

**Table A-2  
Roadside Test Results:  
Predicted FTP Emission Rates and Overall Emission Reductions Achieved by Enhanced I/M (1999)**

Predicted FTP Emission Rates by Model-Year for Vehicles Tested on Roadside <b>After</b> a BAR97 ASM Smog Check Inspection*				Predicted FTP Emission Rates by Model-Year for Vehicles Tested on Roadside <b>Before</b> a BAR97 ASM Smog Check Inspection						Exhaust Emission Reductions			Exhaust Emission Reductions			
Model-Year	# tested	HC mean (g/mi)	NOx mean (g/mi)	CO mean (g/mi)	# tested	HC mean (g/mi)	NOx mean (g/mi)	CO mean (g/mi)	Avg Annual VMT per Vehicle	Number of Vehicles	HC Emission Reduction (tons/day)	NO Emission Reduction (tons/day)	CO Emission Reduction (tons/day)	HC % Reduction	NOx % Reduction	CO % Reduction
1966	24	8.62 +/- 2.31	1.86 +/- 0.46	97.6 +/- 32.4	24	8.62 +/- 2.31	1.86 +/- 0.46	97.6 +/- 32.4	4,747	37,769	0.00	0.00	0.00	0%	0%	0%
1967	20	10.77 +/- 5.35	2.34 +/- 0.68	109.0 +/- 39.7	20	10.77 +/- 5.35	2.34 +/- 0.68	109.0 +/- 39.7	4,882	39,927	0.00	0.00	0.00	0%	0%	0%
1968	29	7.81 +/- 3.28	2.20 +/- 0.52	77.1 +/- 25.2	29	7.81 +/- 3.28	2.20 +/- 0.52	77.1 +/- 25.2	5,097	47,016	0.00	0.00	0.00	0%	0%	0%
1969	17	9.62 +/- 4.94	3.16 +/- 1.00	96.9 +/- 39.8	17	9.62 +/- 4.94	3.16 +/- 1.00	96.9 +/- 39.8	5,406	56,399	0.00	0.00	0.00	0%	0%	0%
1970	30	6.83 +/- 1.81	2.65 +/- 0.65	78.2 +/- 24.7	30	6.83 +/- 1.81	2.65 +/- 0.65	78.2 +/- 24.7	5,581	56,508	0.00	0.00	0.00	0%	0%	0%
1971	22	6.08 +/- 1.76	2.66 +/- 0.69	77.9 +/- 31.6	22	6.08 +/- 1.76	2.66 +/- 0.69	77.9 +/- 31.6	5,858	55,812	0.00	0.00	0.00	0%	0%	0%
1972	32	9.25 +/- 7.66	2.59 +/- 0.67	77.1 +/- 24.4	32	9.25 +/- 7.66	2.59 +/- 0.67	77.1 +/- 24.4	6,182	70,668	0.00	0.00	0.00	0%	0%	0%
1973	62	8.18 +/- 2.99	2.43 +/- 0.37	79.1 +/- 17.5	62	8.18 +/- 2.99	2.43 +/- 0.37	79.1 +/- 17.5	6,419	78,455	0.00	0.00	0.00	0%	0%	0%
1974	16	6.58 +/- 5.19	3.24 +/- 1.09	52.7 +/- 24.4	29	9.32 +/- 5.74	3.14 +/- 0.79	77.5 +/- 26.3	6,709	58,940	3.27	-0.12	29.59	29%	-3%	32%
1975	19	5.15 +/- 2.59	2.88 +/- 1.06	54.7 +/- 27.7	21	4.62 +/- 1.53	2.63 +/- 0.86	66.7 +/- 28.3	6,809	46,928	-0.51	-0.24	11.57	####	####	18%
1976	22	4.35 +/- 1.34	2.71 +/- 0.86	67.7 +/- 27.2	32	8.80 +/- 8.13	2.77 +/- 0.78	57.9 +/- 18.6	6,838	74,696	6.86	0.09	-15.10	51%	2%	####
1977	57	4.98 +/- 3.23	2.55 +/- 0.42	49.6 +/- 15.3	71	6.95 +/- 4.15	2.58 +/- 0.39	58.1 +/- 14.7	6,877	116,232	4.75	0.07	20.50	28%	1%	15%
1978	57	3.59 +/- 1.49	2.49 +/- 0.46	42.7 +/- 13.3	78	6.45 +/- 2.28	2.88 +/- 0.49	54.6 +/- 13.3	7,058	143,266	8.73	1.19	36.31	44%	14%	22%
1979	81	4.46 +/- 1.30	2.37 +/- 0.35	47.2 +/- 11.2	91	4.70 +/- 2.03	2.47 +/- 0.38	47.1 +/- 11.2	7,221	174,446	0.91	0.38	-0.38	5%	4%	0%
1980	71	3.93 +/- 2.03	1.83 +/- 0.30	51.1 +/- 14.8	89	3.35 +/- 0.57	2.11 +/- 0.30	53.2 +/- 11.3	7,372	143,796	-1.86	0.90	6.72	####	13%	4%
