in precursor emissions have led to actual improvements in air quality.

Figure 5.2



6. Maintenance Plan

A maintenance plan must demonstrate continued attainment for at least ten years after approval of redesignation. Section 175A of the CAA sets forth the elements of a maintenance plan for areas seeking redesignation from nonattainment to attainment. Eight years after the redesignation, a revised maintenance plan for the next ten years must be submitted to the EPA. To address the possibility of future NAAQS violations, the maintenance plan must contain contingency measures.

Future attainment is demonstrated through emission inventory projections. This demonstration includes an attainment year inventory for 2005, a projected interim year inventory for 2009, and a projected maintenance inventory for 2018. The future year inventories of VOC and NOx emissions are shown to remain below attainment year 2005 emissions levels to assure that local contribution to ozone formation will not exceed current levels. Continuing reductions in ozone precursor emissions will be realized from fleet turnover, Maximum Achievable Control Technology (MACT) standards for hazardous air pollutants, Clean Air Interstate Rule (CAIR) caps for EGUs, federal diesel emissions programs and diesel strategies implemented for attainment of the PM2.5 NAAQS. Additional emissions reductions of NOx and VOC are scheduled to occur during the maintenance period due to new controls on steel manufacturing sources, a cement manufacturing source, and a refinery in Southeast Michigan. Additionally, NOx reductions will be realized through retrofits on locomotive switch engines, and the Clean School Bus program. The Wayne County

Metropolitan Airport will reduce operational emissions through initiatives taken through the Voluntary Airport Low Emissions program. The introduction of less volatile summertime gasoline, and less volatile consumer and commercial products statewide, starting in 2007, will also produce continuing VOC reductions. The maintenance plan inventory emissions totals for VOC and NOx are provided in Table 6.1.

Table 6.1
Maintenance Plan Emission Inventories
2005-2009-2018
All units are in tons per day

VOC Emissions

Livingston	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	0.66	11.92	5.00	9.61	27.19
2009	0.96	7.69	3.90	8.19	20.74
2018	1.21	8.31	2.40	6.52	18.44
Macomb	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	9.62	38.72	16.50	23.12	87.96
2009	9.51	34.56	12.20	18.66	74.93
2018	10.97	35.43	7.00	16.55	69.95
Monroe	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	11.16	9.85	5.20	9.56	35.77
2005	8.42	9.99	4.00	8.72	31.13
2018	9.94	10.57	2.40	7.12	30.03
Oakland	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	9.80	55.34	34.00	46.35	145.49
2009	7.30	54.52	25.20	37.95	124.97
2018	8.24	57.60	14.20	32.40	112.44
St. Clair	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	5.55	5.20	4.70	11.35	26.80
2005	4.40	7.53	3.50	10.32	25.75
2018	5.54	7.93	2.10	8.94	24.51
Washtenaw	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	1.42	17.23	10.30	12.47	41.42
2009	1.84	16.26	7.90	10.41	36.41
2018	2.41	17.11	4.70	9.10	33.32
Wayne	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	24.27	82.11	50.40	39.97	196.75
2009	18.77	76.55	36.60	33.16	165.08
2018	21.84	78.87	20.20	30.65	151.56
SEMCOG Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	62.48	220.37	126.10	152.43	561.38
2009	51.20	207.10	93.30	127.41	479.01
2018	60.15	215.82	53.00	111.28	440.25
Lenawee	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	1.21	8.89	2.50	4.37	16.97
2009	1.33	4.85	1.80	3.80	11.78
2018	1.63	5.00	1.00	2.99	10.62
NAA Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	63.69	229.26	128.60	156.80	578.35
2009	52.53	211.95	95.10	131.21	490.79
2018	61.78	220.82	54.00	114.27	450.87

