

Attachment G

Data Tables Resulting from the 15-Day Modifications to the
Emissions and Economic Analyses for the
Proposed Amendments to the Small Off-Road Engine
Regulations

Table 1. Annual average emission reductions under the Proposed Amendments with 15-day modifications.

(Totals may not add up due to rounding.)

Year	NO_x emission reductions (tpd)	ROG emission reductions (tpd)	PM_{2.5} emission reductions (tpd)	CO₂ emission reductions (MMT/year)
2023	0.0	0.0	0.00	0.00
2024	0.44	3.3	0.021	0.044
2025	1.3	10.7	0.071	0.13
2026	2.3	19.4	0.13	0.21
2027	3.3	28.0	0.18	0.29
2028	4.3	35.9	0.22	0.37
2029	5.3	43.0	0.25	0.46
2030	6.3	49.3	0.28	0.55
2031	7.2	54.6	0.30	0.62
2032	8.1	59.3	0.31	0.69
2033	8.8	63.4	0.32	0.75
2034	9.5	67.2	0.33	0.81
2035	10.1	70.7	0.34	0.86
2036	10.6	73.8	0.34	0.90
2037	11.1	76.6	0.35	0.94
2038	11.4	79.1	0.35	0.97
2039	11.8	81.2	0.35	0.99
2040	12.0	83.0	0.36	1.02
2041	12.2	84.5	0.36	1.03
2042	12.4	85.9	0.36	1.05
2043	12.6	87.1	0.36	1.06
Average	7.7	55.0	0.26	0.65
Total	58,844	421,924	2,030	13.8

Table 2. Annual statewide avoided mortality and morbidity incidents under the Proposed Amendments with 15-day modifications, central estimates and 95 percent confidence intervals.

(Totals may not add up due to rounding.)

Year	Avoided premature cardiopulmonary mortality	Avoided cardiovascular hospitalizations	Avoided acute respiratory hospitalizations	Avoided ER visits for asthma
2023	0 (0 - 0)	0 (0 - 0)	0 (0 - 0)	0 (0 - 0)
2024	2 (2 - 3)	0 (0 - 1)	0 (0 - 1)	1 (1 - 2)
2025	8 (6 - 9)	1 (0 - 2)	1 (0 - 2)	4 (2 - 5)
2026	14 (11 - 17)	2 (0 - 4)	2 (1 - 4)	7 (4 - 9)
2027	20 (15 - 24)	3 (0 - 5)	3 (1 - 6)	10 (6 - 14)
2028	25 (20 - 31)	4 (0 - 7)	4 (1 - 8)	13 (8 - 17)
2029	31 (24 - 38)	5 (0 - 9)	5 (1 - 10)	15 (10 - 21)
2030	36 (28 - 44)	5 (0 - 11)	6 (2 - 11)	18 (11 - 25)
2031	40 (32 - 49)	6 (0 - 12)	7 (2 - 13)	20 (13 - 28)
2032	45 (35 - 54)	7 (0 - 13)	8 (2 - 14)	22 (14 - 30)
2033	48 (38 - 59)	8 (0 - 15)	9 (2 - 16)	24 (15 - 33)
2034	52 (40 - 63)	8 (0 - 16)	10 (2 - 17)	25 (16 - 35)
2035	55 (43 - 67)	9 (0 - 17)	10 (2 - 18)	27 (17 - 37)
2036	57 (45 - 70)	9 (0 - 18)	11 (3 - 19)	28 (18 - 38)
2037	60 (47 - 73)	10 (0 - 19)	12 (3 - 20)	29 (18 - 40)
2038	62 (48 - 76)	10 (0 - 20)	12 (3 - 21)	30 (19 - 41)
2039	64 (50 - 78)	10 (0 - 20)	12 (3 - 22)	31 (20 - 42)
2040	65 (51 - 80)	11 (0 - 21)	13 (3 - 23)	32 (20 - 43)
2041	67 (52 - 82)	11 (0 - 22)	13 (3 - 23)	32 (20 - 44)
2042	68 (53 - 83)	11 (0 - 22)	13 (3 - 24)	33 (21 - 45)
2043	69 (54 - 85)	11 (0 - 23)	14 (3 - 24)	33 (21 - 46)
Total	887 (693 - 1085)	141 (0 - 276)	168 (39 - 297)	436 (276 - 596)

Table 3. Modeled costs to professional and residential users per year under the Proposed Amendments with 15-day modifications relative to the Baseline Scenario (million 2019\$).

