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**Ranking of Stationary Source NOx Control Measures**

On January 11, 1993, the Strategy Project Team developed a "first cut" list of stationary source NOx control measures. The purpose of preparing this list was to prioritize the NOx control measures to be evaluated by the Point and Area Source Strategy Subcommittees. It must be understood that identification of these NOx control measures does not imply a commitment by any State to adopt the measures.

Each State compiled their own ranking of NOx control measures using the methodology outlined in Attachment 1. This methodology was suggested by the State of Michigan and was used previously by Michigan to rank control measures in the Detroit area. Emission reduction potential was determined by each State based on the % reduction anticipated within that source category, not within the entire inventory. (As a result, source categories with relatively low emissions can appear in the highest or high bins.) Ease of implementation was subjectively determined considering factors such as the feasibility of add-on controls or improved control technology for existing controls, and expected costs. Ease of enforcement was also subjectively determined considering factors such as the number of sources in a given category, and expected compliance strategies.

The lists prepared by the States are presented in Attachments 2 - 5. Each category ranked in the highest or high bins by each State was discussed. Based on the cumulative rankings by the four States, nine (9) source categories were selected for the first-cut list of NOx control measures.

A 2 - 3 page "White Paper" (following the format in the South Coast control strategy document) will be prepared for each of the first-cut measures by the States by February 1, 1993. With respect to the emissions section of the White Paper, the author State will include their individual emission reduction estimates and an appendix which explains the methodology used in making this calculation. For the purposes of the initial analysis, only emission reductions within the currently designated nonattainment areas should be considered.

The first-cut list of NOx control measures, along with the White Paper assignments, are as follows:

## FIRST-CUT LIST OF NOX CONTROL MEASURES

Electric Utilities - coal-fired (MI)  
oil/gas-fired (WI)

Commercial/Institutional Boilers - coal-fired (MI)  
oil/gas-fired (WI)

Industrial Boilers - coal-fired (MI)  
oil/gas-fired (WI)

Petroleum Refining (IL)

Internal Combustion Engines (IL)

Mineral Products (IL) - e.g., glass manufacturing, lime manufacturing, and cement manufacturing

Iron/Steel (IN)

Gas Turbines (IL)

Off-Road Engines (WI) - e.g., industrial equipment, construction equipment, and farm equipment

**NOTE: Each State must also prepare their own White Paper to address RACT Improvements (fix-ups, geographic expansion) and Major Source Definition.**

Additional control measures (e.g., source categories which are unique to a given State and source categories which have significant emissions in only one or two States) will be identified at a later date for subsequent evaluation.

## ABOUT RANKING VOC SOURCES -- (EXCLUDING ON-ROAD VEHICLE MEASURES)

1. Sources were originally prioritized according to tons per day emitted, as reported in the 1987 emission inventory.
2. Ranking criteria was based on emission reduction potential, ease of implementation, and ease of enforcement and were rated high, medium, or low for each source category:
  - a) *emission reduction potential* rating considered the quantity of remaining emissions after control, if applicable, or after a new CTG is implemented. The rating considered whether any remaining sub-sources could be regulated or whether any emission control techniques (equipment or limits) have been implemented and are in practice and go beyond the current rule (where applicable);
  - b) *ease of implementation* rating considered whether retrofitting the existing sources is feasible, whether technology is "readily available", and if cost to implement emission reducing measures is reasonable;
  - c) *ease of enforcement* rating considered the number of sources, whether a self-reporting system would be adequate or if inspections would be required, and if compliance strategies could be merged with current tracking systems.
3. For each source category the criteria for ease of implementation and ease of enforcement were given numerical ratings of 1, 2, or 3 for low, medium, or high. The emission reduction potential criteria was weighted twice to indicate Air Quality Division's priority of reducing maximum emissions, consequently sources received a rating of 2, 4, or 6 or low, medium, or high emission reduction potential.
4. Each source category's score was totalled, with 12 points being the highest (all criteria rated high) and with 4 points being the lowest (all criteria rated low).
5. The source categories were grouped into 5 bins based on the following scores:
 

highest	12
high	11, 10
medium	9, 8, 7
low	6, 5
lowest	4
6. Source categories with total annual emissions less than 10 tpy were bumped into the lowest bin.