NOx Emissions

Livingston	Point Total	Area Total	Onroad	Nonroad	Total
2005	1.89	1.00	16.20	4.38	23.47
2009	2.81	0.71	11.10	3.70	18.32
2018	2.87	0.74	4.10	2.23	9.94
Macomb	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	2.70	2.36	40.60	19.27	64.93
2009	2.40	4.54	27.10	15.27	49.31
2018	2.76	4.72	10.10	9.82	27.40
Monroe	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	113.03	0.93	16.40	7.69	138.05
2005	38.31	0.65	11.20	6.27	56.43
2018	39.86	0.68	4.10	4.96	49.60
Oakland	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	3.36	4.19	88.90	25.52	121.97
2009	3.34	6.94	59.10	20.79	90.17
2018	4.22	7.16	21.20	12.91	45.49
St. Clair	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	80.88	0.67	11.60	7.83	100.98
2005	69.71	0.99	7.80	6.54	85.04
2018	73.08	1.02	3.00	5.69	82.79
Washtenaw	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	3.15	0.97	30.90	9.99	45.01
2009	3.12	1.70	21.00	8.27	34.09
2018	3.26	1.76	7.70	4.50	17.22
Wayne	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	61.57	5.38	130.80	45.09	242.84
2009	67.17	10.02	85.50	36.84	199.53
2018	68.59	10.30	30.30	27.46	136.65
SEMCOG Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	266.58	15.50	335.40	119.77	737.25
2009	186.86	25.55	222.80	97.68	532.89
2018	194.64	26.38	80.50	67.57	369.09
Lenawee	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	0.37	0.73	5.40	3.54	10.04
2009	0.33	0.49	3.60	3.12	7.54
2018	0.38	0.51	1.40	1.99	4.28
NAA Total	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	266.95	16.23	340.80	123.31	747.29
2009	187.19	26.04	226.40	100.80	540.43
2018	195.02	26.89	81.90	69.56	373.37

A comprehensive baseline emissions inventory was prepared by MDEQ and SEMCOG for the year 2005. The inventory was further processed by LADCO to

produce summer day totals by county. Full documentation of methodologies and models used to derive emission inventories is contained in Appendices A and B. The 2009 projected interim year inventory was prepared by LADCO as part of the regional planning effort for ozone, PM2.5, and regional haze. The 2018 projected maintenance inventory was prepared by LADCO, with the exception of the onroad mobile inventories projected by SEMCOG.

Maintenance Commitments

Michigan will develop and submit to the EPA no later than eight years after approval of this redesignation request a new maintenance plan covering the next ten-year period.

The MDEQ will continue to track ozone levels through the operation of an EPA-approved monitoring network as necessary to demonstrate ongoing compliance with the NAAQS. Data will be entered into the Air Quality System (AQS) on a timely basis in accordance with federal regulations. The MDEQ will continue to produce periodic emission inventories as required by the federal Consolidated Emissions Reporting Rule (40 CFR, Part 51) to track future levels of emissions. The control measures for VOC and NOx emissions that were contained in the SIP before redesignation of these areas to attainment shall be retained as required by Section 175A of the CAA.

Michigan will expeditiously enact legal authorities needed for additional contingency control measures, and/or studies of conditions resulting in unexpected ozone increases in response to identified triggering events.

Action Level Response

An Action Level Response will be prompted when a two-year average fourth high monitored value of 0.085 ppm occurs within a maintenance area. A review of circumstances leading to the high monitored values will be conducted if this response is triggered. The MDEQ will explore whether a special event, malfunction, or noncompliance with permit conditions resulted in high ozone levels in order to immediately address corrective measures. The MDEQ will also review meteorological conditions during high ozone episodes. This review will be conducted within six months following the close of the ozone season. If the MDEQ determines that contingency measure implementation is necessary to prevent a future violation, the MDEQ will select and implement a measure that can be implemented promptly.

