

**DEVELOPMENT OF
UPDATED GROWTH
AND CONTROL
FACTORS FOR LAKE
MICHIGAN AIR
DIRECTORS
CONSORTIUM (LADCO)**

DRAFT REPORT

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ACRONYMS AND ABBREVIATIONS

AEO	<i>Annual Energy Outlook</i>
BART	best available retrofit technology
CE	control efficiency
DOE	Department of Energy
EGAS	Economic Growth Analysis System
EGU	electric generating unit
EIA	Energy Information Administration
EIIP	Emission Inventory Improvement Program
EPA	United States Environmental Protection Agency
FCCU	fluid catalytic cracking units
FCU	fluid coking units
HAPs	hazardous air pollutants
IC	internal combustion
LADCO	Lake Michigan Air Directors Consortium
LAER	lowest achievable emission rate
MACT	maximum achievable control technology
NAAQS	national ambient air quality standards
NEI	National Emissions Inventory
NO _x	oxides of nitrogen
NSPS	new source performance standard
Pechan	E.H. Pechan & Associates, Inc.
PM	particulate matter
RACT	reasonably available control technology
RE	rule effectiveness
REMI	Regional Economic Models, Inc.
RICE	reciprocating internal combustion engines
ROG	reactive organic gases
RP	rule penetration
RPO	Regional Planning Organization
SCC	source classification code
S-I	spark-ignition
SIC	standard industrial classification
SIP	State Implementation Plan
tpy	tons per year
SO ₂	sulfur dioxide
VOC	volatile organic compound

SECTION I. BACKGROUND

E.H. Pechan & Associates, Inc. (Pechan) is supporting the Lake Michigan Air Directors Consortium's (LADCO) efforts to forecast anthropogenic emissions for the purpose of assessing progress for air quality goals, including goals related to regional haze and attainment of the ozone national ambient air quality standards (NAAQS). Although the primary geographic area of interest is the 5-State Midwest Regional Planning Organization (RPO) region (i.e., Indiana, Illinois, Michigan, Ohio, and Wisconsin), LADCO has requested assistance in projecting emissions throughout the continental United States. Under a previous contract with LADCO, Pechan prepared emission activity growth and emission control data for all non-electric generating unit (EGU) point, area, and nonroad source categories relative to a base year (2002) inventory supplied by LADCO.¹ In December 2004, Pechan submitted emissions activity growth and control factor files for use by LADCO in emissions modeling. A December 14, 2004 Pechan report documents the contents and derivation of these files (Pechan, 2004). Updated files were later provided to LADCO in March 2005.

In September 2005, LADCO contracted with Pechan to conduct the following two tasks to develop updated growth and control factors needed to support future year control strategy analyses for regional haze, PM-2.5, and ozone:

Task 1: Update control factors to reflect current information pertaining to:

- (a) Petroleum refinery cases and settlements;
- (b) MACT standard control efficiency assumptions;
- (c) Residential wood combustion unit lifetime; and
- (d) Regional Planning Organization (RPO) inventories.

Task 2: Develop non-EGAS default-based emission activity growth factors for:

- (a) Priority point source categories; and
- (b) Priority area source categories.

This report describes Pechan efforts to conduct these tasks, which resulted in updated emissions activity growth and control factor files. The updates reflect the use of more recent and/or more detailed information than that used in the earlier study. As with that study, this effort involved the preparation of emission activity growth and control information relative to a 2002 base year inventory for future years of interest. Control information was developed for 2007, 2008, 2009, 2012, and 2018 (e.g., 2018 is the first milestone for regional haze reasonable progress demonstrations). Because the incremental level of effort required to develop emission activity growth factors for each year over the 2003-2018 period was nominal, Pechan prepared non-EGU point and area and nonroad source growth factors for each year over this entire period.

This report is organized into this Background section and:

¹ Although the base year inventory data supplied by LADCO included EGU SCCs (both point and area), Pechan did not include growth or control factors for these SCCs (forecast year information for EGU was prepared under a separate LADCO contract).

- Section II, which describes the development of the updated emission activity growth data;
- Section III, which discusses how the updated emission control data were compiled;
- Section IV, which describes the preparation of the updated growth and control factor files; and
- Section V, which presents the references consulted in preparing this report.

SECTION II. UPDATED EMISSION ACTIVITY GROWTH DATA

A. OVERVIEW

LADCO requested that Pechan review the growth indicators applied to particular SCCs in the LADCO States. Given the number of non-EGU point and area and nonroad source classification codes (SCCs) in LADCO's base year inventory, the emission activity growth factors for most SCCs are based on the default data that is being incorporated into the forthcoming Version 5.0 of the Economic Growth Analysis System (EGAS).² For priority source categories identified by LADCO, Pechan evaluated alternative growth methodologies and data sources before selecting a forecasting approach. The balance of this section describes the emission activity growth data developed in this study. Section IV discusses how these data were compiled into the file format required by LADCO.

B. NON-EGU AREA SOURCES

LADCO provided Pechan with a list of 22 priority stationary area source categories for which emission activity projection improvements were to be evaluated. For these source categories (see Table II-1), Pechan reviewed EPA SCC documentation and emission estimation guidance to identify the throughput data associated with each SCC. Pechan then investigated the availability of LADCO State-specific projections for these data. In several cases, guidance from the Emission Inventory Improvement Program (EIIP) indicated potential use of an emission factor based on the number of employees in one or more Standard Industrial Classification (SIC) codes. In these cases, Pechan replaced the REMI output data used as the EGAS 5.0 default growth indicator with employment data from REMI (Houyoux, 2004).

Table II-2 presents both the previously assigned and the newly assigned growth indicator for each of the priority source categories (note that while all States with projections data are reported in the "Updated" column, the only States displayed in the "Previous" column are those for which that growth indicator was previously needed). This table also displays the average annual growth rates over the forecast period for both the previous and updated growth indicators. The following information sources supplied projections data for the newly assigned growth indicators:

- Commercial Aircraft and General Aviation: State-level itinerant aircraft operations (FAA, 2005);
- Surface Coating; Machinery and Equipment—SIC 35: State-level employment in North American Industrial Classification System (NAICS) code 3330 (BLS, 2005). (although REMI SIC code 35 data were available, they were not used because they indicated anomalous projected growth relative to the historical LADCO trend);

² Information on these EGAS 5.0 data sources is provided in the report documenting the earlier study (Pechan, 2004).

- Cutback Asphalt and Emulsified Asphalt: LADCO region projected number of “paving, surfacing, and tamping operators” (BLS, 2005);
- Pesticide Application–Agricultural: State-level projected number of “pesticide handlers, sprayers, and applicators, vegetation” (BLS, 2005); and
- Wastewater Treatment–Industrial: LADCO region projected wastewater treatment industrial design flow (EPA, 2005).

For Commercial/Industrial Distillate Oil Combustion, Pechan reviewed the reasonableness of Department of Energy (DOE)’s commercial distillate fuel consumption projections for the LADCO region. Because the 1990-2001 LADCO region historical trend showed a decline, Pechan applied a no growth assumption for this category in the updated LADCO region growth factor file.

Finally, Pechan reviewed the complete list of area SCCs in the LADCO base year inventory to identify whether the updated growth indicators should be applied to any other SCCs not on the priority category list. Table II-3 displays the additional area SCCs for which growth indicator updates were incorporated in this study.

C. NON-EGU POINT SOURCES

LADCO provided Pechan with a summary of 2002 point source emissions by LADCO State and SCC for each of the following pollutants: ROG, NO_x, SO₂, PM-2.5, and NH₃. To assist in prioritizing the point source growth factor review, Pechan summed these emissions across pollutants for each non-EGU SCC. All non-EGU point SCCs with both: (1) 5 tons or more of total LADCO emissions, and (2) previous growth indicator annual growth rates of more than 2.1 percent were identified as priority categories for growth factor review (see Table II-4). Table II-5 summarizes the annual percentage growth rate values that Pechan developed in this study for these categories. The following subsections describe the data sources and procedures used in computing these growth rates.

1. Cement Manufacturing Categories

Due to the magnitude of emissions associated with the priority cement manufacturing SCCs (30500606, 30500623, and 30500706), Pechan researched the availability of historical cement production data for LADCO States. Pechan ultimately replaced the existing REMI output-based growth factors for these SCCs with growth factors reflecting a 2.0 percent annual growth rate. This growth rate was computed from 1994-2001 (beginning/end years available) portland cement production data for the LADCO States as reported by the U.S. Geological Survey (USGS, 2005).

2. Energy Consumption Categories

Pechan compiled LADCO State long-term (1990-2001) energy consumption data from DOE for the sectors/fuel types associated with the priority point SCCs (DOE, 2005). Relative to DOE’s forecasts, which indicated annual growth rates of more than 2.1 percent, the historical data generally indicated declines in LADCO region energy consumption. Because of the discrepancy between the historical trend and DOE’s forecasts, Pechan replaced the existing DOE energy

projections with either a no growth assumption (when the 1990-2001 data indicated a decline in energy consumption in the LADCO region) or with the 1990-2001 annual growth rate in energy consumption for the LADCO region (when 1990-2001 data indicated an increase in LADCO region energy consumption).

3. Categories with Historical Throughput Data

For all non-energy and non-cement manufacturing priority point source categories, Pechan analyzed SCC-level throughput data supplied by LADCO for potential use in developing updated growth factors. LADCO supplied these data for the following States/years:

- Indiana – 1996 through 2002;
- Michigan – 1998 through 2003; and
- Wisconsin – 1996 through 2004.

Because of a desire to develop representative data for all LADCO states, and because of concerns that data from earlier years appeared to be suspect, Pechan reviewed the 1999 and 2002 throughput data as a source for updated growth rates for priority point source categories. Pechan applied the growth rates represented by these data as growth indicators in this study when the throughput trend appeared reasonable in each State and the trend was similar for each State reporting data. Table II-5 reports the annual growth rates computed from the throughput data for categories that passed both of these criteria. Pechan decided to apply the negative annual growth rates only through 2009; post-2009 growth factors were set equivalent to the 2009 factors. The two reasons for adopting this approach were: (1) the limited throughput data set (1999-2002) available for estimating growth rates, and, (2) some of the negative growth rates are quite high, and will result in very large reductions in activity if they are applied out to 2018.

4. Categories with Consistent Recent Historical Emission Declines

Because valid throughput data were not always available for non-energy and non-cement manufacturing priority point source categories, Pechan reviewed historical (1996, 1999, and 2002) LADCO emissions data for potential use in computing representative emission activity growth rates. Pechan computed three sets of SCC-specific annual growth rates from these data:

- (1) From 1996 and 2002 point source emissions data for Illinois, Indiana, and Wisconsin – Pechan summed emissions across each reported pollutant (NO_x , SO_2 , and VOC) and State for 1996 and 2002 (these growth rate computations did not include Michigan and Ohio because 1996 emissions data were not available from these States).
- (2) From 1996 and 2002 point source emissions data for Illinois, Indiana, and Wisconsin – Pechan first identified the highest emitting pollutant (from NO_x , SO_2 , or VOC) for each SCC in 2002 by summing the 2002 emissions by pollutant for all available LADCO States (Michigan was not included because their inventory did not include SO_2 emissions). Pechan then developed growth rates by SCC from the 1996 and 2002 emissions for that pollutant based on the available data for Illinois, Indiana, and Wisconsin.
- (3) From 1999 and 2002 point source emissions data for all five LADCO States – When either VOC or NO_x was identified as the highest-emitting pollutant in 2002, Pechan

summed emissions for the highest pollutant for each State in 1999 and in 2002 and calculated the average annual growth over this period (growth rates are therefore only available for this approach when the highest emitting pollutant was not SO₂).

When the growth rates for an SCC were negative using all three approaches, Pechan replaced the EGAS output-based growth factors with a no growth assumption.

5. Remaining Priority Categories

For the eight remaining priority point source categories not covered by one of the above approaches, Pechan calculated updated growth factors by averaging the default EGAS 5.0 output (sales)-based growth factors with the employment-based growth factors for the same industry sector. EGAS utilizes an untested assumption that emissions activity trends better with output data than employment data. Because of the significantly high growth rates for these eight source categories, Pechan believes that the average of the two sets of growth factors represents a more reasonable growth rate. Note that for comparison sake, the growth rates presented in Table II-5 were calculated using the sum of output (and employment) data across each of the LADCO States. In keeping with the use of other EGAS-based growth factors, however, Pechan computed and applied State-specific growth factors from the available output/employment data.