WISCONSIN NOX POINT AND AREA CONTROL MEASURE RANKING  
FOR OZONE STUDY AREA

FROM SCC	TO SCC	CONTROL MEASURE	SOURCE TYPE	NUM NOX PPGS	TONS PER DAY	% OF TOTAL NOX	REGS	BY 98	EMISSION REDUCTION POTENTIAL	EASE OF IMPLEMENTATION	EASE OF ENFORCEMENT	TOTAL RANKING POINTS
10100101	10101302	EXTOMB BOILRS-ELEC GENERATION	P	93	240.281		ACT	NO	HIGH	HIGH	HIGH	12
<b>HIGHEST BIN</b>												
10300207	10301301	EXTOMB BOILRS-COMMERCL/INSTITUTNL	P	95	1.882		ACT	NO	HIGH	MED	HIGH	11
60300101	60300901	SLD WST DISP-INDUSTRIAL	P	23	0.454		NO	NO	HIGH	MED	HIGH	11
50100101	50190010	ON-SITE INCINERATION	A		0.433		NO	NO	HIGH	HIGH	MED	11
10200104	10201404	SLD WST DISP-COVERMENT	P	15	0.332		NO	NO	HIGH	MED	HIGH	11
50200101	50200506	EXTOMB BOILRS-INDUSTRIAL	P	621	42.728		ACT	NO	HIGH	MED	MED	10
		SLD WST DISP-COMMERCL/INSTITNL	P	15	7.022		NO	NO	MED	HIGH	HIGH	10
<b>MEDIUM BIN</b>												
		CONFUCTION EQUIPMENT	A		63.578		NO	NO	MED	MED	HIGH	9
		INDUS'RIAL EQUIPMENT	A		13.864		NO	NO	MED	MED	HIGH	9
20300101	20300202	INTOMB ENGB-COMMERCL/INSTITNL	P	7	1.319		ACT	NO	MED	MED	HIGH	9
30501402	30501406	CONTAINER GLASS MFG	P	4	1.711		ACT	NO	MED	MED	HIGH	8
20200101	20200501	INTOMB ENGB-INDUSTRIAL	P	16	1.574		ACT	NO	MED	MED	HIGH	8
20100101	20100802	INTOMB ENGB-ELEC GENERATION	P	16	1.561		ACT	NO	MED	MED	HIGH	8
30501602	30501659	LIME MFG	P	5	0.794		NO	NO	MED	MED	HIGH	8
30500201	30500269	ASPHALT PAVING MATL PFDUCTION	P	46	0.559		NO	NO	MED	MED	HIGH	8
30400701	30400769	STEEL FOUNDRIES	P	29	0.442		NO	NO	MED	MED	HIGH	8
30400301	30400369	GREY IRON FOUNDRIES	P	90	0.297		NO	NO	MED	MED	HIGH	8
30700101	30700259	SULFATE/SULF' E PULPING	P	5	0.154		NO	NO	MED	MED	HIGH	8
		COMMERCIAL/INSTITUTIONAL FUEL COMBUSTI	A		8.689		NO	NO	MED	MED	HIGH	8
30201301	30201361	MEAT SMOKING-COMBINED OPERATIONS	P	22	0.227		NO	NO	MED	MED	MED	8
		INDUSTRIAL FUEL COMBUSTION	A		22.761		NO	NO	LOW	HIGH	MED	7
		RAILROADS	A		6.613		NO	NO	LOW	MED	HIGH	7
		RESIDENTIAL FUEL COMBUSTION	A		6.955		NO	NO	MED	MED	LOW	7
<b>LOW BIN</b>												
		AIRCRAFT	A		2.863		NO	NO	LOW	LOW	MED	5
		LAWN AND GARDEN EQUIPMENT	A		0.768		NO	NO	LOW	LOW	MED	5
30400101	30400199	SECONDARY ALUMINUM PFDUCTION	P	51	0.385		NO	NO	LOW	LOW	MED	5
20400101	20400402	INTOMB ENGB-ENGN TESTING	P	13	0.197		NO	NO	LOW	LOW	MED	5
30402201	30402201	METAL HEAT TREATING-FURNACE	P	4	0.180		NO	NO	LOW	LOW	MED	5
		RECREATIONAL VESSELS	A		0.152		NO	NO	LOW	LOW	MED	5
30501701	30501759	MINERAL WOOL MFG	P	2	0.094		NO	NO	LOW	LOW	MED	5
40500201	40500212	LETTER PRESS PRINTING	P	20	0.090		NO	NO	LOW	LOW	MED	5
40200101	40201014	SURFACE COATING-GENERAL	P	21	0.076		NO	NO	LOW	LOW	MED	5
30290003	30290003	FOOD/AG-PROCESS HTRS	P	4	0.070		NO	NO	LOW	LOW	MED	5
30890003	30890003	RUBBR/MISC PLS' C PRDCTS-PROCESS HTRS	P	2	0.062		NO	NO	LOW	LOW	MED	5
		OFF-H GHWAY MOTORCYCLES	A		0.061		NO	NO	LOW	LOW	MED	5
30400803	30400818	SECONDARY ZINC PFDUCTION	P	6	0.040		NO	NO	LOW	LOW	MED	5

