

US EPA ARCHIVE DOCUMENT

APPENDIX D

EXAMPLES OF MODEL COMPARISON REPORTS

Comparison reports for Washtenaw County, Michigan 1998 and 2010 nonroad emissions are printed in the following order. Note that only the first two pages are printed for the longer reports.

1. Compare Two Model Runs by HP and Source Classification (first two pages)
2. Compare Two Model Runs by Pop and Fuel (first two pages)
3. Compare Two Model Runs by SCC (first two pages)
4. Compare Two Model Runs by Source Classification

Comparison of Exhaust THC Emissions in tons/year by Horsepower and Source Classification

Model Run 1 : Washtenaw County 1998

Total for year: 1998

Washtenaw County - Total SI & CI

Date of Model Run 1: Jun 08 15:05:28: 1998

Model Run 2 : Washtenaw County 2010

Total for year: 2010

Washtenaw County - Total SI & CI

Date of Model Run 2: Jun 08 15:45:30: 1998

Today's Date: 6/8/98

Horsepower Range	Model Run 1	Model Run 2	Run 2 - Run 1	% Difference
AGRICULTURAL EQUIPMENT				
1 < HP <= 3	0.06	0.06	0.00	-0.21
3 < HP <= 6	0.23	0.24	0.01	5.99
6 < HP <= 11	1.83	1.38	-0.45	-24.79
11 < HP <= 16	0.37	0.18	-0.19	-52.02
16 < HP <= 25	1.19	0.54	-0.65	-54.84
25 < HP <= 40	4.63	2.13	-2.50	-54.01
40 < HP <= 50	3.73	1.64	-2.09	-55.99
50 < HP <= 100	8.37	5.82	-2.55	-30.52
100 < HP <= 175	9.87	6.61	-3.26	-33.05
175 < HP <= 300	10.19	6.74	-3.46	-33.92
300 < HP <= 600	2.85	1.57	-1.29	-45.10
600 < HP <= 750	0.04	0.05	0.01	22.58
750 < HP <= 1000	0.05	0.06	0.01	22.58
Agricultural Equipment Totals:	43.41	27.00	-16.42	-37.82
AIRPORT GROUND SUPPORT EQUIPMENT				
3 < HP <= 6	0.22	0.30	0.08	37.09

Model Run 1 Core Model Ver. 2.0, June 1998

Model Run 2 Core Model Ver. 2.0, June 1998

Horsepower Range	Model Run 1	Model Run 2	Run 2 - Run 1	% Difference
6 < HP <= 11	0.02	0.01	-0.01	-51.43
11 < HP <= 16	0.10	0.05	-0.05	-52.23
16 < HP <= 25	0.05	0.03	-0.03	-49.85
25 < HP <= 40	0.09	0.06	-0.03	-34.90
40 < HP <= 50	0.19	0.09	-0.10	-51.75
50 < HP <= 100	1.33	0.94	-0.39	-29.32
100 < HP <= 175	2.41	2.49	0.08	3.43
175 < HP <= 300	1.23	0.79	-0.44	-35.96
300 < HP <= 600	0.55	0.34	-0.21	-38.84
600 < HP <= 750	0.12	0.07	-0.05	-40.66
Airport Ground Support Equipment Totals:	6.32	5.17	-1.15	-18.24
COMMERCIAL EQUIPMENT				
0 < HP <= 1	2.27	1.77	-0.50	-21.98
1 < HP <= 3	14.24	11.25	-2.99	-21.02
3 < HP <= 6	23.80	27.28	3.49	14.65
6 < HP <= 11	20.64	8.83	-11.81	-57.23
11 < HP <= 16	10.51	4.69	-5.82	-55.38
16 < HP <= 25	16.57	7.06	-9.51	-57.40
25 < HP <= 40	3.91	3.73	-0.18	-4.59
40 < HP <= 50	2.17	1.24	-0.93	-42.88
50 < HP <= 100	15.31	14.65	-0.66	-4.33
100 < HP <= 175	2.79	2.74	-0.05	-1.85
175 < HP <= 300	1.89	1.81	-0.09	-4.56
300 < HP <= 600	6.85	7.87	1.03	15.02
600 < HP <= 750	0.00	0.00	0.00	-23.16