1981	71	2.70 +/- 0.54	2.12 +/- 0.32	40.6 +/- 11.5	102	3.59 +/- 0.70	2.00 +/- 0.30	52.5 +/- 10.7	7,588	184,956	3.77	-0.51	50.39	25%	-6%	23%
1982	102	3.46 +/- 1.30	1.88 +/- 0.25	35.9 +/- 8.4	130	2.92 +/- 0.43	1.91 +/- 0.25	43.7 +/- 8.0	7,838	236,938	-3.03	0.17	43.71	####	2%	18%
1983	134	2.01 +/- 0.33	1.93 +/- 0.23	27.0 +/- 6.3	186	3.06 +/- 0.59	2.29 +/- 0.24	37.8 +/- 6.1	8,076	307,808	7.88	2.70	81.01	34%	16%	29%
1984	222	2.01 +/- 0.23	1.84 +/- 0.17	26.5 +/- 4.4	288	2.92 +/- 0.52	1.94 +/- 0.17	38.4 +/- 5.2	8,438	522,740	12.11	1.33	158.37	31%	5%	31%
1985	322	1.93 +/- 0.20	1.72 +/- 0.14	25.1 +/- 3.5	403	2.36 +/- 0.43	1.81 +/- 0.14	27.3 +/- 3.4	8,707	651,438	7.36	1.54	37.65	18%	5%	8%
1986	388	1.39 +/- 0.12	1.58 +/- 0.12	17.4 +/- 2.4	454	1.63 +/- 0.15	1.64 +/- 0.12	20.5 +/- 2.3	9,068	762,626	5.01	1.25	64.68	15%	4%	15%
1987	372	1.46 +/- 0.19	1.45 +/- 0.11	17.2 +/- 2.2	416	1.51 +/- 0.15	1.53 +/- 0.11	19.7 +/- 2.4	9,268	850,454	1.19	1.90	59.46	3%	5%	13%
1988	352	1.06 +/- 0.12	1.21 +/- 0.10	12.6 +/- 1.8	376	1.32 +/- 0.18	1.43 +/- 0.12	14.4 +/- 1.9	9,516	854,834	6.38	5.40	44.18	20%	15%	13%
1989	381	0.91 +/- 0.13	1.11 +/- 0.09	9.8 +/- 1.1	454	0.93 +/- 0.09	1.14 +/- 0.09	10.8 +/- 1.1	9,815	931,888	0.55	0.83	27.60	2%	3%	9%
1990	330	0.72 +/- 0.07	0.96 +/- 0.08	8.4 +/- 1.0	398	0.79 +/- 0.08	0.96 +/- 0.08	8.8 +/- 1.0	10,095	836,952	1.78	0.00	10.20	9%	0%	5%
1991	334	0.53 +/- 0.05	0.76 +/- 0.07	6.1 +/- 0.6	409	0.61 +/- 0.06	0.84 +/- 0.07	7.3 +/- 0.8	10,485	814,010	2.06	2.06	30.90	13%	10%	16%
1992	72	0.56 +/- 0.11	0.77 +/- 0.14	6.7 +/- 1.4	119	0.68 +/- 0.13	0.82 +/- 0.14	8.0 +/- 2.1	10,831	696,644	2.73	1.14	29.60	18%	6%	16%
1993	64	0.42 +/- 0.11	0.53 +/- 0.10	5.0 +/- 1.2	125	0.41 +/- 0.06	0.58 +/- 0.09	5.2 +/- 0.8	11,220	783,582	-0.27	1.33	5.31	-2%	9%	4%
1994	107	0.34 +/- 0.05	0.49 +/- 0.08	4.4 +/- 0.8	132	0.35 +/- 0.05	0.55 +/- 0.08	4.7 +/- 0.7	11,600	707,320	0.25	1.49	7.43	3%	11%	6%
1995	55	0.27 +/- 0.06	0.41 +/- 0.08	3.3 +/- 0.8	225	0.33 +/- 0.04	0.49 +/- 0.06	4.3 +/- 0.6	11,962	1,260,918	2.73	3.64	45.51	18%	16%	23%
1996	232	0.22 +/- 0.03	0.34 +/- 0.03	3.0 +/- 0.4	232	0.22 +/- 0.03	0.34 +/- 0.03	3.0 +/- 0.4	12,393	769,451	0.00	0.00	0.00	0%	0%	0%
1997	61	0.20 +/- 0.04	0.30 +/- 0.06	2.3 +/- 0.5	61	0.20 +/- 0.04	0.30 +/- 0.06	2.3 +/- 0.5	12,838	154,191	0.00	0.00	0.00	0%	0%	0%
1998	64	0.17 +/- 0.03	0.24 +/- 0.05	2.1 +/- 0.4	64	0.17 +/- 0.03	0.24 +/- 0.05	2.1 +/- 0.4	13,338	160,378	0.00	0.00	0.00	0%	0%	0%
1999	11	0.12 +/- 0.05	0.17 +/- 0.05	1.6 +/- 0.8	11	0.12 +/- 0.05	0.17 +/- 0.05	1.6 +/- 0.8	13,871	178,387	0.00	0.00	0.00	0%	0%	0%
Wt Avg:	4,233	1.14 +/- 0.06	1.02 +/- 0.03	13.4 +/- 0.5	5,232	1.33 +/- 0.07	1.09 +/- 0.02	15.4 +/- 0.5		12,866,372	73	27	785	14%	6%	13%