Finally, Pechan reviewed the complete list of point SCCs in the LADCO base year inventory to identify whether the updated point source growth indicators should be applied to any additional SCCs not on the priority category list. Appendix A presents the additional point SCCs for which growth factor updates were incorporated in this study.

Table II-1. Priority Area Source Categories

SCC	DESC_1	DESC_2	DESC_3	DESC_4
2103004000	Stationary Source Fuel Combustion	Commercial/Institutional	Distillate Oil	Total: Boilers and IC Engines
2104008001	Stationary Source Fuel Combustion	Residential	Wood	Fireplaces: General
2275020000	Mobile Sources	Aircraft	Commercial Aircraft	Total: All Types
2275050000	Mobile Sources	Aircraft	General Aviation	Total
2401015000	Solvent Utilization	Surface Coating	Factory Finished Wood: SIC 2426 thru 242	Total: All Solvent Types
2401020000	Solvent Utilization	Surface Coating	Wood Furniture: SIC 25	Total: All Solvent Types
2401040000	Solvent Utilization	Surface Coating	Metal Cans: SIC 341	Total: All Solvent Types
2401050000	Solvent Utilization	Surface Coating	Miscellaneous Finished Metals: SIC 34 - (341 + 3498)	Total: All Solvent Types
2401055000	Solvent Utilization	Surface Coating	Machinery and Equipment: SIC 35	Total: All Solvent Types
2401100000	Solvent Utilization	Surface Coating	Industrial Maintenance Coatings	Total: All Solvent Types
2401200000	Solvent Utilization	Surface Coating	Other Special Purpose Coatings	Total: All Solvent Types
2415000000	Solvent Utilization	Degreasing	All Processes/All Industries	Total: All Solvent Types
2415020000	Solvent Utilization	Degreasing	Fabricated Metal Products (SIC 34): All Processes	Total: All Solvent Types
2415025000	Solvent Utilization	Degreasing	Industrial Machinery and Equipment (SIC 35): All Processes	Total: All Solvent Types
2415030000	Solvent Utilization	Degreasing	Electronic and Other Elec. (SIC 36): All Processes	Total: All Solvent Types
2415045000	Solvent Utilization	Degreasing	Miscellaneous Manufacturing (SIC 39): All Processes	Total: All Solvent Types
2461020000	Solvent Utilization	Miscellaneous Non-industrial: Commercial	Asphalt Application: All Processes	Total: All Solvent Types
2461021000	Solvent Utilization	Miscellaneous Non-industrial: Commercial	Cutback Asphalt	Total: All Solvent Types
2461022000	Solvent Utilization	Miscellaneous Non-industrial: Commercial	Emulsified Asphalt	Total: All Solvent Types
2461850000	Solvent Utilization	Miscellaneous Non-industrial: Commercial	Pesticide Application: Agricultural	All Processes
2601020000	Waste Disposal, Treatment, and Recovery	On-site Incineration	Commercial/Institutional	Total
2630010000	Waste Disposal, Treatment, and Recovery	Wastewater Treatment	Industrial	Total Processed

Table II-2. Previous and Updated Growth Indicators for Priority Area Source Categories

SCC	Previous Growth Indicator	Updated Growth Indicator	Comments on Updated Growth Indicator	Annual Growth % 2002 to 2018	
				Previous	Updated
2103004000	AEO2004- Commercial/Distillate fuel consumption for East North Central (ENC) region	No growth	Although DOE projects significant growth, this contradicts actual decline that occurred in 1990-2001 consumption in LADCO region	3.3	0.0
2104008001	AEO2004- Residential/ Renewable energy consumption for ENC region and Pechan projections of % of wood consumption in fireplaces (projection from extrapolation of historical estimates derived from Census of Housing data, # of units per home, etc.)	Similar to previous, but with updated Pechan projections of % of wood consumption in fireplaces based on incorporating more recent Census of Housing data		1.4	1.5
2275020000	REMI Output - Air Transportation-SIC 45	Federal Aviation Administration (FAA) State-level Air Carrier Landing and Take-off Operations (LTOs)	LTOs are the emission activity for this SCC	IL: 3.3; IN: 3.4; MI: 3.3; OH: 3.2; WI: 3.6	IL: 1.3; IN: 0.5; MI: 1.7; OH: -1.8; WI: 2.9
2275050000	REMI Output - Air Transportation-SIC 45	FAA State-level General Aviation LTOs	LTOs are the emission activity for this SCC	IL: 3.3; IN: 3.4; MI: 3.3; OH: 3.2; WI: 3.6	IL: 0.1; IN: 0.2; MI: 0.0; OH: 0.1; WI: 0.5
2401015000	REMI Output - Sawmills and Planning Mills-SIC 242	Employment projections for SICs 242, 243, 244, 245, and 249 given employee-based EF in Emission Inventory Improvement Program (EIIP) guidance	EIIP lists emission factor based on most of the 4-digit SICs between 242 and 249 (unable to remove 4-digit data, therefore included the identified 3-digit SICs)	IN: 2.8; OH: 2.8; WI: 2.7	IL: 0.9; IN: 0.9; MI: 0.4; OH: 0.9; WI: 0.6
2401020000	REMI Output - Furniture Fixtures-SIC 25	Employment projections for SIC 25 given employee-based EF in EIIP guidance		IN: 3.4; MI: 3.2; OH: 4.0; WI: 3.4	IL: 3.0; IN: 1.7; MI: 1.5; OH: 2.3; WI: 1.7
2401040000	REMI Output - Metal Cans and Shipping Containers-SIC 341	Employment projections for SIC 341 given employee-based EF in EIIP guidance		IN: 3.2; MI: 2.8; OH: 2.8; WI: 3.2	IL: -2.7; IN: -2.5; MI: -2.8; OH: -2.8; WI: -2.4
2401050000	REMI Output - Fabricated Metal Products-SIC 34	Employment projections for SIC 34 excluding 341 given employee-based EF in EIIP guidance	EIIP lists SIC 34 excluding 341 and 3498 (no way to remove data for 3498, so included SIC 349)	MI: 3.3; OH: 3.1; WI: 3.4	IL: 0.3; IN: 0.5; MI: 0.1; OH: 0.2; WI: 0.5
2401055000	REMI Output - Machinery and Computer Equipment-SIC 35	Avg annual growth rate from Bureau of Labor Statistics (BLS)/State employ projections for NAICS 3330, which is equivalent to SIC 35	EIIP lists SIC as 35; REMI SIC 35 employment projections indicate very fast growth, which does not seem likely given historical trend (BLS projections are in-line w/ historical data)	IN: 8.6; MI: 8.3; OH: 8.3; WI: 8.2	IL: 0.1; IN: 0.2; MI: 0.4; OH: 0.1; WI: 0.3
2401100000	REMI Output - Total Manufacturing-SIC 20-39	Population data	EIIP does not list SIC codes; lists population as units for SCC	IN: 4.4; MI: 4.3; OH: 4.4; WI: 5.0	IL: 0.9; IN: 0.5; MI: 0.3; OH: 0.3; WI: 0.6 (projections data used are generally county-specific)
2401200000	REMI Output - Paints and Allied Products-SIC 285	Population data	EIIP does not list SIC codes; lists population as units for SCC	IN: 2.7; MI: 2.7; OH: 3.2; WI: 3.3	IL: 0.9; IN: 0.5; MI: 0.3; OH: 0.3; WI: 0.6 (projections data used are generally county-specific)

Table II-2. (continued)

SCC	Previous Growth Indicator	Updated Growth Indicator	Comments on Updated Growth Indicator	Annual Growth % 2002 to 2018	
				Previous	Updated
2415000000	REMI Output - Furniture Fixtures-SIC 25, Primary Metals Industries-SIC 33, Misc. Manufacturing Industries-SIC 39, Auto Repair, Services and Parking-SIC 75	Employment projections for sectors noted at right, except SIC 75, because REMI sector includes many other SICs not listed	The following SICs are listed in the Degreasing SCC descriptions: 25, 33-45, 55, 75, 76	IL: 3.5; MI: 3.1; OH: 2.9	IL: 1.0; IN: 0.9; MI: 0.5; OH: 0.8; WI: 1.2
2415020000	REMI Output - Fabricated Metal Products-SIC 34	Employment projections for same sector	EIIP lists both per employee and per capita degreasing EFs that are not specific to this SCC (used SIC 34 employ due to SCC description)	IL: 3.4	IL: 0.2; IN: 0.5; MI: 0.0; OH: 0.1; WI: 0.5
2415025000	REMI Output - Machinery and Computer Equipment-SIC 35	Employment projections for same sector	EIIP lists both per employee and per capita degreasing EFs that are not specific to this SCC (used SIC 35 employ due to SCC description)	IL: 8.4	IL: 2.4; IN: 2.6; MI: 2.2; OH: 2.4; WI: 2.4
2415030000	REMI Output - Electronic Equipment-except computers-SIC 36	Employment projections for same sector	EIIP lists both per employee and per capita degreasing EFs that are not specific to this SCC (used SIC 36 employ due to SCC description)	IL: 5.9	IL: 1.6; IN: 2.2; MI: 2.0; OH: 1.7; WI: 1.2
2415045000	REMI Output - Misc. Manufacturing Industries-SIC 39	Employment projections for same sector	EIIP lists both per employee and per capita degreasing EFs that are not specific to this SCC (used SIC 39 employ due to SCC description)	IL: 4.4	IL: 0.9; IN: 1.0; MI: 0.7; OH: 0.6; WI: 0.9
2461020000	REMI Output - Commercial (Financial, Retail & Wholesale Trade, Services)-SIC 50-65, 67, 70, 72, 73, 75, 76, 78-84, 86-89	State-level avg annual growth rates from BLS employment projections for "Paving, Surfacing, and Tamping Operators"	BLS projections are only for 2012; 2002-2012 growth rate applied thru 2018	IL: 2.7	IL: 1.3; IN: 1.1; MI: 1.2; OH: 1.4; WI: 1.4
2461021000	REMI Output - Commercial (Financial, Retail & Wholesale Trade, Services)-SIC 50-65, 67, 70, 72, 73, 75, 76, 78-84, 86-89	National avg annual growth rate for "Cutback Asphalt" from consumption forecasts published by Freedonia, Inc.	Based on BLS employment projections for "Paving, Surfacing, and Tamping Operators," growth is not expected to differ much across LADCO States	MI: 2.6; WI: 2.8	1.3
2461022000	REMI Output - Commercial (Financial, Retail & Wholesale Trade, Services)-SIC 50-65, 67, 70, 72, 73, 75, 76, 78-84, 86-89	National avg annual growth rate for "Asphalt Emulsions" from consumption forecasts published by Freedonia, Inc.	Based on BLS employment projections for "Paving, Surfacing, and Tamping Operators," growth is not expected to differ much across LADCO States	IN: 2.7; MI: 2.6; WI: 2.8	1.4
2461850000	REMI Value Added - Farm-SIC 01, 02	State-level avg annual growth rates from BLS employ projections for "Pesticide Handlers, Sprayers, and Applicators, Vegetation"	BLS projections are only for 2012; 2002-2012 growth rate applied thru 2018.	IL: 2.5	IL: 0.9; IN: -0.4; MI: 1.2; OH: 0.4; WI: 1.0
2601020000	REMI Output - Commercial (Financial, Retail & Wholesale Trade, Services)-SIC 50-65, 67, 70, 72, 73, 75, 76, 78-84, 86-89	Employment projections for same sector		IL: 2.7; IN: 2.7; OH: 2.6	IL: 1.1; IN: 1.0; MI: 1.1; OH: 1.0; WI: 1.1
2630010000	REMI Output - Total Manufacturing-SIC 20-39	0.8% annual growth (calculated from present and projected design industrial flow for LADCO States and an assumed 7.5 year time horizon)	Data are from 2000 Clean Watersheds Needs Survey (2000 is most recent available); documentation states that projection time-frame is often 5 to 10 years	IL: 4.7; WI: 5.0	0.8

Table II-3. Additional Area Source Categories with Updated Growth Indicator Assignments

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator as SCC
2401025000	Solvent Utilization	Surface Coating	Metal Furniture: SIC 25	Total: All Solvent Types	2401020000
2415245000	Solvent Utilization	Degreasing	Miscellaneous Manufacturing (SIC 39): Conveyerized	Total: All Solvent Types	2415045000
2415345000	Solvent Utilization	Degreasing	Miscellaneous Manufacturing (SIC 39): Cold Cleaning	Total: All Solvent Types	2415045000
2415230000	Solvent Utilization	Degreasing	Electronic and Other Elec. (SIC 36): Conveyerized	Total: All Solvent Types	2415030000