Model Run 1 Core Model Ver. 2.0, June 1998

Model Run 2 Core Model Ver. 2.0, June 1998

Comparison of Equipment Population and Fuel Consumption by SCC

Model Run 1 : Washtenaw County 1998

Total for year: 1998

Washtenaw County - Total SI & CI

Date of Model Run 1: Jun 08 15:05:28: 1998

Model Run 2 : Washtenaw County 2010

Total for year: 2010

Washtenaw County - Total SI & CI

Date of Model Run 2: Jun 08 15:45:30: 1998

Today's Date: 6/8/98

SCC	Equipment Description	Engine Type	Equipment Population Run 1	Equipment Population Run 2	Fuel Consumption (gallons) Run 1	Fuel Consumption (gallons) Run 2
AGRICULTURAL EQUIPMENT						
2265005010*	2-Wheel Tractors	4 Stroke	3	4	875	774
2270005010	2-Wheel Tractors	Diesel	0	0	42	51
2265005015*	Agricultural Tractors	4 Stroke	1	2	3484	4086
2265005030*	Agricultural Mowers	4 Stroke	4	5	672	538
2270005015	Agricultural Tractors	Diesel	1208	1481	2156077	2643008
2270005030	Agricultural Mowers	Diesel	0	0	196	240
2265005025	Balers	4 Stroke	10	12	2143	2627
2270005025	Balers	Diesel	2	3	503	617
2265005020	Combines	4 Stroke	0	0	73	89
2270005020	Combines	Diesel	144	176	139622	171154
2265005050*	Hydro Power Units	4 Stroke	9	11	6022	5387
2270005050	Hydro Power Units	Diesel	5	6	6813	8351
2265005060*	Irrigation Sets	4 Stroke	4	5	20774	25446
2268005060	Irrigation Sets	CNG	4	5	4664055	5717390
2270005060	Irrigation Sets	Diesel	45	55	136434	167246
2267005060	Irrigation Sets	LPG	0	0	483	592

SCC	Equipment Description	Engine Type	Equipment Population Run 1	Equipment Population Run 2	Fuel Consumption (gallons) Run 1	Fuel Consumption (gallons) Run 2
2265005055*	Other Agricultural Equipment	4 Stroke	2	2	435	480
2270005055	Other Agricultural Equipment	Diesel	14	17	16044	19667
2265005035*	Sprayers	4 Stroke	55	68	5288	5018
2265005045	Swathers	4 Stroke	7	9	4171	5113
2270005035	Sprayers	Diesel	12	14	4367	5354
2270005045	Swathers	Diesel	28	35	7585	9298
2265005040*	Tillers > 6 HP	4 Stroke	380	466	20823	18562
2270005040	Tillers > 6 HP	Diesel	0	0	121	149
Agricultural Equipment Totals:					7197102	8811238
AIRPORT GROUND SUPPORT EQUIPMENT						
2265008005*	Airport Support Equipment	4 Stroke	8	11	18325	25814
2270008005	Airport Support Equipment	Diesel	62	90	210195	303726
Airport Ground Support Equipment Totals:					228520	329540
COMMERCIAL EQUIPMENT						
2265006015*	Air Compressors	4 Stroke	109	132	59099	66025
2270006015	Air Compressors	Diesel	101	122	187576	227181
2260006005*	Generator Sets	2 Stroke	101	123	2960	2870
2265006005*	Generator Sets	4 Stroke	2952	3575	498104	398406
2268006020	Gas Compressors	CNG	1	1	17049336	20649183
2268006005*	Generator Sets	CNG	23	28	2764920	3348713
2270006020	Gas Compressors	Diesel	0	0	696	842
2270006005	Generator Sets	Diesel	300	364	248295	300721
2267006005	Generator Sets	LPG	4	4	6083	7368
2260006010*	Pumps	2 Stroke	268	324	10898	10626