EMFAC 2000 vehicle populations are used for model years 1966 to 1973 and 1996 to 1999; BAR vehicle populations, based on actual smog certificates sold, were used for model years 1974 to 1995.

For 1966 - 1973 and 1996 - 1999 vehicles, all of the vehicles from the before dataset were used for the averages.

For MY '74-'95, 2235 vehicles received their smog inspection when NOx cut points were at gross polluter+30%; 1394 ehicles received their smog inspection when NOx cut points were at gross polluter; current NOx cut points are even lower; therefore, *the "After" fleet emission rate is higher than would be the case if all the roadside tested vehicles had recieved their smog inspection at current cut points.*

\*The 1973 and older, and the 1996 and newer vehicles were exempt from inspection requirements. Therefore the "Before" and "After" emission rates for these models are the same

Predicted FTP Emission Rates by Model-Year for  
Vehicles Tested on Roadside After a BAR97 ASM Smog

+/- 2 Sigma

Variances

Travel Fraction Wtd

Model-Year	Number of vehicles	NOx			HC TF	CO TF	NOx TF	+/- 2 Sigma			Variances			Travel Fraction Wtd		
		HC (g/mi)	CO (g/mi)	(g/mi)	Weighted	Weighted	Weighted	HC	CO	Nox	HC	CO	Nox	HC	CO	Nox
1966	24	8.62	97.6	1.86	0.012026	0.136164	0.002595	2.31	32.4	0.46	1.39	273.26	0.06	2.7E-06	0.000532	1.07E-07
1967	20	10.77	109	2.34	0.016337	0.165344	0.00355	5.35	39.7	0.68	7.45	410.27	0.12	1.71E-05	0.000944	2.77E-07
1968	29	7.81	77.1	2.2	0.014566	0.143792	0.004103	3.28	25.2	0.52	2.80	165.31	0.07	9.74E-06	0.000575	2.45E-07
1969	17	9.62	96.9	3.16	0.022825	0.229908	0.007498	4.94	39.8	1	6.35	412.34	0.26	3.58E-05	0.002321	1.47E-06
1970	30	6.83	78.2	2.65	0.016762	0.19192	0.006504	1.81	24.7	0.65	0.85	158.81	0.11	5.14E-06	0.000957	6.62E-07
1971	22	6.08	77.9	2.66	0.015469	0.198203	0.006768	1.76	31.6	0.69	0.81	259.93	0.12	5.22E-06	0.001683	8.02E-07
1972	32	9.25	77.1	2.59	0.031445	0.262102	0.008805	7.66	24.4	0.67	15.27	154.98	0.12	0.000177	0.001791	1.35E-06
1973	62	8.18	79.1	2.43	0.032055	0.30997	0.009522	2.99	17.5	0.37	2.33	79.72	0.04	3.57E-05	0.001224	5.47E-07
1974	16	6.58	52.7	3.24	0.020247	0.16216	0.00997	5.19	24.4	1.09	7.01	154.98	0.31	6.64E-05	0.001467	2.93E-06
1975	19	5.15	54.7	2.88	0.012806	0.136015	0.007161	2.59	27.7	1.06	1.75	199.73	0.29	1.08E-05	0.001235	1.81E-06
1976	22	4.35	67.7	2.71	0.017291	0.26911	0.010772	1.34	27.2	0.86	0.47	192.59	0.19	7.39E-06	0.003043	3.04E-06
1977	57	4.98	49.6	2.55	0.030975	0.30851	0.015861	3.23	15.3	0.42	2.72	60.94	0.05	0.000105	0.002357	1.78E-06
1978	57	3.59	42.7	2.49	0.028249	0.335997	0.019593	1.49	13.3	0.46	0.58	46.05	0.06	3.58E-05	0.002851	3.41E-06
