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APPENDIX:

CHANGES IN ENERGY USE AND EMISSIONS BY ALTERNATIVE FUELS

Appendix: Changes in Energy Use and Emissions by Alternative Fuels (% relative to RFG)

	Methanol FCV: Landfill Gases to Methanol	Methanol FCV: NG to Methanol	Hydrogen FCV: NG to Hydrogen	HEV: Northeast U.S. Electric Generation Mix	HEV: West Coast Electric Generation Mix	HEV: U.S. Average Electric Generation Mix	EV: Northeast U.S. Electric Generation Mix	EV: West Coast Electric Generation Mix	EV: U.S. Average Electric Generation Mix	E100: Herbaceous Biomass to Ethanol	E100: Woody Biomass to Ethanol
Total energy	-42.2	-14.1	-18.6	-26.1	-32.4	-26.2	-25.2	-37.8	-25.4	17.4	34.5
Fossil fuels	-94.0	-13.9	-18.3	-38.1	-41.0	-34.3	-49.0	-55.0	-41.6	-97.9	-101.8
Petroleum	-100.0	-98.0	-97.3	-56.0	-61.7	-61.4	-84.9	-96.5	-95.9	-97.3	-97.4
VOC: all locations	-78.7	-69.8	-90.9	-72.8	-73.0	-72.9	-98.3	-98.8	-98.6	-45.8	-45.4
VOC: in-basin	-77.1	-75.3	-98.5	-74.1	-74.1	-74.1	-99.9	-99.9	-100.0	-46.6	-46.6
CO: all locations	-93.0	-88.0	-97.2	-74.4	-74.4	-74.4	-99.2	-99.1	-99.2	-20.1	-19.8
CO: in-basin	-91.5	-89.8	-99.6	-74.9	-74.9	-75.0	-99.9	-99.9	-99.9	-19.9	-19.9
NO_x: all locations	-65.6	-34.1	-23.3	-25.7	-32.2	-11.3	-45.4	-57.8	-17.5	3.2	-6.8
NO_x: in-basin	-83.5	-83.2	-87.4	-49.1	-48.8	-49.6	-97.3	-96.8	-98.3	-7.8	-8.1
PM_{10}: all locations	-204.4	-36.1	-22.9	5.4	-9.4	28.5	26.2	-2.5	71.0	486.7	751.3
PM_{10}: in-basin	-160.9	-35.8	-29.4	-22.2	-23.1	-23.6	-36.1	-37.7	-38.6	-33.9	-34.2
SO_x: all locations	17.0	-86.5	-91.3	124.8	48.9	234.4	283.7	136.5	495.8	-138.1	-219.1
SO_x: in-basin	-109.7	-86.3	-96.1	-34.1	-57.1	-56.6	-42.5	-87.1	-86.2	-88.3	-91.1
GHGs	-169.4	-24.7	-28.5	-28.7	-36.2	-19.7	-31.0	-45.6	-13.6	-99.3	-115.7
CH_4	-2215.4	446.3	383.8	259.7	218.5	453.3	540.1	457.5	927.2	-39.0	-40.1
N_2O	134.8	-37.0	-72.4	198.5	110.0	388.9	432.9	261.3	801.3	593.6	33.0
CO_2	-161.6	-27	-30.2	-32.2	-38.9	-25.9	-38.2	-51	-25.9	-106	-117.4

Appedix: Changes in Energy Use and Emissions by Alternative Fuels (% relative to RFG) (Continued)

	E100: Corn to Ethanol	E85: Herbaceous Biomass to Ethanol	E85: Woody Biomass to Ethanol	E85: Corn to Ethanol	M100: Landfill Gases to Methanol	M100: NG to Methanol	M85: Landfill Gases to Methanol	M85: NG to Methanol	CNG	LPG	Clean Diesel
Total energy	24.7	17.0	27.6	30.9	-15.2	25.9	-11.7	19.1	-9.0	-9.0	-19.2
Fossil fuels	-43.1	-77.7	-81.5	-32.7	-91.2	26.3	-68.5	19.4	-10.0	-8.8	-19.0
Petroleum	-89.3	-77.9	-77.9	-71.5	-100.0	-97.1	-75.1	-72.9	-99.8	-83.2	-9.4
VOC: all locations	-39.0	-41.3	-40.9	-35.8	-52.0	-38.9	-45.7	-36.0	-79.4	-72.8	-62.2
VOC: in-basin	-46.6	-42.1	-42.1	-42.1	-48.7	-46.1	-43.7	-41.7	-80.1	-74.9	-63.0
CO: all locations	-14.2	-15.1	-14.9	-10.3	-25.5	-18.2	-19.2	-13.7	-40.1	-29.9	-86.3
CO: in-basin	-19.9	-14.9	-14.9	-14.9	-22.2	-19.8	-16.7	-14.8	-40.0	-30.0	-87.3
NO_x: all locations	98.3	4.9	-3.0	81.1	11.3	57.6	10.4	45.0	4.7	2.0	57.8
NO_x: in-basin	-7.4	-3.3	-3.6	-3.0	-2.9	-2.5	0.2	0.6	-6.8	-3.8	78.2
PM_{10}: all locations	322.3	386.8	598.4	255.3	-272.7	-25.9	-207.7	-23.1	-34.4	-42.1	157.8
PM_{10}: in-basin	-33.5	-30.5	-30.8	-30.2	-217.1	-33.7	-167.6	-30.4	-39.7	-35.5	247.5
SO_x: all locations	459.6	-110.5	-175.2	367.5	71.6	-80.3	53.3	-60.3	-0.1	-80.6	-0.2
SO_x: in-basin	-84.7	-70.6	-72.9	-67.8	-114.3	-80.0	-85.7	-60.1	-93.3	-94.7	214.4
GHGs	-31.7	-79.3	-92.4	-25.4	-204.5	7.9	-153.1	5.7	-5.5	-8.3	-8.6
CH_4	15.0	-26.7	-27.5	16.5	-3157.0	746.8	-2359.1	560.7	2377.8	557.9	-84.8
N_2O	3577.8	474.7	26.3	2861.4	237.8	-14.2	177.7	-10.8	96.1	-31.4	-25.2
CO_2	-64.8	-84.7	-93.9	-51.9	-193.2	4.2	-144.7	2.9	-18.7	-11.0	-8.1

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