Contingency Measure Response

If a violation of the ozone NAAQS occurs, Michigan will select one or more control measures from the following list of potential contingency measure options for implementation. The timing for implementation of a contingency measure is dependent on the process needed for legal adoption and source compliance which varies for each measure. Some potential measures/controls have already been promulgated and are scheduled to be implemented at the federal or state levels.

Other measures will need state administrative rulemaking or legislative approval. The MDEQ will seek to expedite the process of securing enabling authority and implementing the selected measures as needed to reduce ozone levels, with a goal of having measures in place as expeditiously as practicable, and within 18 months. Opportunity for public participation in the contingency measure response will be provided.

List of Potential Contingency Measures

1. Reduced VOC content in Architectural, Industrial, and Maintenance (AIM) coatings rule.
2. Auto body refinisher self-certification audit program.
3. Reduced VOC degreasing/ solvent cleaning rule.
4. Diesel retrofit program.
5. Reduced idling program.
6. Portable fuel container replacement rule.
7. Reduced VOC content for emulsified asphalt rule.
8. Stage II gasoline vapor recovery rule for marinas.

7. Transportation Conformity Budgets

Transportation conformity is required by Section 176(c) of the CAA. Transportation plans, programs, and projects must conform to the applicable SIP. The federal transportation conformity rule established the criteria and procedures for determining whether or not conformity is met. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS.

Estimates of onroad motor vehicle emissions from cars, buses, and trucks driven on public roadways are projected for the maintenance period to assess emission trends and to ensure continued compliance with the ozone NAAQS. These estimates are considered a ceiling or “budget” for emissions and are used to determine whether transportation plans and projects conform to the SIP. Estimated onroad mobile emissions of VOC and NOx must not exceed the emission budgets contained in the maintenance plan. The emissions estimates for this sector reflect appropriate and up-to-date assumptions about vehicle miles traveled, socioeconomic variables, fuels used, weather inputs, and other planning assumptions. Onroad emissions have been projected to 2018 in the maintenance inventory.

The maintenance plan is designed to provide for future growth while still maintaining the ozone NAAQS. A safety margin is the difference between the level of emissions in a year used to determine attainment of the NAAQS (from all sources) and the

projected level of emissions (from all sources) in the maintenance inventory. In this maintenance plan, the safety margin is the difference in total emissions between the years 2005 and 2018. The projected onroad emissions will be allocated 90 percent of the safety margin for VOC and NOx emissions to establish total motor vehicle emission budgets for conformity purposes in the Southeast Michigan maintenance area, as shown in Table 7.1.

Table 7.1
Motor Vehicle Emissions Budgets
With 90% Safety Margin
In Tons per Day

SEMCOG (Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, Wayne)					
VOC	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	62.48	220.37	126.10	152.43	561.38
2018	60.15	215.82	53.00	111.28	440.25
Conformity Budget					162.02
NOx	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	266.58	15.50	335.40	119.77	737.25
2018	194.64	26.38	80.50	67.57	369.09
Conformity Budget					411.84
Lenawee					
VOC	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	1.21	8.89	2.50	4.37	16.97
2018	1.63	5.00	1.00	2.99	10.62
Conformity Budget					6.72
NOx	**Point Total**	**Area Total**	**Onroad**	**Nonroad**	**Total**
2005	0.37	0.73	5.40	3.54	10.04
2018	0.38	0.51	1.40	1.99	4.28
Conformity Budget					6.58

8. Public Hearing and Comments

In accordance with Section 110 (a) (2) of the CAA, public participation in the SIP process was provided for as follows:

Notice of availability of the ozone redesignation documents and notice of the public hearing and comment period has been published in *The Oakland Press*. Notice was also posted on the MDEQ web pages at http://www.Michigan.gov/deqair, and http://www.michigan.gov/deqcalendar .

The public hearing on this redesignation request and maintenance plan SIP revision will be held on July 11, 2007, at Constitution Hall, Lansing, Michigan.

A summary of comments received and the MDEQ responses will be included in Appendix C.