



U.S. Department Of Transportation
National Highway Traffic Safety Administration

APPENDIX I

CAFE Analysis Data Book

Standard Setting Analysis

Table of Contents

1. Summary Tables	4
2. Estimated Required CAFE Levels	32
3. Estimated Achieved CAFE Levels	91
4. CAFE Cost per Vehicle	145
5. Various Impacts of Alternatives	148
6. Required and Achieved CAFE Levels, Baseline vs. Alternative 2.5.....	152
7. Incremental Benefits and Costs	182
8. Technology Costs and Civil Penalties per Vehicle, by Model Year.....	188
9. Regulatory Costs per Vehicle, by Model Year	242
10. Incremental Societal Impacts	296
11. Labor Impacts.....	314
12. Compliance Impacts.....	339
13. Powertrain Technology Penetration Rate, by Model Year	366
14. Mass Reduction Penetration Rate, by Model Year	389
15. Powertrain Technology Penetration Rate, by Alternative.....	412
16. Mass Reduction Penetration Rate, by Model Year	434
17. Electrification Rates	456
18. Required and Achieved CAFE Levels, Comparison.....	478
19. Regulatory Costs, Comparison.....	506
20. Vehicle Price Increase	524
21. Technology Costs, Price Increase, Sales, and Labor Utilization	542
22. CAFE Compliance Credits.....	571
23. Consumer Impacts.....	576
24. Environmental Impacts	582

	3
25. Electrification Costs	603
26. Fleet Characteristics	609
27. Liquid Fuel and Electricity Consumption	613
28. Vehicle-Mass-Related Fatality Impacts	619
29. Sales Impacts.....	637
30. Regulatory Costs per Vehicle, by Vehicle Type	659
31. Change in Safety Parameters.....	680

This appendix presents a broad range of outputs from the CAFE Model analysis discussed in this FRIA. The model outputs in this appendix are presented in tables that are grouped by theme, each of which are itemized in the table of contents. The themes reviewed detail areas of central interest in fuel economy rulemaking, including: core effects of focal fuel economy stringency levels (e.g., net benefits, required and achieved CAFE levels, changes in fuel consumption, environmental impacts); benefits; costs (e.g., regulatory costs, consumer cost impacts, safety impacts, technology costs, price impacts); changes in fleet characteristics (e.g., penetration rates for powertrain, mass reduction, and electrification technologies); and other outcomes (e.g., labor utilization, vehicle sales impacts). Information within many themes in this appendix is presented from multiple perspectives (e.g., by vehicle type, by manufacturer, by model year) to enable critical comparisons of estimated impacts across alternatives, the vehicle fleet, stakeholders, and time.

As discussed in the TSD, FRIA, and today’s final rule, NHTSA has performed two types of supporting analysis. Today’s final rule and FRIA focus on the “standard setting” analysis, which sets aside the potential that manufacturers could respond to standards by using compliance credits or introducing new alternative fuel vehicle (including BEVs) models during the “decision years” (for today’s notice, 2024, 2025, and 2026). The data in this appendix are for the “standard setting” analysis.

The accompanying FSEIS focuses on an “unconstrained” analysis, which does not set aside these potential manufacturer actions. Appendix II presents data for the FSEIS analysis.

Note that due to rounding of presented output components within each table, totals may not exactly match the sum of the rounded impacts

1. Summary Tables

**Table A-1-1 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Total Fleet for Alternative 1, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	58.6	43.0	2.30	3.12
Benefits	79.2	54.5	3.11	3.96
Net Benefits	20.6	11.5	0.81	0.83

**Table A-1-2 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Passenger Car Fleet for Alternative 1, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	9.2	9.1	0.36	0.66
Benefits	41.2	28.5	1.62	2.07
Net Benefits	32.0	19.4	1.26	1.41

**Table A-1-3 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Light Truck Fleet for Alternative 1, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	49.4	33.9	1.94	2.46
Benefits	38.0	26.0	1.49	1.89
Net Benefits	-11.4	-7.9	-0.45	-0.58

**Table A-1-4 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Total Fleet for Alternative 2, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	113.9	84.9	4.47	6.17
Benefits	129.4	89.3	5.07	6.48
Net Benefits	15.5	4.3	0.61	0.32

**Table A-1-5 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Passenger Car Fleet for Alternative 2, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	31.5	28.2	1.24	2.05
Benefits	78.1	54.2	3.06	3.94
Net Benefits	46.6	26.0	1.83	1.89

**Table A-1-6 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Light Truck Fleet for Alternative 2, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	82.4	56.7	3.23	4.12
Benefits	51.3	35.0	2.01	2.55
Net Benefits	-31.1	-21.6	-1.22	-1.57

**Table A-1-7 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Total Fleet for Alternative 2.5, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	128.4	95.8	5.03	6.96
Benefits	144.6	99.7	5.67	7.25
Net Benefits	16.3	3.9	0.64	0.29

**Table A-1-8 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Passenger Car Fleet for Alternative 2.5, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	36.3	32.3	1.42	2.35
Benefits	89.5	62.1	3.51	4.51
Net Benefits	53.2	29.8	2.09	2.16

**Table A-1-9 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Light Truck Fleet for Alternative 2.5, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	92.1	63.5	3.61	4.61
Benefits	55.1	37.6	2.16	2.73
Net Benefits	-37.0	-25.8	-1.45	-1.88

**Table A-1-10 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Total Fleet for Alternative 3, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	165.8	124.3	6.50	9.03
Benefits	182.2	125.8	7.14	9.14
Net Benefits	16.4	1.5	0.64	0.11

**Table A-1-11 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Passenger Car Fleet for Alternative 3, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	42.7	38.5	1.67	2.80
Benefits	109.0	75.6	4.27	5.49
Net Benefits	66.3	37.1	2.60	2.69

**Table A-1-12 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Light Truck Fleet for Alternative 3, Average SCC**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	123.1	85.8	4.83	6.23
Benefits	73.2	50.2	2.87	3.65
Net Benefits	-49.9	-35.5	-1.96	-2.58

Table A-1-13 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 1, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	165.3	96.9	8.43	7.81
Benefits	232.7	141.4	11.87	11.39
Net Benefits	67.4	44.5	3.44	3.59

Table A-1-14 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 1, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	-0.9	6.6	-0.05	0.53
Benefits	125.4	76.3	6.40	6.15
Net Benefits	126.3	69.7	6.44	5.62

Table A-1-15 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 1, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	166.2	90.3	8.48	7.27
Benefits	107.3	65.1	5.47	5.24
Net Benefits	-58.9	-25.2	-3.01	-2.03

Table A-1-16 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 2, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	324.0	192.9	16.53	15.54
Benefits	422.0	257.1	21.53	20.72
Net Benefits	98.0	64.2	5.00	5.18

Table A-1-17 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 2, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	46.6	40.8	2.38	3.29
Benefits	243.6	149.3	12.43	12.03
Net Benefits	197.0	108.6	10.05	8.75

Table A-1-18 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 2, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	277.3	152.1	14.15	12.26
Benefits	178.4	107.8	9.10	8.69
Net Benefits	-99.0	-44.3	-5.05	-3.57

Table A-1-19 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 2.5, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	366.8	218.7	18.71	17.63
Benefits	478.5	292.1	24.41	23.54
Net Benefits	111.7	73.3	5.70	5.91

Table A-1-20 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 2.5, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	57.5	48.5	2.93	3.91
Benefits	282.7	173.2	14.43	13.96
Net Benefits	225.2	124.8	11.49	10.05

Table A-1-21 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 2.5, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	309.2	170.2	15.78	13.72
Benefits	195.7	118.8	9.99	9.57
Net Benefits	-113.5	-51.4	-5.79	-4.14

Table A-1-22 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 3, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	466.7	279.8	23.81	22.55
Benefits	595.9	364.9	30.40	29.40
Net Benefits	129.3	85.1	6.60	6.86

Table A-1-23 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 3, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	65.5	56.7	3.34	4.57
Benefits	343.2	210.6	17.51	16.97
Net Benefits	277.6	153.9	14.17	12.40

Table A-1-24 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 3, Average SCC

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	401.2	223.1	20.47	17.98
Benefits	252.8	154.3	12.90	12.43
Net Benefits	-148.4	-68.8	-7.57	-5.54

Table A-1-25 - Estimated Total Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars) Total Fleet, by Alternative, Average SCC

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	58.6	79.2	20.6	43.0	54.5	11.5
Alternative 2	113.9	129.4	15.5	84.9	89.3	4.3
Alternative 2.5	128.4	144.6	16.3	95.8	99.7	3.9
Alternative 3	165.8	182.2	16.4	124.3	125.8	1.5

**Table A-1-26 - Estimated Passenger Car Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029
(billions of dollars) Passenger Car Fleet, by Alternative, Average SCC**

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	9.2	41.2	32.0	9.1	28.5	19.4
Alternative 2	31.5	78.1	46.6	28.2	54.2	26.0
Alternative 2.5	36.3	89.5	53.2	32.3	62.1	29.8
Alternative 3	42.7	109.0	66.3	38.5	75.6	37.1

**Table A-1-27 - Estimated Light Truck Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029
(billions of dollars) Light Truck Fleet, by Alternative, Average SCC**

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	49.4	38.0	-11.4	33.9	26.0	-7.9
Alternative 2	82.4	51.3	-31.1	56.7	35.0	-21.6
Alternative 2.5	92.1	55.1	-37.0	63.5	37.6	-25.8
Alternative 3	123.1	73.2	-49.9	85.8	50.2	-35.5