Table II-4. Priority Point Source Categories

SCC	DESC 1	DESC 2	DESC 3	DESC 4
10200401	External Combustion Boilers	Industrial	Residual Oil	Grade 6 Oil
10200601	External Combustion Boilers	Industrial	Natural Gas	> 100 Million Btu/hr
10200602	External Combustion Boilers	Industrial	Natural Gas	10-100 Million Btu/hr
10200603	External Combustion Boilers	Industrial	Natural Gas	< 10 Million Btu/hr
10200701	External Combustion Boilers	Industrial	Process Gas	Petroleum Refinery Gas
10200902	External Combustion Boilers	Industrial	Wood/Bark Waste	Wood/Bark-fired Boiler
10300501	External Combustion Boilers	Commercial/Institutional	Distillate Oil	Grades 1 and 2 Oil
20200201	Internal Combustion Engines	Industrial	Natural Gas	Turbine
20200202	Internal Combustion Engines	Industrial	Natural Gas	Reciprocating
20200206	Internal Combustion Engines	Industrial	Natural Gas	Reciprocating-Evap Losses (Fuel Delivery System)
20200252	Internal Combustion Engines	Industrial	Natural Gas	2-cycle Lean Burn
20200254	Internal Combustion Engines	Industrial	Natural Gas	4-cycle Lean Burn
20400402	Internal Combustion Engines	Engine Testing	Reciprocating Engine	Diesel/Kerosene
30101899	Industrial Processes	Chemical Manufacturing	Plastics Production	Others Not Specified
30199999	Industrial Processes	Chemical Manufacturing	Other Not Classified	Specify in Comments Field
30300101	Industrial Processes	Primary Metal Production	Aluminum Ore (Electro-reduction)	Prebaked Reduction Cell
30302352	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Induration: Grate/Kiln, Gas-fired, Flux Pellets
30302360	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Induration: Grate/Kiln, Coal-fired, Flux Pellets
30400301	Industrial Processes	Secondary Metal Production	Grey Iron Foundries	Cupola
30500258	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Mix Plant: Rotary Drum Dryer / Mixer, #2 Oil-Fired
30500606	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Kilns
30500623	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Preheater/Precalciner Kiln
30500706	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Kilns
30501402	Industrial Processes	Mineral Products	Glass Manufacture	Container Glass: Melting Furnace
30501403	Industrial Processes	Mineral Products	Glass Manufacture	Flat Glass: Melting Furnace
30501404	Industrial Processes	Mineral Products	Glass Manufacture	Pressed and Blown Glass: Melting Furnace
30501604	Industrial Processes	Mineral Products	Lime Manufacture	Calcining: Rotary Kiln **
30501618	Industrial Processes	Mineral Products	Lime Manufacture	Calcining: Coal-fired Rotary Kiln
30600106	Industrial Processes	Petroleum Industry	Process Heaters	Process Gas-fired
30600906	Industrial Processes	Petroleum Industry	Flares	Hydrogen Sulfide
39000689	Industrial Processes	In-process Fuel Use	Natural Gas	General
39000699	Industrial Processes	In-process Fuel Use	Natural Gas	General
39001389	Industrial Processes	In-process Fuel Use	Liquid Waste	General
39999999	Industrial Processes	Miscellaneous Mfg Industries	Miscellaneous Industrial Processes	See Comment **
40200101	Petroleum & Solvent Evaporation	Surface Coating Operations	Surface Coating Application - General	Paint: Solvent-base
40200110	Petroleum & Solvent Evaporation	Surface Coating Operations	Surface Coating Application - General	Paint: Solvent-base
40201301	Petroleum & Solvent Evaporation	Surface Coating Operations	Paper Coating	Coating Operation
40201602	Petroleum & Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Cleaning/Pretreatment
40201605	Petroleum & Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Equipment Cleanup
40201606	Petroleum & Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Topcoat Operation
40201625	Petroleum & Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Topcoat: Solvent-borne - Automobiles
40201901	Petroleum & Solvent Evaporation	Surface Coating Operations	Wood Furniture Surface Coating	Coating Operation
40202201	Petroleum & Solvent Evaporation	Surface Coating Operations	Plastic Parts	Coating Operation
40202501	Petroleum & Solvent Evaporation	Surface Coating Operations	Miscellaneous Metal Parts	Coating Operation
40299998	Petroleum & Solvent Evaporation	Surface Coating Operations	Miscellaneous	Specify in Comments Field

Table II-5. Annual Percentage Growth Rates for Priority Point Source Categories

SCC	1994-2001 LADCO Cement Production	Historical Energy Data		LADCO Throughput Data		Historical Emission Trends**	Average of Output and Employment Growth Factors
		1990-2001 Growth Rate	Growth Rate Used*	Annual Growth Rate	Comment		
10200401		-10.4	0.0				
10200601		-0.1	0.0				
10200602		-0.1	0.0				
10200603		-0.1	0.0				
10200701		-1.4	0.0				
10200902		0.6	0.6				
10300501		-0.9	0.0				
20200201		-0.1	0.0				
20200202		-0.1	0.0				
20200206		-0.1	0.0				
20200252		-0.1	0.0				
20200254		-0.1	0.0				
20400402						0.0	
30101899							1.3
30199999							1.9
30300101				-0.9	Held constant after 2009		
30302352							0.2
30302360							0.2
30400301				-6.8	Held constant after 2009		
30500258							1.7
30500606	2.0						
30500623	2.0						
30500706	2.0						
30501402				-3.8	Held constant after 2009		
30501403				-7.2	Held constant after 2009		
30501404				-7.5	Held constant after 2009		
30501604				-1.9	Hold constant after 2009		
30501618				-1.7	Hold constant after 2009		
30600106		-1.4	0.0				
30600906		-0.1	0.0				
39000689		-0.1	0.0				
39000699		-0.1	0.0				
39001389		0.6	0.6				
39999999				-8.3	Held constant after 2009		
40200101						0.0	
40200110				-0.7	Held constant after 2009		
40201301						0.0	
40201602							0.8
40201605							0.8
40201606						0.0	
40201625				-11.6	Held constant after 2009		
40201901				0.8			
40202201				-12.7	Held constant after 2009		
40202501				-13.2	Held constant after 2009		
40299998				-4.9	Held constant after 2009		

* - Because of the discrepancy between DOE forecasts of significant increases in energy consumption and the historical trend, Pechan applied a no growth assumption rather than using the historical rate of decline.

** - Because of uncertainty associated with use of emissions data rather than throughput data, Pechan applied a no growth assumption for these categories rather than relying on the historical rate of emissions decline.

SECTION III. UPDATED EMISSION CONTROL DATA

A. OVERVIEW

Pechan updated emission control factors to reflect current information pertaining to:

- (a) Petroleum refinery cases and settlements;
- (b) MACT standard control efficiency assumptions;
- (c) Residential wood combustion unit lifetime estimates; and
- (d) Base year Regional Planning Organization (RPO) emission inventories.

This section describes the efforts that Pechan undertook to compile updated control information. Section IV documents the contents of the updated emission control factor files that were submitted to LADCO on December 22. These files contain the complete set of control factors for use with LADCO's base year emission inventories (i.e., information compiled both in this study and the earlier study Pechan performed for LADCO).

B. PETROLEUM REFINERY CASES AND SETTLEMENTS

EPA has reached judicial settlements with a number of companies that own U.S. petroleum refineries. For this analysis, Pechan incorporated the expected emission reductions of these consent decrees in its future year base case scenario analyses for the years 2009 through 2018. Because the refinery settlements most affect SO₂ and NO_x, this analysis focuses on the parts of the settlements that affect SO₂ and NO_x emissions. Table III-1 lists the companies and individual refineries that were evaluated in this study. This table also provides information about the fluid catalytic cracking units (FCCUs) and heater/boiler emission control requirements for each refinery.

The five major refinery sources that are affected by the judicial settlements are:

1. FCCUs/Fluid Coking Units (FCUs);
2. Process Heaters and Boilers;
3. Flare Gas Recovery;
4. Leak Detection and Repair; and
5. Benzene/Wastewater

Issues related to modeling the refinery settlement associated emission reductions are as follows:

1. Finding the FCCU/FCU records in the 2002 LADCO base year point source emissions database was straightforward in most situations because most refineries have one or two of these units and there are a limited number of associated SCCs.
2. FCCU SO₂ control requirements were modeled as follows:
 - a. New wet gas scrubber - either a 90 percent SO₂ control efficiency or the specific control efficiency listed in the consent decree (slightly different from 90 percent), was applied.

- b. Catalyst additives - where required to reduce FCCU SO₂ emissions, a 70 percent control efficiency was applied. The 70 percent control efficiency was estimated from information in the literature about the expected SO₂ emission reductions of this control technique (EPA, 1989).
 - c. If there was no requirement, or an existing wet gas scrubber, no additional control efficiency was applied. This may underestimate the reductions at refineries with existing wet gas scrubbers that will have to make some upgrades to their scrubbers.
 3. Heater/boiler SO₂ control requirements were not applied in this analysis because it was found that there were very few fuel oil burning heaters and boilers at refineries in the Midwest RPO States.
 4. Heater/boiler NO_x controls for the units to which they are applied were simulated using a 0.04 lbs per million Btu NO_x emission rate. Meeting this emission reduction requirement is expected to provide an average NO_x emission reduction of 50 percent from 2002 levels.
 5. Some refineries in the 2002 point source file have provided estimates of their boiler and process heater capacities. When these estimates are provided, they are used to determine which units are subject to the boiler/heater SO₂ and NO_x control requirements (all units > 40 million Btu/hour with non-zero emissions are assumed to be subject to the control requirements). For refineries that do not provide the capacity values, controls were applied to all heaters and boilers with 2002 NO_x emissions above 10 tpy.
 6. While the other requirements of the settlements are expected to produce additional emission reductions beyond those applied to FCCUs/FCUs and boilers and heaters, we did not incorporate these emission reductions in our emission projections. The flare gas recovery, leak detection and repair, and benzene/wastewater requirements are expected to produce less significant changes in criteria air pollutant emissions, plus these are source types for which the 2002 emissions estimates are expected to be much more uncertain than they are for the combustion categories.

One of the issues in evaluating the emission effects of the petroleum refinery settlements is the expected timing of the emission reduction requirements compared with the scenario analysis years of interest to the LADCO States. The general conclusion in this analysis is that by 2009, most of the current decree requirements for FCCUs and heaters/boilers will have to be met, so it is appropriate to apply the control factors developed for this study to all analysis years. The Marathon Ashland Petroleum (MAP) consent decree, which affects emissions for more refineries in the LADCO States (four) than any other consent decree, provides a relevant example of the timing of the requirements by pollutant and source type. Table III-2 summarizes the MAP requirements. The MAP consent decree was signed during 2001. A number of the other refinery consent decrees affecting refineries in the Midwest States were signed in the same year as the MAP consent decree. Thus, their schedules would be expected to be similar.

C. FEDERAL MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT) STANDARDS

Numerous MACT standards have been promulgated pursuant to Section 112 of Title I of the Clean Air Act, and control emissions of hazardous air pollutants (HAPs) from stationary sources of air pollution. Many HAPs are also volatile organic compounds (VOCs [VOC HAPs]). Many of the MACT standards are expected to produce associated VOC reductions, so the emission projections capture the expected effects of post-2002 MACT standards.

The emission reductions associated with EPA's MACT standards were estimated using information in EPA's draft guidance for estimating VOC and NO_x emission changes from MACT rules. Any expected PM reductions associated with post-2002 MACT standards were estimated by Pechan using information from the MACT standard preambles. Because the EPA draft guidance only provides source category names and MACT codes to identify potentially affected sources, Pechan also identified associated SCCs because the LADCO State 2002 emission files rarely included MACT codes. Table III-3 was circulated to the Midwest RPO state air pollution control agencies for review. Comments were received from the Wisconsin Department of Natural Resources and the Wisconsin-specific control efficiencies were incorporated in the analysis. The Wisconsin comments are shown in the right-most column in Table III-3.

