

# **Appendix A**

## **80 Options Evaluated by the NOACA Air Quality Public Advisory Task Force**

**May 2005 - May 2006**

**The counties covered by this list of options are:**

**Ashtabula  
Cuyahoga  
Geauga  
Lake  
Lorain  
Medina  
Portage  
Summit**



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**BY RANKING**

# s	Potential Emission Reduction Options 2009	VOC/HC Tons/Day Eliminated	NOx Tons/Day Eliminated	Cost Per Ton	Costs	Sum Weighted Vote Total	Recommended by Task Force?
PT-9	Cold Cleaners/Degreasers - Adopt Chicago/Metro East regulations	8.0000	0.0000	\$ 1,400	\$4.3 million	185	Yes, on a statewide basis.
PT-7	Industrial Surface Coatings - Area Sources - SOLV5A - more stringent RACT regulations, lower applicability thresholds & extend geographic areas	13.0000	0.0000	\$100-5,000	\$0.5-24 million	181	Yes, on a statewide basis.
MO-1	Summer fuel - Low-RVP gasoline of 7.8 psi	5.25	0.32	\$7,367 VOC	1 cent at refinery	155	Yes for 2009, followed by 7.0 psi for 2010 until attainment & 155 redesignation
MO-25	Anti-Idling Policies - assuming 500,000 participating vehicles across NAA	1,466	0.402	Cost savings	Cost savings	143	Yes, to be set at the "state policy level."
MO-14	Trip Reduction Program - Voluntary - All Residents in Nonattainment Area	2.12	4.63	Cost savings and costs to implement	Cost savings and costs to implement	130	Yes
PT-12	Consumer & Commercial Products - SOLV2A - adopt OTC Model Rules with additional product coverage & more stringent VOC limits (14.2% reduction beyond Federal rules)	4.0000	0.0000	\$800	\$ 1.2 million	130	Yes, on a statewide basis.
AR-13	Portable Fuel Containers - Adopt Ozone Transport Commission Model Rule	4.0000	0.0000	\$250-480	\$2-3 million	123	Yes, on a statewide basis.
PT-3	ICI 1 Boilers - Apply 60% NOx Reduction (NOx SIP Call for mid-sized boilers 100-250 mmBtu/hr) (24% reduction 2002)	0.0000	2.0000	\$280-1,300	\$0.2-0.7 million	121	Yes, on a statewide basis.

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MO-2	Summer fuel - Low-RVP gasoline of 7.0 psi	8.2	0.48	\$14,150 VOC	0.6-3 cents at refinery	112	Yes, for 2010 until attainment & redesignation, preceded by 7.8 psi in 2009
PT-1	EGU 1 - Emissions Caps based on "Retrofit NOx BACT" levels of 0.10 lbs/mmBtu NOx (33% reduction from CAIR)	0.0000	14.0000	\$700-1,600	\$4-14 million	107	Yes, as may be needed, coupled with PT-2, as may be needed, based on modeling and implemented on a multi-state basis. Operating and maintenance costs were not included. Capital costs may be underestimated. PT-1 or PT-2 MAY NOT be implementable before 2011, according to industry.
AR-1	Anti-Idling Policy at the Port of Cleveland - Trucks	0.0020	0.0190	Unknown	Enforcement Costs Fuel Savings	104	Yes, as part of MO-25.
PT-2	EGU 2 - Emissions Caps based on "NOx BACT for New Plants" levels of 0.07 lbs/mmBtu NOx (53% reduction from CAIR)	0.0000	28.0000	\$700-2,100	\$7-27 million	100	Yes, if needed, as part of PT-1 (see above).
MO-3	Summer fuel - Federal Reformulated Gasoline	11.22	0.13	\$20,683 VOC	1.7-6.2 cents at refinery	98	No, due to lack of implementation capability prior to 2009.
MO-20	Truck Stop Electrification at the 3 truck stops in the NAA	0.02	0.38	\$44,838 VOC and \$2,359 NOx over 10 years	\$3,273,200	85	Yes
PT-16	Gasoline Distribution Facilities - SOLV7A - adopt CARB EVR Stage I Requirements	2.0000	0.0000	\$0-2,100	\$0-2 million	81	Yes, with Stage I for all gas stations statewide.
PT-5	ICI 3 Boilers - Apply 80% reduction (similar to BART) to mid-sized boilers (100-250 mmBtu/hr) (6% reduction 2002)	0.0000	2.5000	\$536-4,493	\$0.05-4 million	78	No - See PT-3 above.