(Negative values indicate cost-savings. Totals may differ slightly due to rounding.)

Year	Gasoline equipment cost	Electric equipment cost	Gasoline equipment maintenance cost	Gasoline cost	Electricity cost	Total cost	Total cost-savings	Net cost
2023	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2024	\$10.30	\$763.87	-\$11.58	-\$18.02	\$2.64	\$766.51	-\$19.30	\$747.21
2025	\$14.05	\$761.39	-\$33.74	-\$52.56	\$7.50	\$768.89	-\$72.25	\$696.64
2026	\$17.84	\$759.98	-\$57.45	-\$89.42	\$12.84	\$772.82	-\$129.03	\$643.79
2027	\$21.68	\$758.59	-\$80.29	-\$126.63	\$18.20	\$776.79	-\$185.24	\$591.55
2028	-\$822.59	\$1,520.24	-\$101.72	-\$168.22	\$25.62	\$1,545.86	-\$1,092.53	\$453.33
2029	-\$828.20	\$1,524.87	-\$122.28	-\$230.49	\$36.11	\$1,560.98	-\$1,180.97	\$380.01
2030	-\$833.89	\$1,530.68	-\$140.79	-\$291.68	\$47.64	\$1,578.32	-\$1,266.36	\$311.96
2031	-\$839.63	\$1,541.17	-\$156.70	-\$350.32	\$57.91	\$1,599.08	-\$1,346.65	\$252.43
2032	-\$845.44	\$1,551.79	-\$170.59	-\$404.98	\$67.57	\$1,619.36	-\$1,421.01	\$198.35
2033	-\$851.31	\$1,562.52	-\$182.58	-\$455.22	\$76.44	\$1,638.96	-\$1,489.11	\$149.85
2034	-\$857.25	\$1,573.37	-\$192.97	-\$501.13	\$84.53	\$1,657.90	-\$1,551.35	\$106.55
2035	-\$863.25	\$1,584.34	-\$201.71	-\$541.96	\$91.68	\$1,676.02	-\$1,606.92	\$69.10
2036	-\$869.32	\$1,595.44	-\$209.00	-\$577.22	\$97.85	\$1,693.29	-\$1,655.54	\$37.75
2037	-\$875.46	\$1,606.65	-\$215.01	-\$607.70	\$103.08	\$1,709.73	-\$1,698.17	\$11.56
2038	-\$881.67	\$1,618.00	-\$219.71	-\$633.78	\$107.46	\$1,725.46	-\$1,735.16	-\$9.70
2039	-\$887.95	\$1,629.46	-\$223.59	-\$655.81	\$111.12	\$1,740.58	-\$1,767.35	-\$26.77
2040	-\$894.30	\$1,641.06	-\$226.51	-\$673.78	\$114.01	\$1,755.07	-\$1,794.59	-\$39.52
2041	-\$900.72	\$1,652.78	-\$228.91	-\$688.90	\$116.39	\$1,769.17	-\$1,818.53	-\$49.36
2042	-\$907.21	\$1,664.64	-\$230.96	-\$701.92	\$118.39	\$1,783.03	-\$1,840.09	-\$57.06
2043	-\$913.77	\$1,676.62	-\$232.75	-\$713.00	\$120.07	\$1,796.69	-\$1,859.52	-\$62.83
Average	-\$657.53	\$1,357.97	-\$154.23	-\$403.94	\$67.48	\$1,425.45	-\$1,215.70	\$209.75
Total	-\$13,808.09	\$28,517.46	-\$3,238.84	-\$8,482.74	\$1,417.05	\$29,934.51	-\$25,529.67	\$4,404.84

Table 4. Modeled costs to professional users (nonlandscaping businesses, landscapers, and government entities) per year under the Proposed Amendments with 15-day modifications relative to the Baseline Scenario (million 2019\$).

(Negative values indicate cost-savings. Total may differ slightly due to rounding.)