D. RESIDENTIAL WOOD COMBUSTION STANDARDS

To account for the effect of the replacement of retired wood stoves/inserts that emit at pre-residential wood heater new source performance standard (NSPS) levels, Pechan developed control factors for 2007, 2008, 2009, 2012 and 2018 by pollutant. These control factors were developed using an annual 2 percent retirement rate for wood stoves/fireplaces along with the pre- and post-NSPS wood stove and fireplace emission factors used in the 2002 NEI (Pechan, 2006).³ Pechan developed SCC/year-specific weighted emission factors from the pre- and post-NSPS emission factors and estimates of the proportion of total wood consumption associated with pre- and post-NSPS units in the base and each forecast year. Control factors represent the ratio of the forecast year weighted emission factor for a given pollutant to the base year weighted emission factor for that pollutant. SCCs for "controlled" wood stoves and fireplace inserts have no control efficiency applied. Their future year emissions change in proportion to the growth rate.

1. Midwest RPO States

The effects of growth and retirement rates on future year woodstove and fireplace emissions were incorporated in the analysis using Equation 1.

³ The previous study assumed a 4 percent retirement rate, reflecting earlier EPA practice.

$$Q_N = Q_o \left\{ \left[(G_N) - 1 \right] F_n + \left[(1 - R_i)^t \right] F_e + \left[1 - (1 - R_i)^t \right] F_n \right\} \quad (Eq. 1)$$

where:

Q_N	=	emissions in projection year
Q_o	=	emissions in base year
R_i	=	annual retirement rate
F_e	=	emission factor ratio for existing sources (1.0)
G_N	=	projection year growth factor (projection year activity/base year activity)
F_n	=	emission factor ratio for new sources relative to existing sources
t	=	number of years between base year (2002) and projection year

The first term in the equation represents new source growth and controls, the second term accounts for retirement and controls for existing sources, and the third term accounts for replacement source controls. In addition, Pechan obtained updated estimates of the number of fireplaces and woodstoves for 2001 and new estimates for 2003 from the U.S. Bureau of the Census' *American Housing Survey* (BOC, 2005). Pechan used these new values to update estimates of the future year proportion of wood consumed by type of equipment, which affected the equipment type-specific growth factors. Pechan then computed an overall emission reduction for each future year of interest by comparing the forecast year controlled emissions calculated from this equation to the forecast year uncontrolled emissions.

The terms in this equation are applied differently to the SCCs in Table III-4 to account for differences in the SCCs that LADCO States have used in preparing their 2002 emission estimates for this source type. Thus, for States that break down their fireplace insert and woodstove activity and emissions among pre-controlled, certified non-catalytic, and certified catalytic units, all of the growth is applied to the certified fireplace insert or woodstove SCCs, while pre-control fireplace inserts and woodstoves are retired.

2. Non-Midwest RPO States

The non-Midwest RPO State control factors were updated to reflect use of the annual 2 percent wood stove/fireplace retirement rate assumption. To reduce the level of effort required to develop control information for the residential wood combustion category, non-Midwest RPO State emission reduction information is not adjusted to account for State-specific growth rates. This assumption will only significantly understate RP and overall emission reductions for States with large growth factors. Because the largest residential wood combustion growth factor for non-Midwest RPO States is 1.124 (California, Oregon, and Washington State growth factor for 2018), the use of non-growth adjusted emission reduction information does not have a significant impact on the reductions estimated for this category.

E. CONTROL FACTOR UPDATES TO REFLECT NEW BASE YEAR NON-MIDWEST RPO EMISSION INVENTORIES

LADCO provided Pechan with updated emission inventories covering non-Midwest RPO States (Janssen, 2005). Pechan compared the list of stationary and nonroad mobile SCCs for which emission control factors were developed in the previous study to the list of SCCs incorporated in the new non-LADCO emission inventories. The purpose of this comparison was to identify revisions to the list of SCCs to which emission control factors are applied. The updated control factor files reflect an updated list of applicable SCCs. Because the updated emission inventories did not provide portable fuel container SCCs, Pechan removed the previous file's portable fuel container emission control factor records.

Table III-1. Refinery-Specific Summary of Consent Decree Requirements

Company	Location	State	FCCU Requirements		Heater/Boiler Requirements	
			SO _x	NO _x	SO _x	NO _x
BP Amoco	Whiting	IN	FCCU 500: Install wet gas scrubber; FCCU 600: Use SO ₂ adsorbing catalyst additive and/or hydrotreatment.	FCCU 600: Install SCR; FCCU 500: Low NO _x combustion promoter and NO _x adsorbing catalyst additive	Elimination of oil burning and restricting H ₂ S in refinery fuel gas	Use qualifying controls to reduce NO _x emissions by 9632 tpy.
BP Amoco	Toledo	OH	SO ₂ catalyst additive	Install SNCR system	Elimination of oil burning and restricting H ₂ S in refinery fuel gas	Use qualifying controls to reduce NO _x emissions by 9632 tpy.
CITGO Global Refinery	Lemont	IL	New wet gas scrubber	Low NO _x combustion promoter (20 ppmvd limit)	Comply with NSPS Subparts A and J for fuel gas combustion devices. Eliminate fuel oil burning.	Use qualifying controls to reduce NO _x emissions from listed units by at least 50% of the revised baseline
Conoco Philips Global Refinery	Roxanna (Wood River)	IL	Install new wet gas scrubber (25 ppmvd or lower)	FCCU 1: Scrubber-based NO _x emission reduction technology to achieve 20 ppmvd	Subject to NSPS Subparts A and J for fuel gas combustion devices	Use qualifying controls to reduce NO _x emissions from combustion units by 4951 tpy
Conoco Philips Global Refinery	Hartford (Wood River)	IL	Install new wet gas scrubber (25 ppmvd or lower)	FCCU 2: Enhanced SNCR	Subject to NSPS Subparts A and J for fuel gas combustion devices	Use qualifying controls to reduce NO _x emissions from combustion units by 4951 tpy
Exxon-Mobil Refinery	Joliet	IL	Install new wet gas scrubber (25 ppmvd or lower)	Install and operate an SCR system	Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Use qualifying controls to reduce NO _x emissions from combustion units
Marathon Ashland Refinery	Robinson	IL	Existing wet gas scrubber	Catalyst additive	Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Reduce overall NO _x emissions from the controlled heaters and boilers at MAP refineries by 4,000 tpy. Control methods can include: SCR or SNCR; ULNB; technologies to reach 0.040 lbs per MMBtu or lower; alternate SO ₂ single burner technology to achieve 0.055 lbs per MMBtu or lower; unit shutdowns.

Table III-1 (continued)

Company	Location	State	FCCU Requirements		Heater/Boiler Requirements	
			SO ₂	NO _x	SO ₂	NO _x
Marathon Ashland Refinery	Detroit	MI	SO ₂ catalyst additive	Catalyst additive	Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Reduce overall NO _x emissions from the controlled heaters and boilers at MAP refineries by 4,000 tpy. Control methods can include: SCR or SNCR; ULNB; technologies to reach 0.040 lbs per MMBtu or lower; alternate SO ₂ single burner technology to achieve 0.055 lbs per MMBtu or lower; unit shutdowns.
Marathon Ashland Refinery	St Paul Park	MN	New wet gas scrubber on unit 1; catalyst additive on other unit	Catalyst additive	Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Reduce overall NO _x emissions from the controlled heaters and boilers at MAP refineries by 4,000 tpy. Control methods can include: SCR or SNCR; ULNB; technologies to reach 0.040 lbs per MMBtu or lower; alternate SO ₂ single burner technology to achieve 0.055 lbs per MMBtu or lower; unit shutdowns.
Marathon Ashland Refinery	Canton	OH	SO ₂ catalyst additive	Catalyst additive	Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Reduce overall NO _x emissions from the controlled heaters and boilers at MAP refineries by 4,000 tpy. Control methods can include: SCR or SNCR; ULNB; technologies to reach 0.040 lbs per MMBtu or lower; alternate SO ₂ single burner technology to achieve 0.055 lbs per MMBtu or lower; unit shutdowns.
Premcor Refining (formerly Clark Refining)	Hartford	IL	Install new wet gas scrubber to meet 25 ppmvd SO ₂		Accept NSPS Subpart J applicability for heaters and boilers and reduce or eliminate fuel oil firing	Install a combination of current and next generation ULNBs on identified units
Sunoco Petroleum Refinery	Toledo	OH	Install new wet gas scrubber to meet 25 ppmvd SO ₂	Install SCR systems or alternate technology to meet 20 ppmvd	Accept NSPS Subpart J applicability and reduce or eliminate fuel oil burning	

Table III-2. MAP Refinery Compliance Schedules

Source Type/Pollutant	Date Required
1. Nox and CO emission reductions from FCCUs. Additives use begins by this date	March 31, 2002
2. Complete installation and begin operation of a NO _x reducing system at one of the following FCCUs: Robinson FCCU, Garyville FCCU, Detroit FCCU.	December 31, 2005
3. Complete a program to reduce the overall NO _x emissions from the controlled heaters and boilers. Controlled heaters and boilers shall represent at least 30 percent of the allowable heat capacity of all heaters and boilers greater than 40 MMBtu at each refinery.	December 31, 2008
4. Achieve two-thirds of the NO _x emission reductions required for heaters and boilers.	July 31, 2005
5. FCCU SO ₂ emission reductions	
a. Robinson FCCU (< 25 ppmvd)	Date of lodging of consent decree (2001)
b. Garyville FCCU (< 25 ppmvd)	Date of lodging of consent decree (2001)
c. Detroit FCCU, Canton FCCU, & St. Paul Park FCCU	March 30, 2002/September 2002

Table III-3. Post-2002 MACT Standards and Expected VOC, NO_x, and PM Reductions

MACT Standard - Source Category	Code of Federal Regulations Subpart	Compliance Date (existing sources)	VOC (% Reduction)	NO _x (% Reduction)	Total PM (% Reduction)	Affected SCCs	MACT Code	State Comments or Revisions
Asphalt Processing and Asphalt Roofing Manufacture	LLLLL	5/1/2006	85			30505001, 30500101, 30500102, 30505010, 30601101	0418	
Auto and Light Duty Trucks	IIII	4/26/2007	40			40201601 to 40201632; 40201699	0702	Wisconsin recommended zero VOC reduction for their State's affected facilities
Boat Manufacturing	VVVV	8/22/2004	32			314015XX	1305	
Carbon Black	YY	7/12/2005	83			30100501-30100510	1415	
Cellulosic Fiber Production	UUUU	6/11/2005	12			30102501, 30102505, 30102506, 30102599, 649200XX	1349	
Coke Ovens: Pushing, Quenching and Battery Stacks	CCCCC	4/14/2006	0			30300304; 30300303	0303	
Combustion Sources at Pulp & Paper Mills	MM	1/12/2004	12			30700104	1626-2	
Cyanide Chemical Manufacturing	YY	7/12/2005	44			30125417, 30125418	1405	
Ethylene Processes	YY	7/12/2005	64				1635	
Fabric Printing, Coating & Dyeing	OOOO	5/29/2006	60			40201101 to 40201199; 40201201; 40201210	0713	Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities
Friction Products Manufacturing	QQQQQ	10/18/2005	44			30111103; 30111199; 31401001; 31401002	1636	
Integrated Iron and Steel	FFFFF	5/20/2006	(5)		20	30301501 to 30301596	0305	
Iron and Steel Foundries	EEEEEE	4/22/2007	5			304003XX, 304007XX	0308	
Large Appliances	NNNN	7/23/2005	0			40201401 to 40201499		Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities
Leather Finishing Operations	TTTT	2/27/2005	51			32099997; 32099998; 32099999	1634	
Lime Manufacturing	AAAAA	1/5/2007			23	305016XX	0408	
Manufacturing Nutritional Yeast	CCCC	5/21/2004	10			30203404 to 30203424; 30203504 to 30203540	1101	Wisconsin recommended zero VOC reduction for their State's affected facilities
Metal Can	KKKK	11/13/2006	70			40201702; 40201703 to 40201799	0707	Wisconsin recommended zero VOC reduction for their State's affected facilities
Metal Coil	SSSS	6/10/2005	53			402018XX	0708	Wisconsin

Table III-3 (continued)