Table A-1-28 – Estimates of Benefits and Costs of the Preferred Alternative for Model Years 2023 through 2026, 3% Discount Rate, Average SCC

MY	Cost	Benefit	Net Benefits
Present Values			
2023	\$5.1	\$4.5	-\$0.6
2024	\$10.4	\$13.8	\$3.3
2025	\$13.9	\$19.9	\$6.0
2026	\$18.9	\$28.9	\$10.0
Sum	\$48.3	\$67.1	\$18.7

2. Estimated Required CAFE Levels

Table A-2-1 - Average CAFE Requirements for Passenger Cars, Light Trucks, and Combined (mpg), Alternative 0 (Baseline)

Model Year	Passenger Car	Light Truck	Combined
2020	43.3	31.0	35.4
2021	43.9	31.5	36.0
2022	44.6	31.9	36.7
2023	45.2	32.4	37.4
2024	45.9	32.9	38.1
2025	46.6	33.5	38.7
2026	47.3	33.9	39.4
2027	47.3	33.9	39.4
2028	47.3	33.9	39.5
2029	47.3	33.9	39.5

**Table A-2-2 - Average CAFE Requirements for Passenger Cars, Light Trucks, and Combined (mpg),
Alternative 1**

Model Year	Passenger Car	Light Truck	Combined
2020	43.3	31.0	35.4
2021	43.9	31.5	36.0
2022	44.6	31.9	36.7
2023	45.2	32.4	37.4
2024	49.8	36.4	41.8
2025	51.5	37.7	43.2
2026	53.2	39.0	44.7
2027	53.2	39.0	44.8
2028	53.2	39.0	44.8
2029	53.2	39.0	44.9

**Table A-2-3 - Average CAFE Requirements for Passenger Cars, Light Trucks, and Combined (mpg),
Alternative 2**

Model Year	Passenger Car	Light Truck	Combined
2020	43.3	31.0	35.4
2021	43.9	31.5	36.0
2022	44.6	31.9	36.7
2023	45.2	32.4	37.4
2024	49.2	35.1	40.6
2025	53.4	38.2	44.2
2026	58.1	41.5	48.1
2027	58.1	41.5	48.1
2028	58.1	41.5	48.2
2029	58.1	41.5	48.2

**Table A-2-4 - Average CAFE Requirements for Passenger Cars, Light Trucks, and Combined (mpg),
Alternative 2.5**

Model Year	Passenger Car	Light Truck	Combined
2020	43.3	31.0	35.4
2021	43.9	31.5	36.0
2022	44.6	31.9	36.7
2023	45.2	32.4	37.4
2024	49.2	35.1	40.6
2025	53.4	38.2	44.2
2026	59.4	42.4	49.1
2027	59.4	42.4	49.1
2028	59.3	42.4	49.2
2029	59.3	42.4	49.3

**Table A-2-5 - Average CAFE Requirements for Passenger Cars, Light Trucks, and Combined (mpg),
Alternative 3**

Model Year	Passenger Car	Light Truck	Combined
2020	43.3	31.0	35.4
2021	43.9	31.5	36.0
2022	44.6	31.9	36.7
2023	45.2	32.4	37.4
2024	50.2	35.9	41.5
2025	55.8	39.9	46.1
2026	62.0	44.3	51.3
2027	62.0	44.3	51.3
2028	62.0	44.3	51.3
2029	62.0	44.3	51.4

Table A-2-6 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.4	36.0	36.7	37.4	38.1	38.7	39.4	39.4	39.5	39.5
Alternative 1	35.4	36.0	36.7	37.4	41.8	43.2	44.7	44.8	44.8	44.9
Alternative 2	35.4	36.0	36.7	37.4	40.6	44.2	48.1	48.1	48.2	48.2
Alternative 2.5	35.4	36.0	36.7	37.4	40.6	44.2	49.1	49.1	49.2	49.3
Alternative 3	35.4	36.0	36.7	37.4	41.5	46.1	51.3	51.3	51.3	51.4

Table A-2-7 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.3	43.9	44.6	45.2	45.9	46.6	47.3	47.3	47.3	47.3
Alternative 1	43.3	43.9	44.6	45.2	49.8	51.5	53.2	53.2	53.2	53.2
Alternative 2	43.3	43.9	44.6	45.2	49.2	53.4	58.1	58.1	58.1	58.1
Alternative 2.5	43.3	43.9	44.6	45.2	49.2	53.4	59.4	59.4	59.3	59.3
Alternative 3	43.3	43.9	44.6	45.2	50.2	55.8	62.0	62.0	62.0	62.0

Table A-2-8 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.0	31.5	31.9	32.4	32.9	33.5	33.9	33.9	33.9	33.9
Alternative 1	31.0	31.5	31.9	32.4	36.4	37.7	39.0	39.0	39.0	39.0
Alternative 2	31.0	31.5	31.9	32.4	35.1	38.2	41.5	41.5	41.5	41.5
Alternative 2.5	31.0	31.5	31.9	32.4	35.1	38.2	42.4	42.4	42.4	42.4
Alternative 3	31.0	31.5	31.9	32.4	35.9	39.9	44.3	44.3	44.3	44.3

Table A-2-9 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	37.7	38.4	39.2	39.9	40.6	41.3	42.0	42.0	42.1	42.2
Alternative 1	37.7	38.4	39.2	39.9	44.4	46.0	47.6	47.6	47.6	47.6
Alternative 2	37.7	38.4	39.2	39.9	43.4	47.2	51.4	51.4	51.5	51.5
Alternative 2.5	37.7	38.4	39.2	39.9	43.4	47.2	52.5	52.5	52.5	52.6
Alternative 3	37.7	38.4	39.2	39.9	44.4	49.3	54.8	54.8	54.9	54.9

Table A-2-10 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.6	36.3	37.0	37.6	38.4	39.0	39.6	39.7	39.7	39.8
Alternative 1	35.6	36.3	37.0	37.6	42.1	43.5	45.0	45.0	45.1	45.1
Alternative 2	35.6	36.3	37.0	37.6	41.0	44.6	48.5	48.5	48.6	48.6
Alternative 2.5	35.6	36.3	37.0	37.6	41.0	44.6	49.5	49.5	49.6	49.6
Alternative 3	35.6	36.3	37.0	37.6	41.9	46.5	51.7	51.7	51.8	51.8

Table A-2-11 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.3	31.7	32.3	32.8	33.4	33.9	34.4	34.4	34.4	34.4
Alternative 1	31.3	31.7	32.3	32.8	36.9	38.2	39.5	39.5	39.5	39.5
Alternative 2	31.3	31.7	32.3	32.8	35.7	38.8	42.2	42.2	42.2	42.2
Alternative 2.5	31.3	31.7	32.3	32.8	35.7	38.8	43.1	43.1	43.1	43.1
Alternative 3	31.3	31.7	32.3	32.8	36.4	40.5	45.0	45.0	45.0	45.0

Table A-2-12 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.8	32.4	33.0	33.6	34.1	34.7	35.2	35.3	35.3	35.4
Alternative 1	31.8	32.4	33.0	33.6	37.5	38.8	40.2	40.2	40.2	40.3
Alternative 2	31.8	32.4	33.0	33.6	36.4	39.6	43.0	43.0	43.1	43.1
Alternative 2.5	31.8	32.4	33.0	33.6	36.4	39.6	44.0	44.0	44.0	44.1
Alternative 3	31.8	32.4	33.0	33.6	37.2	41.3	45.9	45.9	46.0	46.0

Table A-2-13 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.7	33.2	33.9	34.4	35.0	35.6	36.1	36.2	36.2	36.3
Alternative 1	32.7	33.2	33.9	34.4	38.3	39.6	41.0	41.0	41.1	41.1
Alternative 2	32.7	33.2	33.9	34.4	37.1	40.4	44.0	44.0	44.0	44.1
Alternative 2.5	32.7	33.2	33.9	34.4	37.1	40.4	44.9	44.9	44.9	45.0
Alternative 3	32.7	33.2	33.9	34.4	37.9	42.2	46.9	46.9	46.9	47.0

Table A-2-14 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.6	39.3	40.1	40.7	41.4	42.2	42.8	42.9	43.0	43.0
Alternative 1	38.6	39.3	40.1	40.7	45.4	47.0	48.6	48.6	48.7	48.7
Alternative 2	38.6	39.3	40.1	40.7	44.4	48.2	52.5	52.5	52.5	52.6
Alternative 2.5	38.6	39.3	40.1	40.7	44.4	48.2	53.6	53.6	53.7	53.7
Alternative 3	38.6	39.3	40.1	40.7	45.4	50.4	56.0	56.0	56.0	56.1

Table A-2-15 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	41.6	42.3	43.1	43.8	44.5	45.2	45.9	45.9	45.9	46.0
Alternative 1	41.6	42.3	43.1	43.8	48.3	50.0	51.7	51.7	51.7	51.7
Alternative 2	41.6	42.3	43.1	43.8	47.6	51.7	56.2	56.2	56.2	56.3
Alternative 2.5	41.6	42.3	43.1	43.8	47.6	51.7	57.5	57.5	57.5	57.5
Alternative 3	41.6	42.3	43.1	43.8	48.6	54.0	60.1	60.1	60.1	60.1