Model Run 1 Core Model Ver. 2.0, June 1998

Model Run 2 Core Model Ver. 2.0, June 1998

Comparison of Exhaust PM Emissions in tons/year by SCC

Model Run 1 : Washtenaw County 1998

Total for year: 1998

Washtenaw County - Total SI & CI

Date of Model Run 1: Jun 08 15:05:28: 1998

Model Run 2 : Washtenaw County 2010

Total for year: 2010

Washtenaw County - Total SI & CI

Date of Model Run 2: Jun 08 15:45:30: 1998

Today's Date: 6/8/98

SCC	Equipment Description	Engine Type	Model Run 1	Model Run 2	Run 2 - Run 1	% Difference
AGRICULTURAL EQUIPMENT						
2265005010*	2-Wheel Tractors	4 Stroke	0.001	0.000	0.000	-37.486
2265005015*	Agricultural Tractors	4 Stroke	0.003	0.003	0.000	12.449
2265005020	Combines	4 Stroke	0.000	0.000	0.000	19.301
2265005025	Balers	4 Stroke	0.002	0.002	0.000	19.392
2265005030*	Agricultural Mowers	4 Stroke	0.000	0.000	0.000	-31.311
2265005035*	Sprayers	4 Stroke	0.006	0.004	-0.001	-22.528
2265005040*	Tillers > 6 HP	4 Stroke	0.011	0.012	0.001	13.048
2265005045	Swathers	4 Stroke	0.003	0.004	0.001	19.455
2265005050*	Hydro Power Units	4 Stroke	0.005	0.003	-0.002	-33.020
2265005055*	Other Agricultural Equipment	4 Stroke	0.000	0.000	0.000	6.742
2265005060*	Irrigation Sets	4 Stroke	0.017	0.021	0.004	22.330
2267005060	Irrigation Sets	LPG	0.000	0.000	0.000	22.576
2268005060	Irrigation Sets	CNG	0.020	0.024	0.004	22.576
2270005010	2-Wheel Tractors	Diesel	0.002	0.002	0.000	14.472
2270005015	Agricultural Tractors	Diesel	20.060	21.686	1.626	8.105
2270005020	Combines	Diesel	2.199	1.595	-0.604	-27.460

Model Run 1 Core Model Ver. 2.0, June 1998

Model Run 2 Core Model Ver. 2.0, June 1998

SCC	Equipment Description	Engine Type	Model Run 1	Model Run 2	Run 2 - Run 1	% Difference
2270005025	Balers	Diesel	0.010	0.009	0.000	-3.544
2270005030	Agricultural Mowers	Diesel	0.003	0.003	0.000	14.751
2270005035	Sprayers	Diesel	0.080	0.070	-0.010	-11.913
2270005040	Tillers > 6 HP	Diesel	0.001	0.001	0.000	-13.365
2270005045	Swathers	Diesel	0.146	0.140	-0.006	-4.401
2270005050	Hydro Power Units	Diesel	0.106	0.125	0.019	17.791
2270005055	Other Agricultural Equipment	Diesel	0.183	0.179	-0.004	-1.950
2270005060	Irrigation Sets	Diesel	1.479	1.838	0.359	24.267
Agricultural Equipment Totals:			24.336	25.724	1.388	5.703
AIRPORT GROUND SUPPORT EQUIPMENT						
2265008005*	Airport Support Equipment	4 Stroke	0.016	0.021	0.006	36.867
2270008005	Airport Support Equipment	Diesel	3.484	5.003	1.519	43.615
Airport Ground Support Equipment Totals:			3.499	5.025	1.525	43.585
COMMERCIAL EQUIPMENT						
2260006005*	Generator Sets	2 Stroke	0.140	0.177	0.037	26.707
2260006010*	Pumps	2 Stroke	0.544	0.659	0.115	21.119
2265006005*	Generator Sets	4 Stroke	0.334	0.291	-0.044	-13.044
2265006010*	Pumps	4 Stroke	0.105	0.104	-0.001	-1.107
2265006015*	Air Compressors	4 Stroke	0.061	0.064	0.003	5.564
2265006025*	Welders	4 Stroke	0.082	0.067	-0.015	-17.968
2265006030*	Pressure Washers	4 Stroke	0.112	0.095	-0.018	-15.594
2267006005	Generator Sets	LPG	0.002	0.003	0.000	18.125
2267006010	Pumps	LPG	0.000	0.000	0.000	NA
2268006005*	Generator Sets	CNG	0.012	0.014	0.002	18.197

Model Run 1 Core Model Ver. 2.0, June 1998

Model Run 2 Core Model Ver. 2.0, June 1998

Comparison of Exhaust NOx Emissions in tons/year by Source Classification

Model Run 1 : Washtenaw County 1998

Total for year: 1998

Washtenaw County - Total SI & CI

Date of Model Run 1: Jun 08 15:05:28: 1998

Model Run 2 : Washtenaw County 2010

Total for year: 2010

Washtenaw County - Total SI & CI

Date of Model Run 2: Jun 08 15:45:30: 1998

Today's Date: 6/8/98

Source Classification	Model Run 1	Model Run 2	Run 2 - Run 1	% Difference
Agricultural Equipment	376.20	273.62	-102.58	-27.27
Airport Ground Support Equipment	26.02	18.47	-7.55	-29.02
Commercial Equipment	111.00	93.09	-17.91	-16.14
Construction and Mining Equipment	1442.78	819.97	-622.82	-43.17
Industrial Equipment	556.39	470.66	-85.74	-15.41
Lawn and Garden Equipment (Com)	302.31	239.13	-63.17	-20.90
Lawn and Garden Equipment (Res)	15.32	15.68	0.37	2.39
Logging Equipment	0.00	0.00	0.00	NA
Pleasure Craft	5.19	6.17	0.98	18.84
Railroad Equipment	3.80	2.54	-1.27	-33.36
Recreational Equipment	0.87	0.67	-0.20	-23.13
Grand Totals:	2839.88	1939.99	-899.89	-31.69