MACT Standard - Source Category	Code of Federal Regulations Subpart	Compliance Date (existing sources)	VOC (% Reduction)	NO _x (% Reduction)	Total PM (% Reduction)	Affected SCCs	MACT Code	State Comments or Revisions
								recommended a 10 percent VOC reduction for their State's affected facilities
Metal Furniture	RRRR	5/23/2006	0			402020XX		Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities
Misc. Coating Manufacturing	HHHHH	12/11/2006	64			402026XX	1642	
Misc. Metal Parts and Products	MMMM	1/2/2007	0			402025XX		Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities
Misc. Organic Chemical Production and Processes (MON)	FFFF	11/10/2006	66			645200XX; 30113001 to 30113007; 684300XX; 30101005 to 30101099; 68445001; 68445010; 68445013; 68445020; 68445022; 68445101; 68445201; 30110002 to 30110099; 64820001; 64820010; 64821001; 64821010; 64822001; 64822010; 64823001; 64823010; 64823001; 64823010; 64880001; 64882001; 64882002; 64882599; 30105001; 30105101 to 30105130; 30801001; 31604001; 31604002; 31600403; 68510001; 68510010; 68510011; 68580001; 68582001; 68582002; 68582599; 30101837; 64610301 to 64610350; 64610001 to 64610050; 64610101 to 64610150; 64610201 to 64610250; 64615001 to 64615030; 64620001 to 64620038; 64630001 to 64630083; 64631001 to 64631083; 64632001 to 64632083; 64680001; 64682001; 64682002; 64682501;	1641	

Table III-3 (continued)

MACT Standard - Source Category	Code of Federal Regulations Subpart	Compliance Date (existing sources)	VOC (% Reduction)	NO _x (% Reduction)	Total PM (% Reduction)	Affected SCCs	MACT Code	State Comments or Revisions
						64682502; 64682599; 64130001 to 64130025; 64130101 to 64130125; 64130201 to 64130225; 64131010 to 64131030; 64132001 to 64132030; 64133001 to 64133030; 64180001; 64182001; 64182002; 64182599; 64615001; 64620001; 65135001		
Municipal Solid Waste Landfills	AAAA	1/16/2004	75			501004XX	0802	
Organic Liquids Distribution	EEEE	2/3/2007	70			40300102, 40300104, 40300106, 40300107, 40301010-40301021	0602	
Paper and Other Web	JJJJ	12/4/2005	80			30701199; 402013XX	0711	
Pesticide Active Ingredient Production	MMM	12/23/2003	65			30103301	0911	
Petroleum Refineries	UUU	4/11/2005	43			Catalytic cracking: 30600201; 30600202; 30600301 Catalytic reforming: 30601601; 30601602; 30601603; 30601604	0502	
Plastic Parts	PPPP	4/19/2007	0			402022XX		Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities
Plywood and Composite Wood Products	DDDD	10/1/2007	54			307007XX; 30700921 to 30700971; 30701001 to 30701057; 30700602 to 30700661	1624	
Polymers and Resins III	OOO	1/20/2003	51			Phenolic resins: 30101805; Polyamide resins: 30101827	1347	
Reciprocating Internal Combustion Engines (RICE)	ZZZZ	6/15/2007	13	17		20100102; 20100202; 20100702; 20100802; 20100902; 20200102; 20200104; 20200202; 20200204; 20200301; 20201001; 20201002; 20201012, 20201014; 20201602; 20201702, 20200501; 20200702; 20200706; 20200902; 20300101; 20300201; 20300301	0105	Wisconsin recommended zero VOC and NO _x reductions for their State's affected facilities

Table III-3 (continued)

MACT Standard - Source Category	Code of Federal Regulations Subpart	Compliance Date (existing sources)	VOC (% Reduction)	NO _x (% Reduction)	Total PM (% Reduction)	Affected SCCs	MACT Code	State Comments or Revisions
Refractory Products Manufacturing	SSSSS	4/17/2006	81	0			0406	
Reinforced Plastic Composites Production	WWWW	4/21/2006	39	0			1337	
Rubber Tire Manufacturing	XXXX	7/11/2005	52	0		308001XX	1631	
Secondary Aluminum Production	RRR	3/24/2003	0	0	61	30400101 to 30400199	0202	
Site Remediation	GGGGG	10/8/2006	50	0		504001XX; 50400201, 50400202; 504002XX; 504100XX; 504101XX; 504102XX; 504103XX; 504102XX; 504103XX; 04104XX; 504105XX; 504106XX; 504107XX; 50480001; 50482001; 50482002; 50482599; 50480004	0805	
Solvent Extraction for Vegetable Oil Production	GGGG	4/12/2004	25	0		302019XX	1103	
Stationary Combustion Turbines	YYYY	3/5/2007	13	17		20100101, 20100201, 20200101, 20200103, 20200201, 20200203, 20200901, 20300102, 20300202, 20300203	0105	Wisconsin recommended zero VOC and NO _x reductions for their State's affected facilities
Taconite Iron Ore Processing	RRRRR	10/30/2006	0	0	62	32302371 to 32302399	0411	
Wet Formed Fiberglass Mat Production	HHHH	4/11/2005	74			30501201 to 30501299	0413	
Wood Building Products	QQQQ	5/28/2006	63	0		40202101 to 40202199	0703	Wisconsin recommended a 10 percent VOC reduction for their State's affected facilities

**Based on organic HAP emission reductions

Table III-4. Residential Wood Combustion Emission Reductions for Midwest RPO States

Description	SCC	Growth Factors					Pollutant	CF*	Percentage Emission Reduction					
		2007	2008	2009	2012	2018			2002	2007	2008	2009	2012	2018
Total Woodstoves + Fireplaces	2104008000	1.05	1.05	1.05	1.06	1.06	VOC	0.23	0.0	6.5	7.9	9.3	12.9	19.5
		1.05	1.05	1.05	1.06	1.06	CO	0.45	0.0	3.7	4.5	5.3	7.3	11.0
		1.05	1.05	1.05	1.06	1.06	NO _x	0.71	0.0	2.4	2.9	3.4	4.8	7.2
		1.05	1.05	1.05	1.06	1.06	PM	0.64	0.0	2.9	3.6	4.3	5.9	8.8
Fireplaces	2104008001	1.11	1.13	1.14	1.19	1.28	VOC	0.23	0.0	6.8	8.3	9.8	13.6	20.5
		1.11	1.13	1.14	1.19	1.28	CO	0.45	0.0	3.5	4.3	5.1	7.0	10.6
		1.11	1.13	1.14	1.19	1.28	NO _x	0.71	0.0	2.3	2.8	3.3	4.6	7.0
		1.11	1.13	1.14	1.19	1.28	PM	0.64	0.0	2.8	3.5	4.1	5.7	8.6
Fireplace inserts-non-certified	2104008002	1.01	1.01	1.0	0.98	0.94			0	0	0	0	0	0
		1.01	1.01	1.0	0.98	0.94			0	0	0	0	0	0
		1.01	1.01	1.0	0.98	0.94			0	0	0	0	0	0
		1.01	1.01	1.0	0.98	0.94			0	0	0	0	0	0
Fireplace inserts-certified-non-catalytic	2104008003	2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
Fireplace inserts-certified-catalytic	2104008004	2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
		2.26	2.56	2.86	3.68	5.31			0	0	0	0	0	0
Woodstoves-general	2104008010	1.02	1.02	1.01	0.99	0.95	VOC	0.23	0.0	6.7	8.2	9.6	13.3	20.0
		1.02	1.02	1.01	0.99	0.95	CO	0.45	0.0	3.7	4.6	5.4	7.5	11.2
		1.02	1.02	1.01	0.99	0.95	NO _x	0.71	0.0	2.4	3.0	3.5	4.8	7.3
		1.02	1.02	1.01	0.99	0.95	PM	0.64	0.0	3.0	3.7	4.3	6.0	9.0
Woodstoves-certified-catalytic	2104008030	2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
Woodstoves-certified-noncatalytic	2104008050	2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0
		2.08	2.3	2.51	3.05	3.91			0	0	0	0	0	0

NOTES: *This is the ratio between the emission factor for an EPA-certified woodstove/fireplace insert and the highest emission factor for an uncontrolled unit.
 Growth factors represent the projected increase/decrease in wood consumption by type of unit based on DOE's energy consumption projections and Pechan's projections of the proportion of total residential wood consumption by type of unit, which includes the effect of turnover to EPA-certified wood stoves/inserts.

SECTION IV. PREPARATION OF GROWTH AND CONTROL FILES

This section describes the contents of the growth and control factor files submitted to LADCO on December 22. The first subsection describes the preparation of the non-EGU point and area and miscellaneous nonroad source growth factor file. The final subsection describes the contents of the control factor files. No changes were made to the previous NONROAD model input files.

Table IV-1 presents the RPO Data Exchange Protocol Format for reporting emission growth and control data. Pechan utilized this format to create growth and control factor files for LADCO. Because the growth factors (unlike the control factors) do not differ by pollutant, Pechan developed a separate file containing only the growth factors. Four sets of control factor files were prepared: two for non-EGU area/nonroad source categories and two for non-EGU point sources. Each of the growth and control files were developed in fixed field ascii format. The following subsections describe the contents of the growth and control factor files.

A. GROWTH FACTORS

Pechan compiled the Midwest RPO and non-Midwest RPO region State growth factor information into the file *LADCOGrowthFactors.asc*. Table IV-2 displays the RPO Data Exchange Protocol Format fields and identifies the fields that were populated in this file. The file contains separate records for each SCC/State for each year between 2003 and 2018 (population-based Midwest RPO State growth indicator records are reported by SCC/State/County because population projections were available by county).

B. CONTROL FACTORS

1. Non-EGU Point Source Control Factors

Pechan compiled the non-EGU point source control factors into two sets of ascii files: one set providing control information for the Midwest RPO States (*MidwestRPOPointControls.asc*) and one set for all other States (*NonMidwestRPOPointControls.asc*). Both of these files report control information for the specific date that each control is due to be implemented.

a. *Midwest RPO State Controls*

The *MidwestRPOPointControls.asc* file reports control information at the Process ID-level. Note that the Base Date Control Efficiency field is populated with a zero for every record because Pechan did not have any base year control information other than that reported in the base year inventory supplied by LADCO. LADCO should rely on the control information in the base year inventory to identify the base year level of control. Table IV-3 identifies the RPO Data Exchange Protocol fields that are populated in this file.

b. *Non-Midwest RPO State Controls*

The *NonMidwestRPOPointControls.asc* file generally expresses control information by State/County and SCC, however, in some cases, control information is reported at the Process ID-level

for Iowa and Minnesota. Note that the Base Date Control Efficiency field is populated with a zero for every record because Pechan did not have any base year control information other than that reported in the base year inventory supplied by LADCO. LADCO should rely on the control information in the base year inventory to identify the base year level of control. Table IV-3 identifies the RPO Data Exchange Protocol fields that are populated in this file.

2. Non-EGU Area and Miscellaneous Nonroad Source Control Factors

Pechan compiled the non-EGU area and miscellaneous (locomotive, commercial marine vessel, large spark ignition (S-I) and land-based recreational vehicle evaporative) nonroad source control factor information into two separate ascii files: one file that includes controls for which there is no change in emission reduction after the initial implementation year, and the other file that includes controls for which the emission reduction changes over time due to the effect of increased RP. The non-EGU area and miscellaneous nonroad source control factor files are expressed at the State-level for controls that are State/National, and at the county-level for control factors that are county-specific.

In cases where it was feasible to do so, Pechan populated the 5th, 4th, and 3rd fields from the end of each control factor file (“RESERVED FOR FUTURE USE” in the RPO Data Exchange Protocol Format) with future year CE, RE, and RP values, respectively (the field “FUTURE DATE CONTROL EFFICIENCY” was populated with the overall percentage emission reduction). For the miscellaneous nonroad controls, this was done in cases where the control efficiency value was available in addition to the overall control factor from the relevant regulatory support document, and the rule penetration value was relatively simple to back-calculate. Rule effectiveness values for these Federal standards were assumed to be 100 percent.

a. Controls Affected by Rule Penetration

The ascii file *LADCOAreaNonroadControlsAffectedByRulePenetration.asc* contains area and miscellaneous nonroad source control factors for which the level of emission reduction increases over time due to increased RP. Due to the level of effort associated with estimating RP for each year, this file incorporates control factors only for the years of interest (2007, 2008, 2009, 2012, and 2018). Table IV-4 identifies the RPO Data Exchange Protocol fields that are populated in this file. If and when LADCO begins using NONROAD 2005, it will be necessary to remove the records for which the CONTROL DESCRIPTION is listed as “Federal SI Evaporative Standard” from this file. Where previous versions of NONROAD do not model the effect of this standard on future year nonroad emissions, this effect is incorporated into NONROAD 2005.

b. Controls Unaffected by Rule Penetration

The ascii file *LADCOAreaControlsByImplementationYear.asc* provides control factors for area source emission controls for which RP does not change over time. Because there is no projected change in the emission reduction after the initial implementation year, this file reports control factors only for the first year that each control is due to be implemented. However, these control factors also apply to each post-implementation year. Table IV-4 identifies the RPO Data Exchange Protocol fields populated in this file.