FROM SSC TO SSC	CONTROL MEASURE	SOURCE TYPE	NUM NOX PRCS	TONS PER DAY	% OF TOTAL NOX	REGS	BY 98	EMISSION REDUCTION POTENTIAL	EASE OF IMPLEMENTATION	EASE OF ENFORCEMENT	TOTAL RANKING POINTS
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**LOWEST BIN**

	OPEN BURNING	A		0.888		NO	NO	LOW	LOW	LOW	4
	COMMERCIAL VESSELS (DOCKSIDE)	A		0.089		NO	NO	LOW	LOW	LOW	4
	STRUCTURE FIRES	A		0.071		NO	NO	LOW	LOW	LOW	4
	FOREST WILDFIRES	A		0.058		NO	NO	LOW	LOW	LOW	4
30901001	ELECTROPLATING OPERATIONS	P	3	0.031		NO	NO				4
30490001	SECONDARY METALS-PROCESS HTFS	P	8	0.025		NO	NO				4
10500105	EXFCOMBS BOILERS-SPACE HTFS	P	25	0.023		NO	NO				4
30100601	CHARCOAL MFG	P	1	0.020		NO	NO				4
30400204	SECONDARY COPPER PRODUCTION	P	1	0.018		NO	NO				4
30203001	DAIRY PROCTS-MILK PRODUCTION	P	3	0.017		NO	NO				4
	LANDFILLS	A		0.016		NO	NO				4
30390003	METAL PRODUCTION-PROCESS HTFS	P	2	0.014		NO	NO				4
30700701	PLYWOOD/PARTICLEBOARD PRODUCTION	P	1	0.013		NO	NO				4
30102706	AG CHEMICAL MFG	P	1	0.009		NO	NO				4
30901101	CONVERSION COATING OF METAL PROCTS	P	3	0.007		NO	NO				4
40290023	SURFACE COATING-FLARES	P	7	0.005		NO	NO				4
30300934	STEEL PRODUCTION-ROLL/FINISHING	P	2	0.005		NO	NO				4
31000299	NATURAL GAS PRODCTN-NOT CLASSIFD	P	1	0.005		NO	NO				4
39990001	MISC MFG INDUSTRIES-PROCESS HTFS	P	4	0.004		NO	NO				4
28888802	INTCOMB ENGNs-FUGITIVE	P	3	0.003		NO	NO				4
30902501	DRUM RECLAMATION-BURNOUT FURNACE	P	2	0.002		NO	NO				4
40500101	PRINTING/PUBLISH	P	11	0.002		NO	NO				4
30790003	PAPER & WOOD PRODUCTS-PROCESS HTFS	P	3	0.001		NO	NO				4
31390002	ELEG EQUIPMENT REPAIR-NOT CLASSIFD	P	1	0.000		NO	NO				4
31401001	BRAKE SHOE DEBOND NG	P	1	0.000		NO	NO				4

Additional information is necessary to characterize the processes reported in the following control measures before an evaluation can be made.

30990003	FAB METAL PROCTS-PROCESS HTFS	P	2	333.986							
36000203	IN-PROCESS FUEL USE	P	758	10.513							
39999903	MISC MFG INDUSTRIES-NOT CLASSIFD	P	5	0.272							
49099998	MISC VOC EVAPORATION	P	26	0.000							