Table A-2-16 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.9	39.7	40.5	41.3	42.0	42.7	43.5	43.5	43.6	43.7
Alternative 1	38.9	39.7	40.5	41.3	46.0	47.6	49.2	49.2	49.3	49.4
Alternative 2	38.9	39.7	40.5	41.3	44.9	48.8	53.1	53.1	53.2	53.2
Alternative 2.5	38.9	39.7	40.5	41.3	44.9	48.8	54.2	54.2	54.3	54.4
Alternative 3	38.9	39.7	40.5	41.3	45.9	50.9	56.6	56.6	56.7	56.8

Table A-2-17 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.6	33.1	33.7	34.2	34.7	35.3	35.9	35.9	35.9	35.9
Alternative 1	32.6	33.1	33.7	34.2	38.5	39.9	41.2	41.2	41.2	41.2
Alternative 2	32.6	33.1	33.7	34.2	37.3	40.5	43.9	43.9	44.0	44.0
Alternative 2.5	32.6	33.1	33.7	34.2	37.2	40.5	45.0	45.0	45.0	45.0
Alternative 3	32.6	33.1	33.7	34.2	38.1	42.2	47.0	47.0	47.0	47.0

Table A-2-18 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.7	39.3	40.0	40.7	41.3	42.0	42.7	42.8	42.8	42.8
Alternative 1	38.7	39.3	40.0	40.7	45.4	47.0	48.6	48.7	48.7	48.7
Alternative 2	38.7	39.3	40.0	40.7	44.3	48.1	52.3	52.3	52.4	52.4
Alternative 2.5	38.7	39.3	40.0	40.7	44.3	48.1	53.5	53.5	53.5	53.6
Alternative 3	38.7	39.3	40.0	40.7	45.2	50.2	55.8	55.8	55.9	55.9

Table A-2-19 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.7	41.3	42.1	42.8	43.5	44.2	44.8	44.9	44.9	45.0
Alternative 1	40.7	41.3	42.1	42.8	47.8	49.4	51.1	51.2	51.2	51.2
Alternative 2	40.7	41.3	42.1	42.8	46.5	50.6	55.0	55.0	55.0	55.1
Alternative 2.5	40.7	41.3	42.1	42.8	46.5	50.6	56.2	56.2	56.3	56.3
Alternative 3	40.7	41.3	42.1	42.8	47.5	52.8	58.7	58.7	58.8	58.8

Table A-2-20 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	39.2	39.9	40.6	41.3	42.0	42.7	43.4	43.4	43.5	43.5
Alternative 1	39.2	39.9	40.6	41.3	45.9	47.5	49.1	49.1	49.2	49.2
Alternative 2	39.2	39.9	40.6	41.3	45.0	48.9	53.2	53.2	53.2	53.3
Alternative 2.5	39.2	39.9	40.6	41.3	45.0	48.9	54.4	54.4	54.4	54.4
Alternative 3	39.2	39.9	40.6	41.3	46.0	51.1	56.7	56.7	56.8	56.8

Table A-2-21 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	37.0	37.7	38.3	39.0	39.7	40.3	41.0	41.0	41.1	41.1
Alternative 1	37.0	37.7	38.3	39.0	43.8	45.3	46.9	47.0	47.0	47.0
Alternative 2	37.0	37.7	38.3	39.0	42.5	46.2	50.2	50.2	50.3	50.3
Alternative 2.5	37.0	37.7	38.3	39.0	42.5	46.2	51.3	51.3	51.4	51.5
Alternative 3	37.0	37.7	38.3	39.0	43.4	48.2	53.5	53.5	53.6	53.6

Table A-2-22 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.5	40.4	41.1	41.8	42.4	43.1	43.7	43.7	43.7	43.8
Alternative 1	40.5	40.4	41.1	41.8	46.0	47.6	49.2	49.2	49.2	49.2
Alternative 2	40.5	40.4	41.1	41.8	45.3	49.3	53.6	53.6	53.6	53.6
Alternative 2.5	40.5	40.4	41.1	41.8	45.3	49.3	54.8	54.8	54.8	54.8
Alternative 3	40.5	40.4	41.1	41.8	46.3	51.5	57.3	57.3	57.3	57.3

Table A-2-23 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	37.1	37.9	38.6	39.3	40.1	40.8	41.4	41.5	41.6	41.6
Alternative 1	37.1	37.9	38.6	39.3	43.9	45.4	47.0	47.0	47.1	47.2
Alternative 2	37.1	37.9	38.6	39.3	42.8	46.6	50.7	50.7	50.8	50.8
Alternative 2.5	37.1	37.9	38.6	39.3	42.8	46.6	51.8	51.8	51.8	51.9
Alternative 3	37.1	37.9	38.6	39.3	43.8	48.6	54.1	54.1	54.1	54.2

Table A-2-24 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34.3	34.9	35.5	36.0	36.6	37.2	37.8	37.9	37.9	37.9
Alternative 1	34.3	34.9	35.5	36.0	40.4	41.8	43.3	43.3	43.3	43.3
Alternative 2	34.3	34.9	35.5	36.0	39.2	42.6	46.3	46.3	46.3	46.4
Alternative 2.5	34.3	34.9	35.5	36.0	39.2	42.6	47.3	47.3	47.4	47.4
Alternative 3	34.3	34.9	35.5	36.0	40.1	44.5	49.4	49.4	49.5	49.5

Table A-2-25 - Estimated Required Average Fuel Economy (mpg), Total Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	37.1	37.9	38.7	39.4	40.1	40.8	41.5	41.5	41.6	41.7
Alternative 1	37.1	37.9	38.7	39.4	44.1	45.6	47.2	47.2	47.3	47.4
Alternative 2	37.1	37.9	38.7	39.4	42.9	46.6	50.7	50.8	50.8	50.9
Alternative 2.5	37.1	37.9	38.7	39.4	42.9	46.6	51.8	51.8	51.9	52.0
Alternative 3	37.1	37.9	38.7	39.4	43.8	48.6	54.1	54.1	54.2	54.3

Table A-2-26 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	42.5	43.1	43.8	44.4	45.1	45.8	46.5	46.5	46.5	46.5
Alternative 1	42.5	43.1	43.8	44.4	48.9	50.6	52.3	52.3	52.3	52.2
Alternative 2	42.5	43.1	43.8	44.4	48.3	52.5	57.1	57.1	57.1	57.1
Alternative 2.5	42.5	43.1	43.8	44.4	48.3	52.5	58.3	58.3	58.3	58.3
Alternative 3	42.5	43.1	43.8	44.4	49.4	54.9	60.9	60.9	60.9	60.9

Table A-2-27 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	41.4	42.0	42.7	43.3	44.0	44.6	45.3	45.3	45.3	45.3
Alternative 1	41.4	42.0	42.7	43.3	47.7	49.3	50.9	50.9	50.9	50.9
Alternative 2	41.4	42.0	42.7	43.3	47.1	51.2	55.6	55.6	55.6	55.6
Alternative 2.5	41.4	42.0	42.7	43.3	47.1	51.2	56.8	56.8	56.8	56.8
Alternative 3	41.4	42.0	42.7	43.3	48.1	53.5	59.4	59.4	59.4	59.4

Table A-2-28 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	41.6	42.0	42.5	43.0	43.6	44.2	44.9	44.9	44.8	44.7
Alternative 1	41.6	42.0	42.5	43.0	47.3	48.9	50.5	50.5	50.4	50.4
Alternative 2	41.6	42.0	42.5	43.0	46.8	50.9	55.2	55.2	55.1	55.1
Alternative 2.5	41.6	42.0	42.5	43.0	46.8	50.9	56.4	56.4	56.4	56.4
Alternative 3	41.6	42.0	42.5	43.0	47.8	53.2	59.0	59.0	59.0	59.0

Table A-2-29 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	42.2	42.8	43.5	44.1	44.8	45.5	46.1	46.1	46.1	46.1
Alternative 1	42.2	42.8	43.5	44.1	48.5	50.2	51.9	51.9	51.9	51.9
Alternative 2	42.2	42.8	43.5	44.1	47.9	52.2	56.7	56.7	56.7	56.7
Alternative 2.5	42.2	42.8	43.5	44.1	47.9	52.2	57.9	57.9	57.9	57.9
Alternative 3	42.2	42.8	43.5	44.1	49.0	54.5	60.5	60.5	60.5	60.5

Table A-2-30 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.9	44.5	45.2	45.8	46.5	47.3	48.0	48.0	48.0	47.9
Alternative 1	43.9	44.5	45.2	45.8	50.4	52.2	53.9	53.9	53.9	53.9
Alternative 2	43.9	44.5	45.2	45.8	49.8	54.2	58.9	58.9	58.9	58.9
Alternative 2.5	43.9	44.5	45.2	45.8	49.8	54.2	60.2	60.2	60.1	60.1
Alternative 3	43.9	44.5	45.2	45.8	50.9	56.7	62.9	62.9	62.9	62.9

Table A-2-31 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.6	44.3	45.0	45.6	46.3	47.0	47.7	47.7	47.7	47.7
Alternative 1	43.6	44.3	45.0	45.6	50.2	51.9	53.7	53.7	53.7	53.7
Alternative 2	43.6	44.3	45.0	45.6	49.6	53.9	58.6	58.6	58.6	58.6
Alternative 2.5	43.6	44.3	45.0	45.6	49.6	53.9	59.9	59.9	59.9	59.9
Alternative 3	43.6	44.3	45.0	45.6	50.7	56.4	62.6	62.6	62.6	62.6