Table IV-1 RPO Data Exchange Protocol Format for Growth/Control Data

Field Name	Field Description	Field Length
RECORD TYPE	A code that identifies the type of record (G for growth, C for control)	2
COUNTRY CODE	A code that identifies the country (US = United States)	2
STATE PROVINCE TRIBAL CODE	The code for the State/province/tribe	4
COUNTY FIPS	The FIPS code for the county	3
SIC	4-digit SIC, or 2 digit SIC with remaining digits blank (not zero)	4
SCC	EPA source classification code or a fraction of the code	10
SITE ID	Unique State/local/tribal ID reported consistently over time	15
EMISSION UNIT ID	Unique State/local/tribal ID reported consistently over time	6
EMISSION RELEASE POINT ID	State/ local/tribal ID for point /location where emissions are released to ambient air	6
POLLUTANT CODE	Pollutant code	9
PROCESS ID	Unique State/local/tribal ID reported consistently over time	6
BASE DATE	Date that the control strategy comes into effect	6
FUTURE DATE	Future date that the control strategy affects	6
PRIMARY CONTROL EQUIPMENT CODE	Primary control equipment code	10
BASE DATE CONTROL EFFICIENCY	Base year % control efficiency(60% reduction = 60)	6
FUTURE DATE CONTROL EFFICIENCY	Future year % control efficiency(60% reduction = 60)	6
FUTURE DATE GROWTH FACTOR	Growth factor based on changes in throughput, economic growth (unrelated to controls). This is an absolute growth rate not an annual growth rate.	11
CONTROL TYPE	MACT, RACT, LAER, SIPCALL, BART, etc	10
FUTURE DATE CHEMICAL SPECIATION PROFILE	Code matching speciate chemical speciation profile unless in base year	6
ALLOWABLE EMISSIONS CAP	Allowable emissions cap units must be in TONS/day	10
MARKET PENETRATION OF NEW SPECIATION PROFILE	Fraction of future year emissions using new speciation profile	6
RESERVED FOR FUTURE USE FIELD 3	(Field used to enter future year control efficiency value where available)	10
RESERVED FOR FUTURE USE FIELD 2	(Field used to enter future year rule effectiveness value where available)	10
RESERVED FOR FUTURE USE FIELD 1	(Field used to enter future year RP value where available)	10
CONTROL DESCRIPTION	A text description of the control	80
PRIMARY CONTACT	Email address of the primary contact/developer of this record	30

Table IV-2 Fields Populated in Growth Factor File

Field Name	Populated in Growth Factor File?
RECORD TYPE	Yes
COUNTRY CODE	Yes
STATE PROVINCE TRIBAL CODE	Yes
COUNTY FIPS	Yes (with "000" except for population data)
SIC	No
SCC	Yes
SITE ID	No
EMISSION UNIT ID	No
EMISSION RELEASE POINT ID	No
POLLUTANT CODE	No
PROCESS ID	No
BASE DATE	Yes
FUTURE DATE	Yes
PRIMARY CONTROL EQUIPMENT CODE	No
BASE DATE CONTROL EFFICIENCY	No
FUTURE DATE CONTROL EFFICIENCY	No
FUTURE DATE GROWTH FACTOR	Yes
CONTROL TYPE	No
FUTURE DATE CHEMICAL SPECIATION PROFILE	No
ALLOWABLE EMISSIONS CAP	No
MARKET PENETRATION OF NEW SPECIATION PROFILE	No
RESERVED FOR FUTURE USE FIELD 3 (<i>future year CE</i>)	No
RESERVED FOR FUTURE USE FIELD 2 (<i>future year RE</i>)	No
RESERVED FOR FUTURE USE FIELD 1 (<i>future year RP</i>)	No
CONTROL DESCRIPTION	No
PRIMARY CONTACT	Yes

Table IV-3 Fields Populated in Non-EGU Point Source Control Factor Files

RPO Data Exchange Protocol Format Field Name	Populated in Midwest RPO State Control Factor File	Populated in Non-Midwest RPO State Control Factor File
RECORD TYPE	Yes	Yes
COUNTRY CODE	Yes	Yes
STATE PROVINCE TRIBAL CODE	Yes	Yes
COUNTY FIPS	Yes	Yes
SIC	Yes	No ¹
SCC	Yes	Yes
SITE ID	Yes	No ¹
EMISSION UNIT ID	Yes	No ¹
EMISSION RELEASE POINT ID	Yes	No ¹
POLLUTANT CODE	Yes	Yes
PROCESS ID	Yes	No ¹
BASE DATE	Yes	Yes
FUTURE DATE ²	Yes	Yes
PRIMARY CONTROL EQUIPMENT CODE	No	No
BASE DATE CONTROL EFFICIENCY ³	Yes	Yes
FUTURE DATE CONTROL EFFICIENCY ⁴	Yes	Yes
FUTURE DATE GROWTH FACTOR	No ⁵	No
CONTROL TYPE	Yes	Yes
FUTURE DATE CHEMICAL SPECIATION PROFILE	No	No
ALLOWABLE EMISSIONS CAP	No ⁶	No
MARKET PENETRATION OF NEW SPECIATION PROFILE	No	No
RESERVED FOR FUTURE USE FIELD 3 (<i>future year CE</i>)	No	No
RESERVED FOR FUTURE USE FIELD 2 (<i>future year RE</i>)	No	No
RESERVED FOR FUTURE USE FIELD 1 (<i>future year RP</i>)	No	No
CONTROL DESCRIPTION	Yes	Yes
PRIMARY CONTACT	Yes	Yes

¹ Except for Iowa and Minnesota records.

² Represents date that control is first implemented.

³ All records populated with "0" - LADCO should rely on control information reported in base year inventory.

⁴ Populated with overall percentage emission reduction.

⁵ A value of "1" is incorporated when the control record represents an allowable emissions cap.

⁶ Populated only when the control record represents an allowable emissions cap.

Table IV-4 Fields Populated in Area/Miscellaneous Nonroad Source Control Factor Files

RPO Data Exchange Protocol Format Field Name	Populated in Implementation Year Control Factor File	Populated in Rule Penetration Based Control Factor File
RECORD TYPE	Yes	Yes
COUNTRY CODE	Yes	Yes
STATE PROVINCE TRIBAL CODE	Yes	Yes
COUNTY FIPS	Yes	Yes
SIC	No	No
SCC	Yes	Yes
SITE ID	No	No
EMISSION UNIT ID	No	No
EMISSION RELEASE POINT ID	No	No
POLLUTANT CODE	Yes	Yes
PROCESS ID	No	No
BASE DATE	Yes	Yes
FUTURE DATE	Yes ¹	Yes
PRIMARY CONTROL EQUIPMENT CODE	Yes	Yes
BASE DATE CONTROL EFFICIENCY	Yes	Yes
FUTURE DATE CONTROL EFFICIENCY ²	Yes	Yes
FUTURE DATE GROWTH FACTOR	No	No
CONTROL TYPE	No	No
FUTURE DATE CHEMICAL SPECIATION PROFILE	No	No
ALLOWABLE EMISSIONS CAP	No	No
MARKET PENETRATION OF NEW SPECIATION PROFILE	No	No
RESERVED FOR FUTURE USE FIELD 3 (<i>future year CE</i>)	Yes	Yes ³
RESERVED FOR FUTURE USE FIELD 2 (<i>future year RE</i>)	Yes	Yes ³
RESERVED FOR FUTURE USE FIELD 1 (<i>future year RP</i>)	Yes	Yes ³
CONTROL DESCRIPTION	Yes	Yes
PRIMARY CONTACT	Yes	Yes

¹ Represents year that control is first implemented.

² Populated with overall percentage emission reduction (product of CE, RE, and RP).

³ Not populated for Federal S-I evaporative standards and for Federal locomotive standard PM control records.

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APPENDIX A. ADDITIONAL POINT SOURCE CATEGORIES WITH UPDATED GROWTH INDICATOR ASSIGNMENTS

SCC	DESC 1	DESC 2	DESC 3	DESC 4	Same Growth Indicator As
10200402	External Combustion Boilers	Industrial	Residual Oil	10-100 Million Btu/hr **	10200401
10200404	External Combustion Boilers	Industrial	Residual Oil	Grade 5 Oil	10200401
10200405	External Combustion Boilers	Industrial	Residual Oil	Cogeneration	10200401
10200604	External Combustion Boilers	Industrial	Natural Gas	Cogeneration	10200603
10200901	External Combustion Boilers	Industrial	Wood/Bark Waste	Bark-fired Boiler	10200902
10200903	External Combustion Boilers	Industrial	Wood/Bark Waste	Wood-fired Boiler - Wet Wood (>=20% moisture)	10200902
10200904	External Combustion Boilers	Industrial	Wood/Bark Waste	Bark-fired Boiler (< 50,000 Lb Steam) **	10200902
10200905	External Combustion Boilers	Industrial	Wood/Bark Waste	Wood/Bark-fired Boiler (< 50,000 Lb Steam) **	10200902
10200906	External Combustion Boilers	Industrial	Wood/Bark Waste	Wood-fired Boiler (< 50,000 Lb Steam) **	10200902
10200907	External Combustion Boilers	Industrial	Wood/Bark Waste	Wood Cogeneration	10200902
10200911	External Combustion Boilers	Industrial	Wood/Bark Waste	Stoker boilers **	10200902
10201201	External Combustion Boilers	Industrial	Solid Waste	Specify Waste Material in Comments	10200902
10201301	External Combustion Boilers	Industrial	Liquid Waste	Specify Waste Material in Comments	10200902
10201401	External Combustion Boilers	Industrial	CO Boiler	Natural Gas	10200603
10201404	External Combustion Boilers	Industrial	CO Boiler	Residual Oil	10200401
10300502	External Combustion Boilers	Commercial/ Institutional	Distillate Oil	10-100 Million Btu/hr **	10300501
10300503	External Combustion Boilers	Commercial/ Institutional	Distillate Oil	< 10 Million Btu/hr **	10300501
10300504	External Combustion Boilers	Commercial/ Institutional	Distillate Oil	Grade 4 Oil	10300501
10500106	External Combustion Boilers	Space Heaters	Industrial	Natural Gas	10200603
10500205	External Combustion Boilers	Space Heaters	Commercial/Institutional	Distillate Oil	10300501
20200203	Internal Combustion Engines	Industrial	Natural Gas	Turbine: Cogeneration	10200603
20200204	Internal Combustion Engines	Industrial	Natural Gas	Reciprocating: Cogeneration	10200603
20200207	Internal Combustion Engines	Industrial	Natural Gas	Reciprocating: Exhaust	10200603
20200253	Internal Combustion Engines	Industrial	Natural Gas	4-cycle Rich Burn	10200603
20200501	Internal Combustion Engines	Industrial	Residual/Crude Oil	Reciprocating	10200401
20300101	Internal Combustion Engines	Commercial/ Institutional	Distillate Oil (Diesel)	Reciprocating	10300501
20300102	Internal Combustion Engines	Commercial/ Institutional	Distillate Oil (Diesel)	Turbine	10300501
20300107	Internal Combustion Engines	Commercial/ Institutional	Distillate Oil (Diesel)	Reciprocating: Exhaust	10300501
20300108	Internal Combustion Engines	Commercial/ Institutional	Distillate Oil (Diesel)	Turbine: Evaporative Losses (Fuel Storage and Delivery System)	10300501
30101801	Industrial Processes	Chemical Manufacturing	Plastics Production	Polyvinyl Chlorides and Copolymers ** (Use 6-46-3X0-XX)	30101899
30101802	Industrial Processes	Chemical Manufacturing	Plastics Production	Polypropylene and Copolymers	30101899
30101803	Industrial Processes	Chemical Manufacturing	Plastics Production	Ethylene-Propylene Copolymers	30101899
30101805	Industrial Processes	Chemical Manufacturing	Plastics Production	Phenolic Resins	30101899
30101807	Industrial Processes	Chemical Manufacturing	Plastics Production	General: Polyethylene (High Density)	30101899
30101808	Industrial Processes	Chemical Manufacturing	Plastics Production	Monomer and Solvent Storage	30101899