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PT-15	Auto Body Refinishing HVLSP Spray Guns - SOLV4B - adopt more stringent RACT requirements based on SCAQMD 1145	4.0000	0.0000	\$7,200	\$11 million	75	Yes, on a statewide basis.
MO-16	Intelligent Transportation System - Cleveland Area	0.549	-0.071	\$23,330 VOC over 6 years	\$28 million	72	Yes.
PT-21	Grant funding for energy efficiency projects	UnK	UnK	Receipt of Receipt of Grant Funds	Grant Funds	70	Yes.
MO-28	Alternative Fuel - Biodiesel	0	0.001	Approximately neutral	Approximately neutral - assume 100 refuse trucks	60	Tabled until PM2.5 discussions in fall of 2006.
MO-26	Cash For Clunkers Program - Purchase all vehicles failing E-Check	0.03	0.03	\$1.1 million VOC \$1.1 million NOx	\$12,183,500	56	No, as not cost-effective and having no likely funding source.
MO-27	Alternative Fuel - Ethanol	0.0003	0.0001	Approximately neutral	Approximately neutral - assume 100 cars	56	Tabled until PM2.5 discussions in fall of 2006.
MO-17	Intelligent Transportation System - Akron Area	0.211	-0.093	\$31,162 VOC over 6 years	\$14.4 million	55	Yes.
PT-8	Industrial Surface Coatings - Point Sources - SOLV6B - more stringent RACT regulations, lower applicability thresholds & extend geographic areas	2.0000	0.0000	\$100-5,000	\$0.07-3.5 million	55	Yes, on a statewide basis.

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PT-10	AIM Coatings - SOLV1A - 21% reduction beyond Federal AIM Rules (40 CFR Part 59) and Wisconsin NR433.17 requirements	4.0000	0.0000	\$6,500	\$37 million	55	Yes, on a statewide basis.
PT-18	Gasoline Distribution Facilities - SOLV7C - require air pollution control devices for underground storage tank vents	1.0000	0.0000	Minimal	Minimal	55	No - See PT-16 above.
AR-3	Anti-Idling Policy at Cleveland Hopkins International Airport - Buses and Cars	0.0050	0.0010	Unknown	Enforcement Costs Fuel Savings	55	Yes, as part of MO-25.
AR-14	Portable Fuel Containers - Adopt incentive programs to phase in compliance	4.0000	0.0000	\$4,600	\$10 million	53	Yes, on a statewide basis.
MO-5	E-Check - Adopt ASM 2525 Final Standards for Older Vehicles	0.31	0.43	\$24,745 VOC and \$17,840 incremental cost to consumers	\$2.8 million NOx to consumers	50	Yes.
MO-15	Bus Replacements in NOACA TIP and AMATS TIP	0.001	0.52	\$5,507 NOx	\$240,000 per bus - less for an engine replacements	50	Yes.
MO-33	Transit Incentive for High Air Pollution Days	0.003	0.002	Unknown	Depends on number of days	50	Yes.
AR-6	Idling at Railroad Switch Yards - Auxiliary power units on switch yard locomotives	Unk	Unk	Unknown	Cost of APU; Fuel Savings	50	Yes, as part of MO-25.