Table A-2-32 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.3	44.0	44.7	45.5	46.2	46.9	47.6	47.6	47.6	47.6
Alternative 1	43.3	44.0	44.7	45.5	50.0	51.7	53.4	53.4	53.4	53.4
Alternative 2	43.3	44.0	44.7	45.5	49.4	53.7	58.3	58.3	58.3	58.3
Alternative 2.5	43.3	44.0	44.7	45.5	49.4	53.7	59.6	59.6	59.6	59.6
Alternative 3	43.3	44.0	44.7	45.5	50.5	56.1	62.3	62.3	62.3	62.3

Table A-2-33 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	44.0	44.7	45.4	46.1	46.8	47.5	48.3	48.3	48.3	48.3
Alternative 1	44.0	44.7	45.4	46.1	50.8	52.5	54.2	54.2	54.3	54.3
Alternative 2	44.0	44.7	45.4	46.1	50.1	54.5	59.2	59.2	59.2	59.2
Alternative 2.5	44.0	44.7	45.4	46.1	50.1	54.5	60.5	60.5	60.5	60.5
Alternative 3	44.0	44.7	45.4	46.1	51.2	56.9	63.3	63.3	63.3	63.3

Table A-2-34 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	42.1	42.7	43.3	44.0	44.7	45.4	46.1	46.1	46.1	46.1
Alternative 1	42.1	42.7	43.3	44.0	48.4	50.1	51.8	51.8	51.8	51.8
Alternative 2	42.1	42.7	43.3	44.0	47.8	52.0	56.5	56.5	56.5	56.5
Alternative 2.5	42.1	42.7	43.3	44.0	47.8	52.0	57.8	57.8	57.8	57.8
Alternative 3	42.1	42.7	43.3	44.0	48.9	54.3	60.4	60.4	60.4	60.4

Table A-2-35 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.9	44.6	45.2	45.9	46.6	47.3	48.0	48.0	48.0	48.0
Alternative 1	43.9	44.6	45.2	45.9	50.6	52.3	54.1	54.1	54.1	54.1
Alternative 2	43.9	44.6	45.2	45.9	50.0	54.3	59.0	59.0	59.0	59.0
Alternative 2.5	43.9	44.6	45.2	45.9	50.0	54.3	60.3	60.3	60.3	60.3
Alternative 3	43.9	44.6	45.2	45.9	51.1	56.7	63.0	63.0	63.0	63.0

Table A-2-36 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	46.5	47.2	48.0	48.8	49.6	50.4	51.1	51.2	51.2	51.2
Alternative 1	46.5	47.2	48.0	48.8	53.8	55.6	57.5	57.5	57.5	57.5
Alternative 2	46.5	47.2	48.0	48.8	53.1	57.7	62.7	62.7	62.7	62.8
Alternative 2.5	46.5	47.2	48.0	48.8	53.1	57.7	64.1	64.1	64.1	64.2
Alternative 3	46.5	47.2	48.0	48.8	54.2	60.3	67.0	67.0	67.0	67.0

Table A-2-37 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.2	43.9	44.5	45.1	45.8	46.5	47.3	47.3	47.2	47.2
Alternative 1	43.2	43.9	44.5	45.1	49.7	51.4	53.1	53.1	53.1	53.1
Alternative 2	43.2	43.9	44.5	45.1	49.1	53.4	58.0	58.0	58.0	58.0
Alternative 2.5	43.2	43.9	44.5	45.1	49.1	53.4	59.3	59.3	59.3	59.3
Alternative 3	43.2	43.9	44.5	45.1	50.2	55.8	61.9	61.9	61.9	61.9

Table A-2-38 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	44.9	45.5	46.2	46.9	47.7	48.4	49.1	49.1	49.1	49.1
Alternative 1	44.9	45.5	46.2	46.9	51.7	53.4	55.2	55.2	55.2	55.2
Alternative 2	44.9	45.5	46.2	46.9	51.0	55.5	60.3	60.3	60.3	60.3
Alternative 2.5	44.9	45.5	46.2	46.9	51.0	55.5	61.6	61.6	61.6	61.6
Alternative 3	44.9	45.5	46.2	46.9	52.2	57.9	64.4	64.4	64.4	64.4

Table A-2-39 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.9	40.8	41.4	42.1	42.7	43.4	44.0	44.0	44.0	44.1
Alternative 1	40.9	40.8	41.4	42.1	46.3	47.9	49.5	49.5	49.5	49.5
Alternative 2	40.9	40.8	41.4	42.1	45.7	49.7	54.0	54.0	54.0	54.0
Alternative 2.5	40.9	40.8	41.4	42.1	45.7	49.7	55.2	55.2	55.2	55.2
Alternative 3	40.9	40.8	41.4	42.1	46.7	51.9	57.7	57.7	57.7	57.7

Table A-2-40 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.6	44.3	45.0	45.6	46.3	47.1	47.8	47.8	47.8	47.8
Alternative 1	43.6	44.3	45.0	45.6	50.3	51.9	53.7	53.7	53.7	53.7
Alternative 2	43.6	44.3	45.0	45.6	49.7	53.9	58.6	58.6	58.6	58.6
Alternative 2.5	43.6	44.3	45.0	45.6	49.7	53.9	59.9	59.9	59.9	59.9
Alternative 3	43.6	44.3	45.0	45.6	50.8	56.4	62.7	62.7	62.7	62.7

Table A-2-41 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.9	41.5	42.2	42.8	43.4	44.1	44.7	44.7	44.7	44.7
Alternative 1	40.9	41.5	42.2	42.8	47.1	48.6	50.3	50.3	50.3	50.3
Alternative 2	40.9	41.5	42.2	42.8	46.5	50.5	54.9	54.9	54.9	54.9
Alternative 2.5	40.9	41.5	42.2	42.8	46.5	50.5	56.1	56.1	56.1	56.1
Alternative 3	40.9	41.5	42.2	42.8	47.5	52.8	58.7	58.7	58.7	58.7

Table A-2-42 - Estimated Required Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	43.6	44.3	45.0	45.7	46.4	47.1	47.8	47.8	47.9	47.9
Alternative 1	43.6	44.3	45.0	45.7	50.3	52.0	53.8	53.8	53.8	53.8
Alternative 2	43.6	44.3	45.0	45.7	49.7	54.0	58.7	58.7	58.7	58.7
Alternative 2.5	43.6	44.3	45.0	45.7	49.7	54.0	60.0	60.0	60.0	60.0
Alternative 3	43.6	44.3	45.0	45.7	50.8	56.4	62.7	62.7	62.7	62.7

Table A-2-43 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.7	32.2	32.6	33.1	33.6	34.2	34.7	34.7	34.7	34.7
Alternative 1	31.7	32.2	32.6	33.1	37.4	38.6	39.9	39.9	39.9	39.9
Alternative 2	31.7	32.2	32.6	33.1	36.0	39.2	42.6	42.6	42.6	42.6
Alternative 2.5	31.7	32.2	32.6	33.1	36.0	39.2	43.5	43.5	43.5	43.5
Alternative 3	31.7	32.2	32.6	33.1	36.8	40.9	45.5	45.5	45.5	45.5

Table A-2-44 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.7	32.2	32.6	33.1	33.7	34.2	34.7	34.7	34.7	34.7
Alternative 1	31.7	32.2	32.6	33.1	37.4	38.6	39.9	39.9	39.9	39.9
Alternative 2	31.7	32.2	32.6	33.1	36.0	39.2	42.6	42.6	42.6	42.6
Alternative 2.5	31.7	32.2	32.6	33.1	36.0	39.2	43.5	43.5	43.5	43.5
Alternative 3	31.7	32.2	32.6	33.1	36.8	40.9	45.5	45.5	45.5	45.5

Table A-2-45 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.1	30.5	31.0	31.5	32.0	32.5	32.9	32.9	32.9	32.9
Alternative 1	30.1	30.5	31.0	31.5	35.5	36.7	37.9	37.9	37.9	37.9
Alternative 2	30.1	30.5	31.0	31.5	34.2	37.2	40.4	40.4	40.4	40.4
Alternative 2.5	30.1	30.5	31.0	31.5	34.2	37.2	41.3	41.3	41.3	41.3
Alternative 3	30.1	30.5	31.0	31.5	34.9	38.8	43.1	43.1	43.1	43.1

Table A-2-46 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.2	29.7	30.1	30.6	31.0	31.5	32.0	32.0	32.0	32.0
Alternative 1	29.2	29.7	30.1	30.6	34.3	35.5	36.7	36.7	36.7	36.7
Alternative 2	29.2	29.7	30.1	30.6	33.1	36.0	39.1	39.1	39.1	39.1
Alternative 2.5	29.2	29.7	30.1	30.6	33.1	36.0	40.0	40.0	40.0	40.0
Alternative 3	29.2	29.7	30.1	30.6	33.8	37.6	41.8	41.8	41.8	41.8

Table A-2-47 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.1	29.5	30.0	30.4	30.9	31.4	31.8	31.8	31.8	31.8
Alternative 1	29.1	29.5	30.0	30.4	33.9	35.1	36.3	36.3	36.3	36.3
Alternative 2	29.1	29.5	30.0	30.4	32.7	35.6	38.7	38.7	38.7	38.7
Alternative 2.5	29.1	29.5	30.0	30.4	32.7	35.6	39.5	39.5	39.5	39.5
Alternative 3	29.1	29.5	30.0	30.4	33.4	37.2	41.3	41.3	41.3	41.3