Year	Gasoline equipment cost	Electric equipment cost	Gasoline equipment maintenance cost	Gasoline costs	Electricity costs	Total costs	Total cost-savings	Net costs
2023	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2024	\$104.99	\$269.46	-\$5.66	-\$9.89	\$1.57	\$376.02	-\$15.55	\$360.47
2025	\$107.09	\$268.66	-\$16.98	-\$30.89	\$4.61	\$380.36	-\$47.87	\$332.49
2026	\$109.22	\$268.22	-\$29.01	-\$52.98	\$7.96	\$385.40	-\$81.99	\$303.41
2027	\$111.38	\$267.78	-\$40.51	-\$74.95	\$11.30	\$390.46	-\$115.46	\$275.00
2028	-\$288.10	\$565.99	-\$51.16	-\$97.26	\$16.08	\$582.07	-\$436.52	\$145.55
2029	-\$290.35	\$567.52	-\$60.99	-\$125.14	\$21.91	\$589.43	-\$476.48	\$112.95
2030	-\$292.64	\$569.48	-\$69.60	-\$150.16	\$28.08	\$597.56	-\$512.40	\$85.16
2031	-\$294.94	\$573.12	-\$76.81	-\$173.39	\$33.52	\$606.64	-\$545.14	\$61.50
2032	-\$297.27	\$576.81	-\$82.97	-\$194.27	\$38.57	\$615.38	-\$574.51	\$40.87
2033	-\$299.63	\$580.53	-\$88.18	-\$212.95	\$43.15	\$623.68	-\$600.76	\$22.92
2034	-\$302.02	\$584.30	-\$92.63	-\$229.64	\$47.26	\$631.56	-\$624.29	\$7.27
2035	-\$304.43	\$588.10	-\$96.30	-\$244.15	\$50.83	\$638.93	-\$644.88	-\$5.95
2036	-\$306.87	\$591.94	-\$99.33	-\$256.52	\$53.89	\$645.83	-\$662.72	-\$16.89
2037	-\$309.34	\$595.82	-\$101.75	-\$266.99	\$56.42	\$652.24	-\$678.08	-\$25.84
2038	-\$311.84	\$599.74	-\$103.57	-\$275.67	\$58.46	\$658.20	-\$691.08	-\$32.88
2039	-\$314.36	\$603.70	-\$105.05	-\$282.89	\$60.13	\$663.83	-\$702.30	-\$38.47
2040	-\$316.92	\$607.70	-\$106.10	-\$288.63	\$61.40	\$669.10	-\$711.65	-\$42.55
2041	-\$319.50	\$611.75	-\$106.93	-\$293.38	\$62.40	\$674.15	-\$719.81	-\$45.66
2042	-\$322.11	\$615.83	-\$107.62	-\$297.45	\$63.23	\$679.06	-\$727.18	-\$48.12
2043	-\$324.75	\$619.96	-\$108.20	-\$300.89	\$63.91	\$683.87	-\$733.84	-\$49.97
Average	-\$212.49	\$501.26	-\$73.78	-\$183.72	\$37.37	\$559.23	-\$490.60	\$68.63
Total	-\$4,462.39	\$10,526.41	-\$1,549.35	-\$3,858.09	\$784.68	\$11,743.77	-\$10,302.51	\$1,441.26

Table 5. Modeled costs to residential users per year under the Proposed Amendments with 15-day modifications relative to the Baseline Scenario (million 2019\$).

(Negative values indicate cost-savings. Total may differ slightly due to rounding.)