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30101809	Industrial Processes	Chemical Manufacturing	Plastics Production	Extruder	30101899
30101810	Industrial Processes	Chemical Manufacturing	Plastics Production	Conveying	30101899
30101811	Industrial Processes	Chemical Manufacturing	Plastics Production	Storage	30101899
30101812	Industrial Processes	Chemical Manufacturing	Plastics Production	General: Polyethylene (Low Density)	30101899
30101813	Industrial Processes	Chemical Manufacturing	Plastics Production	Recovery and Purification System	30101899
30101814	Industrial Processes	Chemical Manufacturing	Plastics Production	Extruder	30101899
30101815	Industrial Processes	Chemical Manufacturing	Plastics Production	Pellet Silo	30101899
30101816	Industrial Processes	Chemical Manufacturing	Plastics Production	Transferring/Handling/Loading/Packing	30101899
30101817	Industrial Processes	Chemical Manufacturing	Plastics Production	General	30101899
30101818	Industrial Processes	Chemical Manufacturing	Plastics Production	Reactor	30101899
30101819	Industrial Processes	Chemical Manufacturing	Plastics Production	Solvent Recovery	30101899
30101820	Industrial Processes	Chemical Manufacturing	Plastics Production	Polymer Drying	30101899
30101821	Industrial Processes	Chemical Manufacturing	Plastics Production	Extruding/Pelletizing/Conveying/Storage	30101899
30101822	Industrial Processes	Chemical Manufacturing	Plastics Production	Acrylic Resins	30101899
30101827	Industrial Processes	Chemical Manufacturing	Plastics Production	Polyamide Resins	30101899
30101832	Industrial Processes	Chemical Manufacturing	Plastics Production	Urea-Formaldehyde Resins	30101899
30101837	Industrial Processes	Chemical Manufacturing	Plastics Production	Polyester Resins	30101899
30101838	Industrial Processes	Chemical Manufacturing	Plastics Production	Reactor Kettle ** (Use 6-45-200-11 or 6-45-210-11)	30101899
30101839	Industrial Processes	Chemical Manufacturing	Plastics Production	Resin Thinning Tank ** (Use 6-45-200-21 or 6-45-210-21)	30101899
30101840	Industrial Processes	Chemical Manufacturing	Plastics Production	Resin Storage Tank ** (Use 6-45-200-23 or 6-45-210-23)	30101899
30101842	Industrial Processes	Chemical Manufacturing	Plastics Production	Melamine Resins	30101899
30101847	Industrial Processes	Chemical Manufacturing	Plastics Production	Epoxy Resins	30101899
30101849	Industrial Processes	Chemical Manufacturing	Plastics Production	Acrylonitrile-Butadiene-Styrene (ABS) Resin	30101899
30101852	Industrial Processes	Chemical Manufacturing	Plastics Production	Polyfluorocarbons	30101899
30101863	Industrial Processes	Chemical Manufacturing	Plastics Production	Extruder	30101899
30101864	Industrial Processes	Chemical Manufacturing	Plastics Production	Pellet Silo/Storage	30101899
30101865	Industrial Processes	Chemical Manufacturing	Plastics Production	Transferring/Conveying	30101899
30101870	Industrial Processes	Chemical Manufacturing	Plastics Production	Reactor (Polyether Resins)	30101899
30101871	Industrial Processes	Chemical Manufacturing	Plastics Production	Blowing Agent: Freon (Polyether Resins)	30101899
30101872	Industrial Processes	Chemical Manufacturing	Plastics Production	Miscellaneous (Polyether Resins)	30101899
30101880	Industrial Processes	Chemical Manufacturing	Plastics Production	Reactor (Polyurethane)	30101899
30101882	Industrial Processes	Chemical Manufacturing	Plastics Production	Blowing Agent: Methylene Chloride (Polyurethane)	30101899

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30101883	Industrial Processes	Chemical Manufacturing	Plastics Production	Transferring/Conveying/Storage (Polyurethane)	30101899
30101884	Industrial Processes	Chemical Manufacturing	Plastics Production	Packing/Shipping (Polyurethane)	30101899
30101885	Industrial Processes	Chemical Manufacturing	Plastics Production	Other Not Classified (Polyurethane)	30101899
30101890	Industrial Processes	Chemical Manufacturing	Plastics Production	Catalyst Preparation	30101899
30101891	Industrial Processes	Chemical Manufacturing	Plastics Production	Reactor Vents	30101899
30101892	Industrial Processes	Chemical Manufacturing	Plastics Production	Separation Processes	30101899
30101893	Industrial Processes	Chemical Manufacturing	Plastics Production	Raw Material Storage	30101899
30101894	Industrial Processes	Chemical Manufacturing	Plastics Production	Solvent Storage	30101899
30102423	Industrial Processes	Chemical Manufacturing	Synthetic Organic Fiber Manufacturing	Fiber Extrusion (Use 6-49-300-21 of 6-49-310-21 for Spandex)	30101899
30102428	Industrial Processes	Chemical Manufacturing	Synthetic Organic Fiber Manufacturing	Leaching	30101899
30102429	Industrial Processes	Chemical Manufacturing	Synthetic Organic Fiber Manufacturing	Mixing	30101899
30102499	Industrial Processes	Chemical Manufacturing	Synthetic Organic Fiber Manufacturing	Other Not Classified	30101899
30102599	Industrial Processes	Chemical Manufacturing	Cellulosic Fiber Production	Other Not Classified	30101899
30102601	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	General	30101899
30102609	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Dryers	30101899
30102612	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Pre-storage Tank	30101899
30102614	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Blending Tanks	30101899
30102617	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Latex: Blending Tank	30101899
30102630	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Silicone Rubber	30101899
30102656	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Fugitive Emissions: Carbon Black Storage	30101899
30102699	Industrial Processes	Chemical Manufacturing	Synthetic Rubber (Manufacturing Only)	Other Not Classified	30101899
30180001	Industrial Processes	Chemical Manufacturing	General Processes	Fugitive Leaks	30199999
30180003	Industrial Processes	Chemical Manufacturing	General Processes	Pipeline Valves: Light Liquid/Gas Stream	30199999
30180006	Industrial Processes	Chemical Manufacturing	General Processes	Open-ended Valves: All Streams	30199999
30180007	Industrial Processes	Chemical Manufacturing	General Processes	Flanges: All Streams	30199999
30180008	Industrial Processes	Chemical Manufacturing	General Processes	Pump Seals: Light Liquid/Gas Stream	30199999
30180013	Industrial Processes	Chemical Manufacturing	General Processes	Vessel Relief Valves: All Streams	30199999
30181001	Industrial Processes	Chemical Manufacturing	General Processes	Air Oxidation Units	30199999
30182001	Industrial Processes	Chemical Manufacturing	Wastewater Treatment	Wastewater Stripper	30199999

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30182002	Industrial Processes	Chemical Manufacturing	Wastewater Treatment	Wastewater Treatment	30199999
30182003	Industrial Processes	Chemical Manufacturing	Wastewater Treatment	Wastewater Treatment	30199999
30183001	Industrial Processes	Chemical Manufacturing	General Processes	Storage/Transfer	30199999
30184001	Industrial Processes	Chemical Manufacturing	General Processes	Distillation Units	30199999
30188801	Industrial Processes	Chemical Manufacturing	Fugitive Emissions	Specify in Comments Field	30199999
30188802	Industrial Processes	Chemical Manufacturing	Fugitive Emissions	Specify in Comments Field	30199999
30188803	Industrial Processes	Chemical Manufacturing	Fugitive Emissions	Specify in Comments Field	30199999
30188804	Industrial Processes	Chemical Manufacturing	Fugitive Emissions	Specify in Comments Field	30199999
30188805	Industrial Processes	Chemical Manufacturing	Fugitive Emissions	Specify in Comments Field	30199999
30199998	Industrial Processes	Chemical Manufacturing	Other Not Classified	Specify in Comments Field	30199999
30302307	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Bentonite Storage	30302352
30302316	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Pellet Transfer to Storage	30302352
30302321	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Haul Road: Rock	30302352
30302351	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Induration: Grate/Kiln, Gas-fired, Acid Pellets	30302352
30302359	Industrial Processes	Primary Metal Production	Taconite Iron Ore Processing	Induration: Grate/Kiln, Coal-fired, Acid Pellets	30302352
30302401	Industrial Processes	Primary Metal Production	Metal Mining (General Processes)	Primary Crushing: Low Moisture Ore	30302352
30302404	Industrial Processes	Primary Metal Production	Metal Mining (General Processes)	Material Handling: Low Moisture Ore	30302352
30302408	Industrial Processes	Primary Metal Production	Metal Mining (General Processes)	Material Handling: High Moisture Ore	30302352
30302411	Industrial Processes	Primary Metal Production	Metal Mining (General Processes)	Ore Drying	30302352
30304013	Industrial Processes	Primary Metal Production	Alumina Processing - Bayer Process	Filter/Wash	30302352
30304017	Industrial Processes	Primary Metal Production	Alumina Processing - Bayer Process	Cooling of Alumina	30302352
30500101	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Asphalt Blowing: Saturant (Use 3-05-050-10 for MACT)	30500258
30500102	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Asphalt Blowing: Coating (Use 3-05-050-10 for MACT)	30500258
30500103	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Felt Saturation: Dipping Only	30500258
30500105	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	General **	30500258
30500108	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Shingles and Rolls: Coating	30500258
30500111	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Dipping Only	30500258
30500113	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Dipping/Spraying	30500258
30500114	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Asphaltic Felt: Coating	30500258
30500130	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Fixed Roof Tank: Asphalt/Breathing Loss	30500258
30500131	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Fixed Roof Tank: Working Loss	30500258
30500133	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Floating Roof Tank: Working Loss	30500258

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30500142	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Mineral Dust Unloading	30500258
30500143	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Mineral Dust Storage	30500258
30500144	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Granules Transport Screw Conveyor and Bucket Elevator	30500258
30500145	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Mineral Dust Transport Screw Conveyor and Bucket Elevator	30500258
30500151	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Granules	30500258
30500154	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Finish Floating Looper	30500258
30500198	Industrial Processes	Mineral Products	Asphalt Roofing Manufacture	Other Not Classified	30500258
30500201	Industrial Processes	Mineral Products	Asphalt Concrete	Rotary Dryer: Conventional Plant (see 3-05-002-50 to -53 for subtypes)	30500258
30500202	Industrial Processes	Mineral Products	Asphalt Concrete	Batch Mix Plant: Hot Elevs, Screens, Bins&Mixer (also see -45 thru -47	30500258
30500203	Industrial Processes	Mineral Products	Asphalt Concrete	Storage Piles	30500258
30500204	Industrial Processes	Mineral Products	Asphalt Concrete	Cold Aggregate Handling	30500258
30500205	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Dryer: Drum Mix Plant (see 3-05-002-55 thru -63 for subtypes)	30500258
30500211	Industrial Processes	Mineral Products	Asphalt Concrete	Rotary Dryer Conventional Plant with Cyclone ** use 3-05-002-01 w/CTL	30500258
30500212	Industrial Processes	Mineral Products	Asphalt Concrete	Heated Asphalt Storage Tanks	30500258
30500213	Industrial Processes	Mineral Products	Asphalt Concrete	Storage Silo	30500258
30500214	Industrial Processes	Mineral Products	Asphalt Concrete	Truck Load-out	30500258
30500216	Industrial Processes	Mineral Products	Asphalt Concrete	Cold Aggregate Feed Bins	30500258
30500217	Industrial Processes	Mineral Products	Asphalt Concrete	Cold Aggregate Conveyors and Elevators	30500258
30500240	Industrial Processes	Mineral Products	Asphalt Concrete	Mixers: Batch Process (also see -45 thru -47 for combos w/scr,bins	30500258
30500242	Industrial Processes	Mineral Products	Asphalt Concrete	Mixers: Drum Mix Process ** (use 3-05-002-005 and subtypes)	30500258
30500250	Industrial Processes	Mineral Products	Asphalt Concrete	Conventional Continuous Mix (outside of drum) Plant: Rotary Dryer	30500258
30500251	Industrial Processes	Mineral Products	Asphalt Concrete	Batch Mix Plant: Rotary Dryer, Natural Gas-Fired (also see -45)	30500258
30500252	Industrial Processes	Mineral Products	Asphalt Concrete	Batch Mix Plant: Rotary Dryer, Oil-Fired (also see -46)	30500258
30500255	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Mix Plant: Rotary Drum Dryer / Mixer, Natural Gas-Fired	30500258
30500256	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Mix Plant: Rotary Drum Dryer / Mixer, Natural Gas, Parallel Flow	30500258
30500259	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Mix Plant: Rotary Drum Dryer / Mixer, #2 Oil-Fired, Parallel Flow	30500258
30500260	Industrial Processes	Mineral Products	Asphalt Concrete	Drum Mix Plant: Rotary Drum Dryer / Mixer, #2 Oil-Fired, Counterflow	30500258
30500290	Industrial Processes	Mineral Products	Asphalt Concrete	Haul Roads: General	30500258
30500298	Industrial Processes	Mineral Products	Asphalt Concrete	Other Not Classified	30500258