Table A-2-48 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	33.3	33.8	34.3	34.8	35.3	35.9	36.4	36.4	36.4	36.4
Alternative 1	33.3	33.8	34.3	34.8	39.2	40.6	41.9	41.9	41.9	41.9
Alternative 2	33.3	33.8	34.3	34.8	37.8	41.1	44.7	44.7	44.7	44.7
Alternative 2.5	33.3	33.8	34.3	34.8	37.8	41.1	45.7	45.7	45.7	45.7
Alternative 3	33.3	33.8	34.3	34.8	38.7	43.0	47.7	47.7	47.7	47.7

Table A-2-49 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.3	31.7	32.2	32.7	33.2	33.7	34.2	34.2	34.2	34.2
Alternative 1	31.3	31.7	32.2	32.7	36.9	38.1	39.4	39.4	39.4	39.4
Alternative 2	31.3	31.7	32.2	32.7	35.5	38.6	42.0	42.0	42.0	42.0
Alternative 2.5	31.3	31.7	32.2	32.7	35.5	38.6	42.9	42.9	42.9	42.9
Alternative 3	31.3	31.7	32.2	32.7	36.3	40.4	44.9	44.9	44.9	44.9

Table A-2-50 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.8	33.3	33.9	34.4	34.9	35.4	36.0	36.0	36.0	36.0
Alternative 1	32.8	33.3	33.9	34.4	38.8	40.1	41.4	41.4	41.4	41.4
Alternative 2	32.8	33.3	33.9	34.4	37.4	40.6	44.1	44.1	44.1	44.1
Alternative 2.5	32.8	33.3	33.9	34.4	37.4	40.6	45.1	45.1	45.1	45.1
Alternative 3	32.8	33.3	33.9	34.4	38.2	42.4	47.1	47.1	47.1	47.1

Table A-2-51 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.3	32.8	33.3	33.8	34.3	34.9	35.4	35.4	35.4	35.4
Alternative 1	32.3	32.8	33.3	33.8	38.1	39.4	40.7	40.7	40.7	40.7
Alternative 2	32.3	32.8	33.3	33.8	36.8	40.0	43.4	43.4	43.4	43.4
Alternative 2.5	32.3	32.8	33.3	33.8	36.8	40.0	44.4	44.4	44.4	44.4
Alternative 3	32.3	32.8	33.3	33.8	37.6	41.7	46.4	46.4	46.4	46.4

Table A-2-52 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34.8	35.3	35.8	36.4	36.9	37.5	38.1	38.1	38.1	38.1
Alternative 1	34.8	35.3	35.8	36.4	41.0	42.4	43.9	43.9	43.9	43.9
Alternative 2	34.8	35.3	35.8	36.4	39.6	43.0	46.7	46.7	46.7	46.7
Alternative 2.5	34.8	35.3	35.8	36.4	39.6	43.0	47.8	47.8	47.8	47.8
Alternative 3	34.8	35.3	35.8	36.4	40.4	44.9	49.9	49.9	49.9	49.9

Table A-2-53 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.8	37.3	37.9	38.5	39.0	39.6	40.2	40.2	40.2	40.2
Alternative 1	36.8	37.3	37.9	38.5	43.4	44.8	46.3	46.4	46.4	46.4
Alternative 2	36.8	37.3	37.9	38.5	41.8	45.4	49.4	49.4	49.4	49.4
Alternative 2.5	36.8	37.3	37.9	38.5	41.8	45.4	50.5	50.5	50.5	50.5
Alternative 3	36.8	37.3	37.9	38.5	42.7	47.5	52.7	52.7	52.8	52.8

Table A-2-54 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.5	33.0	33.5	34.0	34.6	35.1	35.6	35.6	35.6	35.6
Alternative 1	32.5	33.0	33.5	34.0	38.4	39.7	41.0	41.0	41.0	41.0
Alternative 2	32.5	33.0	33.5	34.0	37.0	40.2	43.7	43.7	43.7	43.7
Alternative 2.5	32.5	33.0	33.5	34.0	37.0	40.2	44.7	44.7	44.7	44.7
Alternative 3	32.5	33.0	33.5	34.0	37.8	42.0	46.7	46.7	46.7	46.7

Table A-2-55 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.4	35.9	36.4	37.0	37.6	38.1	38.7	38.7	38.7	38.7
Alternative 1	35.4	35.9	36.4	37.0	41.7	43.1	44.6	44.6	44.6	44.6
Alternative 2	35.4	35.9	36.4	37.0	40.2	43.7	47.5	47.5	47.5	47.5
Alternative 2.5	35.4	35.9	36.4	37.0	40.2	43.7	48.6	48.6	48.6	48.6
Alternative 3	35.4	35.9	36.4	37.0	41.1	45.7	50.7	50.7	50.7	50.7

Table A-2-56 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.6	31.1	31.6	32.0	32.5	33.0	33.5	33.5	33.5	33.5
Alternative 1	30.6	31.1	31.6	32.0	36.1	37.3	38.6	38.6	38.6	38.6
Alternative 2	30.6	31.1	31.6	32.0	34.8	37.9	41.1	41.1	41.1	41.1
Alternative 2.5	30.6	31.1	31.6	32.0	34.8	37.8	42.1	42.1	42.1	42.1
Alternative 3	30.6	31.1	31.6	32.0	35.6	39.5	43.9	44.0	44.0	44.0

Table A-2-57 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.8	32.3	32.7	33.2	33.8	34.3	34.8	34.8	34.8	34.8
Alternative 1	31.8	32.3	32.7	33.2	37.5	38.7	40.0	40.0	40.0	40.0
Alternative 2	31.8	32.3	32.7	33.2	36.1	39.3	42.7	42.7	42.7	42.7
Alternative 2.5	31.8	32.3	32.7	33.2	36.1	39.3	43.6	43.6	43.6	43.6
Alternative 3	31.8	32.3	32.7	33.2	36.9	41.0	45.6	45.6	45.6	45.6

Table A-2-58 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.5	33.0	33.5	34.0	34.5	35.0	35.6	35.6	35.6	35.6
Alternative 1	32.5	33.0	33.5	34.0	38.3	39.6	41.0	41.0	41.0	41.0
Alternative 2	32.5	33.0	33.5	34.0	36.9	40.2	43.6	43.6	43.6	43.6
Alternative 2.5	32.5	33.0	33.5	34.0	36.9	40.2	44.6	44.6	44.6	44.6
Alternative 3	32.5	33.0	33.5	34.0	37.8	42.0	46.6	46.6	46.6	46.6

Table A-2-59 - Estimated Required Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	33.5	34.1	34.6	35.1	35.6	36.2	36.7	36.7	36.7	36.7
Alternative 1	33.5	34.1	34.6	35.1	39.6	40.9	42.3	42.3	42.3	42.3
Alternative 2	33.5	34.1	34.6	35.1	38.2	41.5	45.1	45.1	45.1	45.1
Alternative 2.5	33.5	34.1	34.6	35.1	38.2	41.5	46.1	46.1	46.1	46.1
Alternative 3	33.5	34.1	34.6	35.1	39.0	43.3	48.2	48.2	48.2	48.2

3. Estimated Achieved CAFE Levels

Table A-3-1 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34.4	36.0	38.2	40.0	41.4	42.2	43.2	43.4	43.7	44.1
Alternative 1	34.4	36.0	38.2	40.3	42.7	44.0	45.5	46.0	46.4	46.8
Alternative 2	34.4	36.0	38.2	40.7	43.3	45.2	47.7	48.4	48.9	49.3
Alternative 2.5	34.4	36.0	38.2	40.8	43.5	45.4	48.4	49.1	49.7	50.0
Alternative 3	34.4	36.0	38.2	41.0	44.4	46.7	49.8	50.7	51.4	51.7

Table A-3-2 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	41.8	43.7	46.9	48.4	50.4	51.5	52.4	52.8	52.9	53.3
Alternative 1	41.8	43.7	46.9	49.0	52.3	54.1	55.7	56.1	56.5	56.8
Alternative 2	41.8	43.7	46.9	49.8	54.1	57.2	59.7	60.6	61.1	61.2
Alternative 2.5	41.8	43.7	46.9	50.0	54.7	57.9	60.9	61.8	62.5	62.6
Alternative 3	41.8	43.7	46.9	50.3	55.8	59.6	63.0	64.2	65.1	65.2

Table A-3-3 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.2	31.5	33.0	34.6	35.6	36.1	36.9	37.1	37.3	37.5
Alternative 1	30.2	31.5	33.0	34.9	36.7	37.5	38.8	39.3	39.7	40.0
Alternative 2	30.2	31.5	33.0	35.0	36.7	37.9	40.2	40.8	41.2	41.6
Alternative 2.5	30.2	31.5	33.0	35.0	36.8	38.0	40.7	41.4	41.8	42.1
Alternative 3	30.2	31.5	33.0	35.2	37.5	39.1	41.9	42.6	43.2	43.4

Table A-3-4 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34.5	37.2	40.5	43.0	44.8	47.0	48.3	48.4	48.5	48.8
Alternative 1	34.5	37.2	40.5	43.5	45.4	47.5	48.5	48.6	48.7	48.9
Alternative 2	34.5	37.2	40.5	43.5	45.2	48.4	50.2	51.5	51.6	51.8
Alternative 2.5	34.5	37.2	40.5	43.5	45.3	48.9	50.8	52.5	52.7	52.9
Alternative 3	34.5	37.2	40.5	43.8	45.8	50.1	52.0	54.9	55.2	55.5