1979	81	4.46	47.2	2.37	0.043717	0.462659	0.023231	1.3	11.2	0.35	0.44	32.65	0.03	4.23E-05	0.003137	3.06E-06
1980	71	3.93	51.1	1.83	0.032421	0.421553	0.015097	2.03	14.8	0.3	1.07	57.02	0.02	7.3E-05	0.00388	1.59E-06
1981	71	2.7	40.6	2.12	0.029487	0.4434	0.023153	0.54	11.5	0.32	0.08	34.43	0.03	9.05E-06	0.004106	3.18E-06
1982	102	3.46	35.9	1.88	0.050003	0.518815	0.027169	1.3	8.4	0.25	0.44	18.37	0.02	9.19E-05	0.003836	3.4E-06
1983	134	2.01	27	1.93	0.038885	0.522332	0.037337	0.33	6.3	0.23	0.03	10.33	0.01	1.06E-05	0.003867	5.15E-06
1984	222	2.01	26.5	1.84	0.068991	0.909584	0.063156	0.23	4.4	0.17	0.01	5.04	0.01	1.62E-05	0.005937	8.86E-06
1985	322	1.93	25.1	1.72	0.085186	1.107854	0.075917	0.2	3.5	0.14	0.01	3.19	0.01	2.03E-05	0.006212	9.94E-06
1986	388	1.39	17.4	1.58	0.074802	0.936368	0.085026	0.12	2.4	0.12	0.00	1.50	0.00	1.09E-05	0.004342	1.09E-05
1987	372	1.46	17.2	1.45	0.089551	1.054988	0.088938	0.19	2.2	0.11	0.01	1.26	0.00	3.54E-05	0.00474	1.18E-05
1988	352	1.06	12.6	1.21	0.067103	0.797645	0.076599	0.12	1.8	0.1	0.00	0.84	0.00	1.5E-05	0.00338	1.04E-05
1989	381	0.91	9.8	1.11	0.064774	0.697569	0.07901	0.13	1.1	0.09	0.00	0.31	0.00	2.23E-05	0.001596	1.07E-05
1990	330	0.72	8.4	0.96	0.047342	0.552326	0.063123	0.07	1	0.08	0.00	0.26	0.00	5.51E-06	0.001125	7.2E-06
1991	334	0.53	6.1	0.76	0.035201	0.405138	0.050476	0.05	0.6	0.07	0.00	0.09	0.00	2.87E-06	0.000413	5.63E-06
1992	72	0.56	6.7	0.77	0.03288	0.393391	0.045211	0.11	1.4	0.14	0.00	0.51	0.01	1.09E-05	0.001759	1.76E-05
1993	64	0.42	5	0.53	0.028734	0.342072	0.03626	0.11	1.2	0.1	0.00	0.37	0.00	1.47E-05	0.001754	1.22E-05
1994	107	0.34	4.4	0.49	0.021708	0.280932	0.031286	0.05	0.8	0.08	0.00	0.17	0.00	2.65E-06	0.000679	6.79E-06
1995	55	0.27	3.3	0.41	0.031692	0.38735	0.048125	0.06	0.8	0.08	0.00	0.17	0.00	1.29E-05	0.002295	2.3E-05
1996	232	0.22	3	0.34	0.016325	0.222619	0.02523	0.03	0.4	0.03	0.00	0.04	0.00	1.29E-06	0.000229	1.29E-06
1997	61	0.2	2.3	0.3	0.003081	0.035429	0.004621	0.04	0.5	0.06	0.00	0.07	0.00	9.88E-08	1.54E-05	2.22E-07
1998	64	0.17	2.1	0.24	0.00283	0.034957	0.003995	0.03	0.4	0.05	0.00	0.04	0.00	6.49E-08	1.15E-05	1.8E-07
1999	11	0.12	1.6	0.17	0.002311	0.03081	0.003274	0.05	0.8	0.05	0.00	0.17	0.00	2.41E-07	6.18E-05	2.41E-07

Weighted

Average b : 4,233 1.138079 13.40698 1.018935

a 1966 through 1973 vehicles are not subject to the Smog Check Program and the first four model-years (1996 through 1999 vehicles) were not subject to biennial Smog Check inspection requirements. Therefore, the predicted FTP emissions from the roadside sample after November 11, 1998 were used for these model-years.

b Weighted by May 1999 model-year travel fraction table.

Variances 0.000911 0.074359 0.000172  
+/- 2 sigma: 0.059173 0.534469 0.025684