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MO-22	Transit Centers in NOACA TIP	0.45	0.33	\$3,056 VOC over 10 years \$4,167 NOx over 10 years	\$5 million	41	Yes, with greater and more widespread use.
PT-17	Gasoline Distribution Facilities - SOLV7B - adopt CARB EVR Stage II Requirements	2.0000	0.0000	\$840-\$13,400	\$0.5-10 million	38	Yes.
MO-21	Traffic Signal Synchronizations in NOACA TIP and AMATS TIP	0.125	0.038	\$66,150 VOC over 10 years \$217,599 NOx over 10 years	\$30,181,000	37	Yes.
MO-12	On-Road Diesel Vehicles - NOx Retrofit - Selective Catalytic Reduction	0	0.4	\$3,139	\$2.75 million for 100 trucks	36	Yes.
MO-19	Additional Enforcement of Existing Speed Limits	-1.000	2.00	Cost savings	Cost savings	35	Yes.
PT-14	Auto Body Refinishing HVLP Spray Guns - SOLV4A - extend existing VOC RACT regulations beyond 1-hour Ozone nonattainment counties	1.5000	0.0000	\$1,354	\$0.75 million	35	Yes - See PT-15 above.
PT-30	NOx Credit Trading Bank	0.0000	Unk	Unknown	Cost to Ohio EPA to implement	35	Yes.
AR-2	Ground Support Equipment (GSE) Replacement with Electric, CNG, or Hydrogen	Unk	Unk	Unknown	Depends on vehicles replaced	35	Yes.

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MO-32	Ozone Action Program/ Fine Particle Program	0.003	0.002	\$1.7 million VOC and \$2.6 million NOx	\$250,000	34	No, except as part of MO-14 above.
MO-7	E-Check - Include Ashtabula County	0.108	0.065	\$25,367 VOC and \$42,149 NOx	\$1 million plus staff, maintenance & administration	33	No, as not cost-effective.
MO-4	E-Check - Change to Most Stringent Possible Program	3.13	1.09	\$99,325 VOC and \$285,218 NOx	\$44 million for administration and \$69 million to consumer	30	No.
MO-13	Trip Reduction Program - Mandatory - Government Employees in NAA	0.125	0.047	Cost savings and costs to implement	Cost savings and costs to implement	30	No - but see MO-14 above for voluntary.
AR-12	Clean Marina / Clean Boater Program	Unk	Unk	Unknown	Unknown	30	No.
MO-11	On-Road Diesel Vehicles - NOx Retrofit - Exhaust Gas Recirculation & Diesel Filter	0	0.15	\$5,970	\$2.3 million for 100 trucks	25	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
PT-29	Increased Enforcement and Funding for Enforcement	Unk	Unk	Unknown	\$800,000	25	No.
PT-4	ICI 2 Boilers - Apply likely controls to ICIs subject to BART (6% reduction 2002)	0.0000	0.4000	\$536-4,493	\$0.1-0.7 million	24	No - See PT-3 above.



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MO-23	Park & Ride Lot Enhancements in NOACA TIP	0.04	0.037	\$54,279 VOC over 10 years \$58,681 NOx over 10 years	\$7,925,000	23	Yes, as part of MO-22 above.
MO-30	Alternative Fuel - Natural Gas	0	0.4	\$9,188 NOx	\$3 million to purchase 100 dual-fuel engines		No, but will be re-visited during PM2.5 discussions in the fall of 22 2006.
PT-27	Encourage wind power on or near Lake Erie	Unk	Unk	Unknown	Unknown	21	No, but will be re-visited during PM2.5 discussions in the fall of 21 2006.
MO-18	Reduced Speed Limits from 65 mph to 55 mph where possible	-1,000	2.00	Cost savings	Cost savings	20	No.
MO-24	Transit Waiting Environment Improvements	0.003	0.002	Unknown	Unknown	20	Yes, as part of MO-22 above.
PT-6	Asphalt Batch Plants - Low-NOx burners	0.0000	Unk	Unk	Unk	20	No.
PT-13	Consumer & Commercial Products - SOLV2B - adopt CARB requirements in addition to SOLV2A (12.5% reduction beyond SOLV2A)	3.0000	0.0000	\$4,800	\$6 million	20	No - see PT-12 above.
PT-26	Create incentives for combined heat and power (CHP) projects	Unk	Unk	Unknown	Unknown	20	No.