Table A-3-5 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.7	33.8	34.7	36.6	39.2	40.5	41.4	41.8	42.0	42.4
Alternative 1	31.7	33.8	34.7	36.9	40.1	41.7	42.7	43.5	43.8	44.0
Alternative 2	31.7	33.8	34.7	36.9	39.9	41.4	42.4	44.4	45.2	45.4
Alternative 2.5	31.7	33.8	34.7	36.9	39.9	41.4	42.4	44.4	45.5	45.8
Alternative 3	31.7	33.8	34.7	36.9	40.3	41.7	42.7	44.8	46.4	46.6

Table A-3-6 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28.3	29.4	31.9	34.0	34.4	34.5	35.2	35.5	36.0	36.1
Alternative 1	28.3	29.4	31.9	34.0	34.3	34.4	35.5	36.7	37.7	38.1
Alternative 2	28.3	29.4	31.9	34.0	34.3	34.3	35.7	37.0	38.2	38.6
Alternative 2.5	28.3	29.4	31.9	34.0	34.3	34.3	35.9	37.2	38.2	38.6
Alternative 3	28.3	29.4	31.9	34.0	34.3	34.3	35.9	37.2	38.3	38.7

Table A-3-7 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.4	33.1	35.2	37.8	39.1	39.4	40.7	40.8	40.9	41.0
Alternative 1	31.4	33.1	35.2	38.0	39.0	39.4	40.8	40.9	41.1	41.1
Alternative 2	31.4	33.1	35.2	38.9	40.1	40.5	43.5	43.6	43.8	43.8
Alternative 2.5	31.4	33.1	35.2	38.9	40.1	40.5	44.3	44.4	44.5	44.5
Alternative 3	31.4	33.1	35.2	39.1	41.4	42.0	46.1	46.1	46.3	46.4

Table A-3-8 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.9	32.4	34.0	34.7	35.5	36.2	36.7	36.8	36.9	37.5
Alternative 1	30.9	32.4	34.0	34.9	38.1	40.0	41.4	41.7	41.9	42.6
Alternative 2	30.9	32.4	34.0	34.8	37.3	40.5	43.8	44.5	44.7	45.3
Alternative 2.5	30.9	32.4	34.0	34.8	37.3	40.6	44.7	45.5	45.6	46.2
Alternative 3	30.9	32.4	34.0	34.9	37.9	42.3	46.3	47.3	47.5	47.7

Table A-3-9 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.2	41.2	44.5	45.5	46.6	48.6	49.6	49.7	49.7	49.8
Alternative 1	40.2	41.2	44.5	45.6	46.4	48.3	49.3	49.3	49.4	49.4
Alternative 2	40.2	41.2	44.5	47.2	48.8	51.0	52.2	52.3	52.6	52.9
Alternative 2.5	40.2	41.2	44.5	47.9	50.3	52.6	53.9	54.0	54.4	54.8
Alternative 3	40.2	41.2	44.5	48.8	51.7	54.3	55.6	55.7	56.4	56.8

Table A-3-10 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.0	39.3	42.3	43.9	46.1	46.4	47.1	47.4	47.5	47.8
Alternative 1	38.0	39.3	42.3	43.9	47.7	49.1	51.8	52.3	52.4	52.5
Alternative 2	38.0	39.3	42.3	43.9	48.3	50.7	56.3	56.8	57.0	57.1
Alternative 2.5	38.0	39.3	42.3	43.9	48.3	50.7	57.5	58.0	58.2	58.3
Alternative 3	38.0	39.3	42.3	43.9	49.5	52.6	60.1	60.6	60.9	61.0

Table A-3-11 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.7	40.7	41.5	41.9	44.6	45.2	45.4	46.1	46.2	46.2
Alternative 1	36.7	40.7	41.5	41.9	47.1	48.2	49.2	50.0	50.3	50.3
Alternative 2	36.7	40.7	41.5	41.9	49.0	51.7	53.1	54.0	54.4	54.4
Alternative 2.5	36.7	40.7	41.5	41.9	50.4	52.8	54.2	55.1	55.6	55.6
Alternative 3	36.7	40.7	41.5	41.9	51.7	55.0	56.6	57.4	57.9	58.1

Table A-3-12 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28.9	30.1	31.5	33.9	35.7	36.0	36.4	36.5	36.5	36.8
Alternative 1	28.9	30.1	31.5	34.1	36.3	37.5	41.0	42.0	42.0	42.5
Alternative 2	28.9	30.1	31.5	35.0	37.2	38.7	42.3	43.3	43.3	43.9
Alternative 2.5	28.9	30.1	31.5	35.0	37.2	38.7	42.3	43.3	43.3	44.8
Alternative 3	28.9	30.1	31.5	35.0	37.2	38.7	42.2	43.3	43.3	46.7

Table A-3-13 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.6	37.8	38.7	43.6	44.2	45.2	45.9	46.0	46.0	46.1
Alternative 1	36.6	37.8	38.7	43.7	44.6	47.7	49.2	49.2	49.3	49.3
Alternative 2	36.6	37.8	38.7	43.7	45.0	50.5	53.9	53.9	54.0	54.0
Alternative 2.5	36.6	37.8	38.7	43.7	45.1	51.2	55.5	55.5	55.6	55.6
Alternative 3	36.6	37.8	38.7	43.7	45.0	52.1	56.3	56.4	56.4	56.5

Table A-3-14 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	39.3	39.9	40.1	40.3	40.4	46.0	46.1	46.2	46.3	46.3
Alternative 1	39.3	39.9	40.1	40.3	40.4	51.9	52.0	52.1	52.1	52.2
Alternative 2	39.3	39.9	40.1	40.3	40.4	54.9	55.0	55.0	55.1	55.2
Alternative 2.5	39.3	39.9	40.1	40.3	40.4	56.1	56.2	56.2	56.3	56.4
Alternative 3	39.3	39.9	40.1	40.3	40.4	58.7	58.8	58.8	58.9	58.9

Table A-3-15 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	37.8	40.2	42.3	43.0	44.6	45.3	45.6	45.7	46.0	46.1
Alternative 1	37.8	40.2	42.3	44.6	47.2	48.5	49.2	49.3	50.2	50.3
Alternative 2	37.8	40.2	42.3	45.2	48.7	51.7	52.9	53.3	54.6	55.1
Alternative 2.5	37.8	40.2	42.3	45.2	49.2	52.2	53.4	54.1	55.5	56.0
Alternative 3	37.8	40.2	42.3	45.2	50.3	53.3	54.6	55.6	57.9	58.4

Table A-3-16 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	39.3	40.1	42.9	46.1	48.3	49.9	50.5	50.7	50.7	50.8
Alternative 1	39.3	40.1	42.9	46.8	49.5	51.1	52.0	52.2	52.2	52.3
Alternative 2	39.3	40.1	42.9	46.8	49.5	51.1	53.1	53.3	53.3	53.4
Alternative 2.5	39.3	40.1	42.9	46.8	49.5	51.1	53.3	53.5	53.5	53.7
Alternative 3	39.3	40.1	42.9	47.0	50.0	51.6	54.0	54.3	54.4	54.4

Table A-3-17 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	720.0	740.6	745.1	751.8	754.5	756.8	757.6	758.0	758.7	759.2
Alternative 1	720.0	740.6	745.1	751.8	754.4	756.3	756.8	757.1	757.7	758.1
Alternative 2	720.0	740.6	745.1	751.8	754.2	755.9	756.2	756.3	756.9	757.4
Alternative 2.5	720.0	740.6	745.1	751.8	754.2	755.7	756.0	756.1	756.7	757.2
Alternative 3	720.0	740.6	745.1	751.8	754.1	755.3	755.6	755.5	756.2	756.6

Table A-3-18 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.6	38.1	40.3	41.6	42.7	43.0	45.3	45.8	46.2	47.1
Alternative 1	36.6	38.1	40.3	42.9	45.7	46.1	49.0	49.5	50.3	51.1
Alternative 2	36.6	38.1	40.3	43.5	47.7	48.2	51.6	51.9	52.5	52.6
Alternative 2.5	36.6	38.1	40.3	43.7	47.9	48.5	52.2	52.5	53.2	53.3
Alternative 3	36.6	38.1	40.3	44.0	49.9	50.5	55.0	55.4	56.4	56.4

Table A-3-19 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	33.1	33.4	33.6	41.3	41.5	42.6	43.6	45.3	45.3	45.3
Alternative 1	33.1	33.4	33.6	41.1	41.3	42.4	43.3	45.9	45.9	46.0
Alternative 2	33.1	33.4	33.6	41.9	42.1	43.2	44.2	47.8	47.9	47.9
Alternative 2.5	33.1	33.4	33.6	42.5	42.7	43.9	44.9	48.9	48.9	49.0
Alternative 3	33.1	33.4	33.6	43.9	44.1	45.3	46.4	51.2	51.3	51.3

Table A-3-20 - Estimated Achieved Average Fuel Economy (mpg), Total Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	33.4	34.9	36.8	38.7	44.6	46.6	47.9	48.2	48.5	48.7
Alternative 1	33.4	34.9	36.8	38.7	45.1	47.0	48.4	48.7	49.3	49.4
Alternative 2	33.4	34.9	36.8	38.7	44.5	47.1	48.7	49.8	50.8	51.1
Alternative 2.5	33.4	34.9	36.8	38.7	44.5	47.1	48.9	50.1	51.2	51.4
Alternative 3	33.4	34.9	36.8	38.7	44.5	48.0	51.3	52.9	54.2	54.6