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30500299	Industrial Processes	Mineral Products	Asphalt Concrete	See Comment **	30500258
30500607	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Material Unloading	30500623
30500608	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Material Piles	30500623
30500609	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Primary Crushing	30500623
30500610	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Secondary Crushing	30500623
30500611	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Screening	30500623
30500612	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Material Transfer	30500623
30500613	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Material Grinding and Drying	30500606
30500614	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Clinker Cooler	30500606
30500615	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Clinker Piles	30500606
30500616	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Clinker Transfer	30500606
30500617	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Clinker Grinding	30500606
30500618	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Cement Silos	30500606
30500619	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Cement Load Out	30500606
30500621	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Pulverized Coal Kiln Feed Units	30500623
30500622	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Preheater Kiln	30500623
30500624	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Mill Feed Belt	30500623
30500625	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Raw Mill Weigh Hopper	30500623
30500627	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Finish Grinding Mill Feed Belt	30500623
30500628	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Finish Grinding Mill Weigh Hopper	30500623
30500629	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Finish Grinding Mill Air Separator	30500623
30500699	Industrial Processes	Mineral Products	Cement Manufacturing (Dry Process)	Other Not Classified	30500606
30500707	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Raw Material Unloading	30500623

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
30500708	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Raw Material Piles	30500623
30500709	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Primary Crushing	30500623
30500710	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Secondary Crushing	30500623
30500711	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Screening	30500623
30500712	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Raw Material Transfer	30500623
30500714	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Clinker Cooler	30500623
30500716	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Clinker Transfer	30500623
30500717	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Clinker Grinding	30500623
30500718	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Cement Silos	30500623
30500719	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Cement Load Out	30500623
30500727	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Finish Grinding Mill Feed Belt	30500623
30500728	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Finish Grinding Mill Weigh Hopper	30500623
30500729	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Finish Grinding Mill Air Separator	30500623
30500799	Industrial Processes	Mineral Products	Cement Manufacturing (Wet Process)	Other Not Classified	30500623
30501406	Industrial Processes	Mineral Products	Glass Manufacture	Container Glass: Forming/Finishing	30501402
30501407	Industrial Processes	Mineral Products	Glass Manufacture	Flat Glass: Forming/Finishing	30501403
30501408	Industrial Processes	Mineral Products	Glass Manufacture	Pressed and Blown Glass: Forming/Finishing	30501404
30501621	Industrial Processes	Mineral Products	Lime Manufacture	Calcining: Coal- and Coke-fired Rotary Kiln	30501618
30501622	Industrial Processes	Mineral Products	Lime Manufacture	Calcining: Coal-fired Rotary Preheater Kiln	30501618
30505001	Industrial Processes	Mineral Products	Asphalt Processing (Blowing)	Asphalt Processing (Blowing)	30500258
30505005	Industrial Processes	Mineral Products	Asphalt Processing (Blowing)	Asphalt Storage (Prior to Blowing)	30500258
30510202	Industrial Processes	Mineral Products	Bulk Materials Storage Bins	Cement	30500623
30510402	Industrial Processes	Mineral Products	Bulk Materials Unloading Operation	Cement	30500623
30510502	Industrial Processes	Mineral Products	Bulk Materials Loading Operation	Cement	30500623
30600199	Industrial Processes	Petroleum Industry	Process Heaters	Other Not Classified	30600906
30600904	Industrial Processes	Petroleum Industry	Flares	Process Gas	30600106
30600999	Industrial Processes	Petroleum Industry	Flares	Not Classified **	30600906
30609904	Industrial Processes	Petroleum Industry	Incinerators	Process Gas	30600906

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
31400901	Industrial Processes	Transportation Equipment	Automobiles/Truck Assembly Operations	Solder Joint Grinding	40201602
31400902	Industrial Processes	Transportation Equipment	Automobiles/Truck Assembly Operations	Soldering Machine	40201602
31400903	Industrial Processes	Transportation Equipment	Automobiles/Truck Assembly Operations	Stamping	40201602
39000489	Industrial Processes	In-process Fuel Use	Residual Oil	General	10200401
39000989	Industrial Processes	In-process Fuel Use	Wood	General	10200902
39001299	Industrial Processes	In-process Fuel Use	Solid Waste	General	10200902
39090002	Industrial Processes	In-process Fuel Use	Fuel Storage - Fixed Roof Tanks	Residual Oil: Working Loss	10200401
39092052	Industrial Processes	In-process Fuel Use	Fuel Storage - Pressure Tanks	Landfill Gas: Withdrawal Loss	10200902
40201001	Petroleum and Solvent Evaporation	Surface Coating Operations	Coating Oven Heater	Natural Gas	10200603
40201303	Petroleum and Solvent Evaporation	Surface Coating Operations	Paper Coating	Coating Mixing	40201301
40201304	Petroleum and Solvent Evaporation	Surface Coating Operations	Paper Coating	Coating Storage	40201301
40201601	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Application/Electrodeposition/Dip/Spray	40201602
40201603	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Coating Mixing	40201602
40201607	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Sealers	40201602
40201608	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Deadeners	40201602
40201609	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Anti-corrosion Priming	40201602
40201619	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Surfacing Operation	40201602
40201620	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Repair Topcoat Application Area	40201602
40201621	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Coating: Solvent-borne - Automobiles	40201602
40201622	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Coating: Electrodeposition - Automobiles	40201602
40201623	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Guide Coating: Solvent-borne - Automobiles	40201602
40201624	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Guide Coating: Water-borne - Automobiles	40201602
40201626	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Topcoat: Water-borne - Automobiles	40201602
40201627	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Coating: Solvent-borne - Light Trucks	40201602
40201628	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Prime Coating: Electrodeposition - Light Trucks	40201602
40201629	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Guide Coating: Solvent-borne - Light Trucks	40201602
40201630	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Guide Coating: Water-borne - Light Trucks	40201602
40201631	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Topcoat: Solvent-borne - Light Trucks	40201602
40201632	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Topcoat: Water-borne - Light Trucks	40201602
40201699	Petroleum and Solvent Evaporation	Surface Coating Operations	Automobiles and Light Trucks	Other Not Classified	40201602
40201903	Petroleum and Solvent Evaporation	Surface Coating Operations	Wood Furniture Surface Coating	Coating Mixing	40201901
40202203	Petroleum and Solvent Evaporation	Surface Coating Operations	Plastic Parts	Coating Mixing	40202201
40202503	Petroleum and Solvent Evaporation	Surface Coating Operations	Miscellaneous Metal Parts	Coating Mixing	40202501

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
40202504	Petroleum and Solvent Evaporation	Surface Coating Operations	Miscellaneous Metal Parts	Coating Storage	40202501
40290013	Petroleum and Solvent Evaporation	Surface Coating Operations	Fuel Fired Equipment	Natural Gas: Incinerator/Afterburner	10200603
40290023	Petroleum and Solvent Evaporation	Surface Coating Operations	Fuel Fired Equipment	Natural Gas: Flares	10200603
49090013	Petroleum and Solvent Evaporation	Organic Solvent Evaporation	Fuel Fired Equipment	Natural Gas: Incinerators	10200603
49090023	Petroleum and Solvent Evaporation	Organic Solvent Evaporation	Fuel Fired Equipment	Natural Gas: Flares	10200603
50300601	Waste Disposal	Solid Waste Disposal - Industrial	Landfill Dump	Waste Gas Flares	10200902
50300789	Waste Disposal	Solid Waste Disposal - Industrial	Liquid Waste	Sludge Digester Gas Flare	10200902
50390006	Waste Disposal	Solid Waste Disposal - Industrial	Auxiliary Fuel/No Emissions	Natural Gas	10200603
64130001	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Bulk Polymerization, Batch-cell Method	Polymethyl Methacrylate Resins: Bulk, Batch Cell Process	30101899
64130111	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Bulk Polymerization, Continuous Casting	Process Vents, Reactor: Curing Zone	30101899
64130201	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Bulk Polymeriz'n, Centrifugal Polymeriz'n	Polymethyl Methacrylate Resins: Bulk, Centrifugal Process	30101899
64130210	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Bulk Polymeriz'n, Centrifugal Polymeriz'n	Process Vents: Bulk, Centrifugal Process	30101899
64130211	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Bulk Polymeriz'n, Centrifugal Polymeriz'n	Process Vents: Reactor	30101899
64131001	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Solution Polymerization	Polymethyl Methacrylate Resins: Solvent Process	30101899
64131020	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Solution Polymerization	Process Vents: Dryer	30101899
64132001	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Emulsion Polymerization	Polymethyl Methacrylate Resins: Emulsion Process	30101899
64132010	MACT Source Categories	Styrene or Methacrylate Based Resins	Polymethyl Methacrylate Prod - Emulsion Polymerization	Process Vents: Emulsion Process	30101899
64182001	MACT Source Categories	Styrene or Methacrylate Based Resins	Wastewater, Aggregate	Process Area Drains	30101899
64520001	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Alkyd Production: Solvent Process	30101899
64520010	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Polymerization Reaction	30101899
64520011	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Polymerization Reaction: Kettle	30101899

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
64520020	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Product Finishing	30101899
64520021	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Product Finishing: Thinning Vessels	30101899
64520023	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	Product Finishing: Intermediate Storage	30101899
64520040	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Solvent Process	End Product Storage	30101899
64521001	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Fusion Process	Alkyd Production: Fusion Process	30101899
64521011	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Fusion Process	Polymerization Reaction: Kettle	30101899
64521020	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Fusion Process	Product Finishing	30101899
64521021	MACT Source Categories	Miscellaneous Resins	Alkyd Resin Production, Fusion Process	Product Finishing: Thinning Vessels	30101899
64610010	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Emulsion, Latex Prod.	Raw Material Preparation	30101899
64610020	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Emulsion, Latex Prod.	Polymerization	30101899
64610021	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Emulsion, Latex Prod.	Polymerization: Reactor Opening Loss	30101899
64610041	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Emulsion, Latex Prod.	Product Finishing: Polymer Holding Tanks	30101899
64610050	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Emulsion, Latex Prod.	End Product Storage	30101899
64610101	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production-Emulsion, Dried Resin Prod.	Emulsion Polymerization: Dried Resin	30101899
64610331	MACT Source Categories	Vinyl-based Resins	Polymerized Vinylidene Chloride Production - Solution, Batch Process	Material Recovery: Stripping Vessel	30101899
64615010	MACT Source Categories	Vinyl-based Resins	Polyvinyl Acetate Emulsions, Batch Emulsion Process	Polymerization	30101899
64620015	MACT Source Categories	Vinyl-based Resins	Polyvinyl Alcohol Production, Solution Polymerization	Polymerization and Hydrolysis	30101899
64630001	MACT Source Categories	Vinyl-based Resins	Polyvinyl Chloride and Copolymers Production - Suspension Process	PVC and Copolymers Production: Suspension Process	30101899

SCC	DESC_1	DESC_2	DESC_3	DESC_4	Same Growth Indicator As
64633080	MACT Source Categories	Vinyl-based Resins	Polyvinyl Chloride and Copolymers Production - Bulk Process	Fugitive Emissions	30101899
64820001	MACT Source Categories	Miscellaneous Polymers	Maleic Anhydride Copolymers Production - Bulk Polymerization	Maleic Anhydride Copolymer Production - Bulk Polymerization	30101899
64822001	MACT Source Categories	Miscellaneous Polymers	Maleic Anhydride Copolymers Production - Emulsion Polymerization	Maleic Anhydride Copolymer Production - Emulsion Polymerization	30101899
64822010	MACT Source Categories	Miscellaneous Polymers	Maleic Anhydride Copolymers Production - Emulsion Polymerization	Process Vents: Emulsion Process	30101899
64882599	MACT Source Categories	Miscellaneous Polymers	Wastewater, Points of Generation	Specify Point of Generation	30101899
64931031	MACT Source Categories	Fibers Production Processes	Spandex Fiber Production, Reaction Spun Process	Fiber Finishing: Drying Oven	30101899