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AR-4	Free Pick-up/Drop-off Parking Lot at Cleveland Hopkins International Airport	0.0280	0.0070	Unknown	Several million dollar loss annually	20	No.
AR-10	Construction Equipment - Selective Catalytic Reduction	0.0000	0.1400	\$7,788	\$2.75 million for 100 vehicles		No, but will be re-visited during PM2.5 discussions in the fall of 20 2006.
MO-29	Alternative Fuel - Emulsified Diesel (PuriNOx)	0	0.002	\$9,000 NOx for older trucks; more for newer	\$300,000 fuel cost - assume 100 trucks	19	No.
MO-31	Alternatively Powered Vehicles - Hybrid Electric	0.002	0.001	\$41,095 VOC and \$82,191 NOx	\$3,000 more per car = \$300,000 for 100 cars	15	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
MO-34	Roadside Diesel Testing for Particulate Matter	0	0	Unknown	May produce \$13 million annually in revenue	15	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
PT-11	AIMCoatings - SOLV1B - Adopt SCAQMD Phase III VOC limits to VOLV1A (13.4% reduction beyond SOLV1A)	4.0000	0.0000	\$20,000	\$16 million	15	No - see PT-10 above.
PT-24	Set a statewide or nonattainment-area-wide electricity reduction goal of 5%	UnK	UnK	Cost savings for all participants	Cost Savings for Region	15	No.
PT-25	Create incentives for government entities and businesses to replace electric devices with energy efficient models	UnK	UnK	Unknown	Unknown	15	No.

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PT-28	Create a statewide model Green Building Code with Lead rating system	Unk	Unk	Unknown	Unknown	15	No.
AR-5	Parking Garage - Improved Signage at Cleveland Hopkins International Airport	Unk	Unk	Unknown	Unknown	15	No.
AR-8	Construction Equipment - Lean-NOx Diesel Retrofits	0.0000	0.0700	\$10,542	\$2 million for 100 vehicles	15	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
MO-6	E-Check - Eliminate the Waiver	0.03	0.03	\$1.1 million VOC and \$1.1 million NOx	\$12,183,500 to consumers	10	No.
MO-8	On-Road Diesel Engine or Vehicle Replacement with Newer	0	0.4	\$4,423 NOx	\$4.5 million for 100 trucks	10	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
MO-9	On-Road Heavy Duty Diesel Vehicle Low-NOx Rebuild/Chip Reflashing	0	0.06	\$1,842	\$39,800 for 100 trucks	10	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
MO-10	On-Road Diesel Vehicles - NOx Retrofit - Lean-NOx Catalyst	0	0.15	\$5,905	\$2 million for 100 trucks	10	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
PT-19	Glass Manufacturing - GLASS1 - apply controls to achieve 30% reduction over uncontrolled	0.1400	0.0000	Unknown	Unknown	10	No.

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AR-7	Hybrid Electric Locomotives - replace existing switch yard locomotives	Unk	Unk	Unknown	\$1 million per engine	10 No.	
AR-9	Construction Equipment - Exhaust Gasoline Recirculation plus Diesel Filters (DPF)	0.0000	0.0600	\$23,788	\$2.3 million for 100 vehicles	10	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
AR-15	Diesel Agricultural Tractors - Lean-NOx Retrofits	0.0000	0.0040	\$10,498	\$104,980 for 10 tractors	10	No.
PT-20	Glass Manufacturing - GLASS2 - apply controls to achieve 75% reduction over uncontrolled	0.3500	0.0000	Unknown	Unknown	5	No.
AR-11	Construction Equipment - Replacing Older Engines with Newer Engines	0.0000	0.0600	\$7,675	\$1.375 million for 100 vehicles	5	No, but will be re-visited during PM2.5 discussions in the fall of 2006.
AR-17	Electric Tomotors for Industry					5	No.
PT-22	State appliance standards for electric appliances not covered by federal law	Unk	Unk	Unknown	Unknown	0	No.
PT-23	Disallow (PUCO) electric rates increases where there is no renewable energy initiative on the part of the EGU	Unk	Unk	Unknown	Unknown	0	No.

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AR-16	Diesel Agricultural Tractors - Replacing Older Engines with Newer Engines	0.0000	0.0060	\$7,833	\$134,500 for 10 tractors	0	No.