Table A-3-21 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.7	40.1	43.8	45.9	48.2	51.9	54.1	54.1	54.1	54.4
Alternative 1	36.7	40.1	43.8	46.2	48.9	52.4	54.0	54.1	54.1	54.4
Alternative 2	36.7	40.1	43.8	46.0	48.3	53.8	57.1	57.2	57.2	57.5
Alternative 2.5	36.7	40.1	43.8	46.1	48.4	54.8	58.3	58.4	58.4	58.7
Alternative 3	36.7	40.1	43.8	46.6	49.4	57.1	60.9	61.1	61.4	61.9

Table A-3-22 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	33.9	37.3	38.9	39.8	45.8	47.3	47.5	47.8	47.9	48.6
Alternative 1	33.9	37.3	38.9	40.0	47.9	49.5	49.8	50.9	51.5	51.6
Alternative 2	33.9	37.3	38.9	40.0	47.3	48.9	49.2	53.8	55.6	55.6
Alternative 2.5	33.9	37.3	38.9	40.0	47.3	48.9	49.2	53.8	56.8	56.8
Alternative 3	33.9	37.3	38.9	40.0	48.3	49.9	50.2	55.0	59.4	59.7

Table A-3-23 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.7	38.9	41.1	43.4	44.9	45.1	47.4	47.5	48.4	48.4
Alternative 1	30.7	38.9	41.1	44.6	46.1	46.2	49.9	49.9	50.5	50.5
Alternative 2	30.7	38.9	41.1	44.6	46.1	46.2	53.2	54.1	55.2	55.2
Alternative 2.5	30.7	38.9	41.1	44.6	46.0	46.2	55.3	56.4	56.8	56.8
Alternative 3	30.7	38.9	41.1	44.6	46.0	46.2	55.5	57.1	59.1	59.1

Table A-3-24 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.9	37.4	43.9	48.8	48.9	49.2	51.6	51.9	51.9	52.0
Alternative 1	36.9	37.4	43.9	50.6	50.7	51.8	55.0	55.1	55.1	55.2
Alternative 2	36.9	37.4	43.9	56.9	56.8	58.3	59.6	59.7	59.8	59.7
Alternative 2.5	36.9	37.4	43.9	56.9	56.9	58.4	59.6	59.8	59.8	59.7
Alternative 3	36.9	37.4	43.9	56.9	56.9	58.5	61.6	61.8	61.8	61.7

Table A-3-25 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	40.3	40.8	44.0	45.8	46.8	48.7	48.9	49.0	49.0	49.0
Alternative 1	40.3	40.8	44.0	46.5	49.8	53.2	54.8	55.2	55.3	55.3
Alternative 2	40.3	40.8	44.0	46.2	49.3	54.5	57.6	59.4	59.5	59.5
Alternative 2.5	40.3	40.8	44.0	46.2	49.3	55.3	58.6	60.8	60.8	60.7
Alternative 3	40.3	40.8	44.0	46.9	50.1	56.9	60.0	63.0	63.0	63.0

Table A-3-26 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	45.0	46.0	48.9	49.6	50.2	52.0	53.7	53.8	53.8	53.9
Alternative 1	45.0	46.0	48.9	49.8	50.4	52.5	54.2	54.2	54.3	54.3
Alternative 2	45.0	46.0	48.9	52.9	53.6	55.8	58.1	58.3	58.7	58.8
Alternative 2.5	45.0	46.0	48.9	54.4	55.6	58.0	60.5	60.7	61.3	61.4
Alternative 3	45.0	46.0	48.9	55.6	57.0	59.4	62.0	62.1	63.4	63.5

Table A-3-27 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	39.4	40.9	44.5	45.7	48.3	48.5	48.7	49.0	49.2	49.5
Alternative 1	39.4	40.9	44.5	45.7	50.3	51.9	53.6	54.1	54.2	54.3
Alternative 2	39.4	40.9	44.5	45.7	51.0	53.9	58.4	59.0	59.2	59.3
Alternative 2.5	39.4	40.9	44.5	45.7	51.0	53.9	59.6	60.2	60.4	60.5
Alternative 3	39.4	40.9	44.5	45.7	52.5	56.3	62.3	62.9	63.2	63.3

Table A-3-28 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	41.9	45.7	46.8	47.0	49.3	50.3	50.4	50.7	50.7	50.7
Alternative 1	41.9	45.7	46.8	47.0	50.8	52.7	54.2	54.5	54.9	54.9
Alternative 2	41.9	45.7	46.8	47.0	52.1	56.8	59.2	59.6	60.2	60.2
Alternative 2.5	41.9	45.7	46.8	47.0	53.9	58.1	60.5	61.0	61.6	61.6
Alternative 3	41.9	45.7	46.8	47.0	54.6	60.6	63.3	63.8	64.5	64.8

Table A-3-29 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.7	36.9	37.0	38.7	46.1	46.1	46.1	46.9	46.9	46.9
Alternative 1	35.7	36.9	37.0	39.5	47.3	47.2	47.3	49.4	49.4	51.8
Alternative 2	35.7	36.9	37.0	39.5	47.3	47.3	47.3	49.5	49.5	53.5
Alternative 2.5	35.7	36.9	37.0	39.5	47.3	47.3	47.3	49.5	49.5	53.5
Alternative 3	35.7	36.9	37.0	39.5	47.3	47.3	47.3	49.5	49.5	53.4

Table A-3-30 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.8	41.3	43.1	48.1	48.8	50.5	50.7	50.8	50.8	50.8
Alternative 1	38.8	41.3	43.1	48.2	49.7	53.9	55.4	55.4	55.5	55.5
Alternative 2	38.8	41.3	43.1	48.2	50.7	57.2	59.7	59.7	59.7	59.7
Alternative 2.5	38.8	41.3	43.1	48.4	50.9	57.9	60.5	60.5	60.5	60.5
Alternative 3	38.8	41.3	43.1	48.3	50.8	60.3	63.0	63.0	63.0	63.0

Table A-3-31 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	42.8	44.3	44.7	45.0	45.3	52.1	52.3	52.4	52.5	52.6
Alternative 1	42.8	44.3	44.7	45.0	45.2	57.7	57.9	58.0	58.1	58.2
Alternative 2	42.8	44.3	44.7	45.0	45.2	62.6	62.8	62.8	62.9	63.0
Alternative 2.5	42.8	44.3	44.7	45.0	45.2	63.9	64.1	64.1	64.2	64.3
Alternative 3	42.8	44.3	44.7	45.0	45.2	66.8	67.0	67.0	67.1	67.2

Table A-3-32 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	42.0	43.4	45.5	46.1	48.3	48.7	48.9	49.0	49.1	49.2
Alternative 1	42.0	43.4	45.5	47.8	51.4	52.9	53.2	53.3	54.3	54.4
Alternative 2	42.0	43.4	45.5	48.3	53.4	57.7	57.9	58.3	59.8	60.1
Alternative 2.5	42.0	43.4	45.5	48.3	54.2	58.4	58.8	59.5	61.0	61.4
Alternative 3	42.0	43.4	45.5	48.3	55.9	60.3	60.7	62.1	63.8	64.1

Table A-3-33 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.1	40.1	46.1	47.9	50.0	50.4	52.1	52.1	52.1	52.1
Alternative 1	38.1	40.1	46.1	47.9	52.0	52.3	55.2	55.2	55.2	55.2
Alternative 2	38.1	40.1	46.1	47.9	52.0	52.3	60.3	60.3	60.3	60.3
Alternative 2.5	38.1	40.1	46.1	47.9	52.0	52.3	61.6	61.6	61.6	61.6
Alternative 3	38.1	40.1	46.1	47.9	53.2	53.6	64.4	64.4	64.4	64.4

Table A-3-34 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	731.7	752.4	754.5	755.8	756.8	757.5	758.3	758.7	759.4	759.9
Alternative 1	731.7	752.4	754.5	755.8	756.7	757.0	757.5	757.8	758.4	758.8
Alternative 2	731.7	752.4	754.5	755.8	756.5	756.6	756.9	757.0	757.6	758.1
Alternative 2.5	731.7	752.4	754.5	755.8	756.5	756.4	756.7	756.8	757.4	757.9
Alternative 3	731.7	752.4	754.5	755.8	756.4	756.0	756.3	756.2	756.9	757.3

Table A-3-35 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	45.9	47.1	49.1	49.8	50.7	51.1	51.8	52.8	53.0	54.5
Alternative 1	45.9	47.1	49.1	49.8	53.0	53.4	54.2	55.3	55.7	57.3
Alternative 2	45.9	47.1	49.1	50.0	56.8	57.8	59.0	59.8	60.0	60.1
Alternative 2.5	45.9	47.1	49.1	50.4	57.5	58.5	60.0	60.8	61.0	61.0
Alternative 3	45.9	47.1	49.1	50.4	59.8	61.0	62.8	63.8	64.0	64.1

Table A-3-36 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.7	36.4	36.5	40.7	41.0	42.5	45.5	47.3	47.4	47.5
Alternative 1	35.7	36.4	36.5	40.7	41.0	42.5	45.5	50.7	50.8	50.9
Alternative 2	35.7	36.4	36.5	40.7	41.0	42.5	45.5	54.9	55.0	55.1
Alternative 2.5	35.7	36.4	36.5	40.7	41.0	42.5	45.5	56.1	56.2	56.3
Alternative 3	35.7	36.4	36.5	40.7	41.0	42.5	45.4	58.7	58.8	58.9