Year	Gasoline equipment cost	Electric equipment cost	Gasoline equipment maintenance cost	Gasoline costs	Electricity costs	Total costs	Total cost-savings	Net costs
2023	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2024	-\$94.69	\$494.41	-\$5.92	-\$8.13	\$1.07	\$495.48	-\$108.74	\$386.74
2025	-\$93.05	\$492.73	-\$16.76	-\$21.67	\$2.90	\$495.63	-\$131.48	\$364.15
2026	-\$91.39	\$491.76	-\$28.44	-\$36.44	\$4.89	\$496.65	-\$156.27	\$340.38
2027	-\$89.70	\$490.81	-\$39.78	-\$51.68	\$6.90	\$497.71	-\$181.16	\$316.55
2028	-\$534.49	\$954.26	-\$50.56	-\$70.96	\$9.54	\$963.80	-\$656.01	\$307.79
2029	-\$537.85	\$957.35	-\$61.29	-\$105.35	\$14.20	\$971.55	-\$704.49	\$267.06
2030	-\$541.25	\$961.20	-\$71.20	-\$141.52	\$19.56	\$980.76	-\$753.97	\$226.79
2031	-\$544.69	\$968.05	-\$79.89	-\$176.92	\$24.39	\$992.44	-\$801.50	\$190.94
2032	-\$548.16	\$974.98	-\$87.61	-\$210.71	\$29.00	\$1,003.98	-\$846.48	\$157.50
2033	-\$551.68	\$981.99	-\$94.38	-\$242.27	\$33.30	\$1,015.29	-\$888.33	\$126.96
2034	-\$555.23	\$989.08	-\$100.34	-\$271.49	\$37.27	\$1,026.35	-\$927.06	\$99.29
2035	-\$558.82	\$996.25	-\$105.40	-\$297.81	\$40.85	\$1,037.10	-\$962.03	\$75.07
2036	-\$562.45	\$1,003.50	-\$109.69	-\$320.70	\$43.96	\$1,047.46	-\$992.84	\$54.62
2037	-\$566.12	\$1,010.84	-\$113.26	-\$340.70	\$46.66	\$1,057.50	-\$1,020.08	\$37.42
2038	-\$569.83	\$1,018.26	-\$116.14	-\$358.11	\$49.00	\$1,067.26	-\$1,044.08	\$23.18
2039	-\$573.59	\$1,025.76	-\$118.54	-\$372.92	\$50.99	\$1,076.75	-\$1,065.05	\$11.70
2040	-\$577.38	\$1,033.36	-\$120.41	-\$385.16	\$52.61	\$1,085.97	-\$1,082.95	\$3.02
2041	-\$581.22	\$1,041.04	-\$121.97	-\$395.51	\$53.98	\$1,095.02	-\$1,098.70	-\$3.68
2042	-\$585.09	\$1,048.81	-\$123.34	-\$404.47	\$55.16	\$1,103.97	-\$1,112.90	-\$8.93
2043	-\$589.02	\$1,056.66	-\$124.54	-\$412.11	\$56.16	\$1,112.82	-\$1,125.67	-\$12.85
Average	-\$445.03	\$856.72	-\$80.45	-\$220.22	\$30.11	\$886.83	-\$745.70	\$141.13
Total	-\$9,345.70	\$17,991.10	-\$1,689.46	-\$4,624.63	\$632.39	\$18,623.49	-\$15,659.79	\$2,963.70

Table 6. Annual valuation of avoided health outcomes under the Proposed Amendments with 15-day modifications (million 2019\$).

Year	Avoided premature cardiopulmonary mortality valuation	Avoided cardiovascular hospitalization valuation	Avoided acute respiratory hospitalization valuation	Avoided ER visit for asthma valuation	Annual total valuation
2023	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2024	\$23.64	\$0.02	\$0.02	\$0.00	\$23.68
2025	\$74.89	\$0.06	\$0.06	\$0.00	\$75.01
2026	\$133.71	\$0.11	\$0.11	\$0.01	\$133.94
2027	\$192.68	\$0.16	\$0.17	\$0.01	\$193.02
2028	\$249.31	\$0.21	\$0.22	\$0.01	\$249.76
2029	\$303.81	\$0.27	\$0.28	\$0.01	\$304.37
2030	\$354.02	\$0.31	\$0.33	\$0.02	\$354.67
2031	\$398.71	\$0.36	\$0.37	\$0.02	\$399.46
2032	\$439.18	\$0.40	\$0.42	\$0.02	\$440.01
2033	\$475.62	\$0.44	\$0.46	\$0.02	\$476.54
2034	\$508.85	\$0.47	\$0.49	\$0.02	\$509.84
2035	\$538.87	\$0.51	\$0.53	\$0.02	\$539.94
2036	\$565.67	\$0.54	\$0.56	\$0.02	\$566.79
2037	\$589.28	\$0.56	\$0.59	\$0.02	\$590.45
2038	\$610.17	\$0.59	\$0.61	\$0.03	\$611.39
2039	\$628.60	\$0.61	\$0.63	\$0.03	\$629.86
2040	\$644.75	\$0.62	\$0.65	\$0.03	\$646.05
2041	\$659.60	\$0.64	\$0.67	\$0.03	\$660.94
2042	\$672.99	\$0.66	\$0.68	\$0.03	\$674.35
2043	\$685.35	\$0.67	\$0.70	\$0.03	\$686.74
Total	\$8,749.68	\$8.21	\$8.55	\$0.36	\$8,766.81

Table 7. Cost-benefit comparison of the ISOR Proposed Amendments and the Proposed Amendments with 15-day modifications (billion 2019\$).

Scenario	Total direct costs	Health benefits	Direct cost-savings (benefit)	Tax & fee revenue	Total benefit	Net benefit	Benefit-cost ratio
Proposed Amendments	\$14.41	\$8.82	\$10.33	-\$0.47	\$18.68	\$4.27	1.30
Proposed Amendments with 15-day modifications	\$14.71	\$8.77	\$10.30	-\$0.44	\$18.64	\$3.93	1.27
Percent Difference	2	-0.6	-0.3	-8	-0.2	-8	-2