Table A-3-37 - Estimated Achieved Average Fuel Economy (mpg), Passenger Car Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	38.0	38.7	40.7	43.6	54.4	55.3	56.8	57.2	57.6	58.0
Alternative 1	38.0	38.7	40.7	43.6	53.1	54.0	55.6	55.9	57.1	57.5
Alternative 2	38.0	38.7	40.7	43.6	54.2	55.4	56.7	56.7	59.2	59.7
Alternative 2.5	38.0	38.7	40.7	43.6	54.3	55.6	57.4	57.5	60.3	60.7
Alternative 3	38.0	38.7	40.7	43.6	52.9	54.6	59.4	59.5	62.9	63.8

Table A-3-38 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.3	32.9	35.3	38.3	39.0	39.2	39.2	39.3	39.3	39.3
Alternative 1	31.3	32.9	35.3	38.9	39.6	39.8	39.9	39.9	39.9	39.9
Alternative 2	31.3	32.9	35.3	39.2	40.0	40.2	40.2	42.6	42.7	42.7
Alternative 2.5	31.3	32.9	35.3	39.2	40.0	40.2	40.2	43.5	43.6	43.6
Alternative 3	31.3	32.9	35.3	39.1	39.8	40.1	40.1	45.5	45.6	45.6

Table A-3-39 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.9	31.0	31.3	33.8	33.9	35.0	36.1	36.5	36.6	36.8
Alternative 1	29.9	31.0	31.3	34.1	34.2	35.6	36.9	37.4	37.4	37.6
Alternative 2	29.9	31.0	31.3	34.1	34.2	35.6	36.9	37.4	37.5	37.6
Alternative 2.5	29.9	31.0	31.3	34.1	34.2	35.6	36.9	37.4	37.4	37.6
Alternative 3	29.9	31.0	31.3	34.1	34.2	35.6	36.9	37.4	37.5	37.6

Table A-3-40 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28.0	28.2	30.7	32.7	33.0	33.0	33.5	33.8	34.3	34.4
Alternative 1	28.0	28.2	30.7	32.6	32.8	32.8	33.7	35.0	36.0	36.4
Alternative 2	28.0	28.2	30.7	32.6	32.8	32.8	33.7	35.0	36.1	36.5
Alternative 2.5	28.0	28.2	30.7	32.6	32.8	32.8	33.7	35.0	36.0	36.4
Alternative 3	28.0	28.2	30.7	32.6	32.8	32.8	33.7	35.0	36.0	36.4

Table A-3-41 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.8	31.7	32.7	34.6	36.1	36.3	37.3	37.3	37.4	37.4
Alternative 1	29.8	31.7	32.7	34.5	35.6	35.8	36.8	36.9	37.0	37.0
Alternative 2	29.8	31.7	32.7	34.5	35.8	36.0	39.1	39.2	39.3	39.3
Alternative 2.5	29.8	31.7	32.7	34.5	35.8	36.0	40.0	40.1	40.2	40.2
Alternative 3	29.8	31.7	32.7	34.7	37.2	37.7	41.8	41.8	41.9	42.0

Table A-3-42 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	27.8	29.4	30.4	30.8	31.4	31.8	32.2	32.3	32.3	33.1
Alternative 1	27.8	29.4	30.4	30.8	33.9	35.3	36.5	36.8	36.9	37.7
Alternative 2	27.8	29.4	30.4	30.8	33.0	35.6	38.8	39.2	39.4	40.1
Alternative 2.5	27.8	29.4	30.4	30.8	33.0	35.6	39.6	40.1	40.2	40.9
Alternative 3	27.8	29.4	30.4	30.8	33.6	37.2	41.3	41.8	42.0	42.1

Table A-3-43 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35.1	35.7	39.1	40.1	41.7	43.7	43.7	43.7	43.7	43.7
Alternative 1	35.1	35.7	39.1	40.1	41.1	42.7	42.7	42.7	42.7	42.7
Alternative 2	35.1	35.7	39.1	40.3	42.6	44.7	44.7	44.7	44.7	45.2
Alternative 2.5	35.1	35.7	39.1	40.3	43.4	45.7	45.7	45.7	45.7	46.2
Alternative 3	35.1	35.7	39.1	40.9	45.0	47.7	47.7	47.7	47.7	48.2

Table A-3-44 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.5	29.5	29.5	32.3	32.4	32.5	35.4	35.4	35.4	35.4
Alternative 1	29.5	29.5	29.5	32.3	32.4	32.5	39.4	39.5	39.5	39.5
Alternative 2	29.5	29.5	29.5	32.3	32.4	32.5	42.0	42.1	42.1	42.1
Alternative 2.5	29.5	29.5	29.5	32.3	32.4	32.5	42.9	43.0	43.0	43.0
Alternative 3	29.5	29.5	29.5	32.3	32.4	32.5	45.1	45.1	45.1	45.1

Table A-3-45 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.6	34.3	34.4	34.7	37.5	37.5	37.7	38.7	38.7	38.7
Alternative 1	30.6	34.3	34.4	34.7	41.2	41.2	41.4	42.8	42.8	42.8
Alternative 2	30.6	34.3	34.4	34.7	43.9	43.9	44.1	45.5	45.5	45.5
Alternative 2.5	30.6	34.3	34.4	34.7	44.8	44.9	45.1	46.4	46.4	46.4
Alternative 3	30.6	34.3	34.4	34.7	46.8	46.8	47.1	48.1	48.1	48.1

Table A-3-46 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28.7	29.8	31.3	33.7	35.3	35.5	35.9	36.0	36.0	36.3
Alternative 1	28.7	29.8	31.3	33.8	35.8	37.1	40.7	41.6	41.6	42.0
Alternative 2	28.7	29.8	31.3	34.8	36.8	38.3	42.0	43.0	43.0	43.4
Alternative 2.5	28.7	29.8	31.3	34.8	36.8	38.3	42.0	43.0	43.0	44.4
Alternative 3	28.7	29.8	31.3	34.8	36.8	38.3	42.0	43.0	43.0	46.4

Table A-3-47 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34.7	35.0	35.1	39.8	40.2	40.6	41.6	41.6	41.6	41.6
Alternative 1	34.7	35.0	35.1	39.8	40.2	42.5	43.9	43.9	43.9	43.9
Alternative 2	34.7	35.0	35.1	39.8	40.2	44.9	48.9	48.9	48.9	48.9
Alternative 2.5	34.7	35.0	35.1	39.8	40.2	45.6	51.1	51.1	51.1	51.1
Alternative 3	34.7	35.0	35.1	39.8	40.2	45.6	50.7	50.8	50.8	50.8

Table A-3-48 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	36.8	36.8	36.8	36.8	36.8	41.5	41.5	41.5	41.5	41.5
Alternative 1	36.8	36.8	36.8	36.8	36.8	47.5	47.5	47.5	47.5	47.5
Alternative 2	36.8	36.8	36.8	36.8	36.8	49.4	49.4	49.4	49.4	49.4
Alternative 2.5	36.8	36.8	36.8	36.8	36.8	50.5	50.5	50.5	50.5	50.5
Alternative 3	36.8	36.8	36.8	36.8	36.8	52.9	52.9	52.9	52.9	52.9

Table A-3-49 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	31.0	34.3	36.1	36.7	37.2	38.1	38.5	38.5	39.1	39.1
Alternative 1	31.0	34.3	36.1	38.0	38.9	39.9	41.0	41.0	41.6	41.8
Alternative 2	31.0	34.3	36.1	38.8	39.8	40.9	43.2	43.7	44.4	45.1
Alternative 2.5	31.0	34.3	36.1	38.8	39.8	40.9	43.2	43.8	44.7	45.4
Alternative 3	31.0	34.3	36.1	38.8	40.0	41.1	43.4	43.8	46.7	47.4

Table A-3-50 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	39.6	40.1	42.0	45.6	47.8	49.7	50.0	50.2	50.2	50.3
Alternative 1	39.6	40.1	42.0	46.4	48.7	50.7	51.0	51.2	51.2	51.3
Alternative 2	39.6	40.1	42.0	46.4	48.7	50.7	51.0	51.2	51.2	51.3
Alternative 2.5	39.6	40.1	42.0	46.4	48.7	50.7	51.0	51.2	51.2	51.3
Alternative 3	39.6	40.1	42.0	46.7	49.0	51.0	51.3	51.6	51.6	51.6

Table A-3-51 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	477.8	483.0	510.7	625.8	673.3	728.4	728.4	728.4	728.4	728.4
Alternative 1	477.8	483.0	510.7	625.8	673.2	728.4	728.4	728.3	728.3	728.3
Alternative 2	477.8	483.0	510.7	625.8	673.3	728.4	728.4	728.5	728.5	728.5
Alternative 2.5	477.8	483.0	510.7	625.8	673.2	728.4	728.4	728.4	728.4	728.4
Alternative 3	477.8	483.0	510.7	625.8	673.2	728.4	728.3	728.3	728.3	728.3

Table A-3-52 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	29.8	31.0	32.7	34.2	35.0	35.2	38.4	38.4	38.8	38.9
Alternative 1	29.8	31.0	32.7	36.2	38.5	38.8	43.1	43.1	44.0	44.0
Alternative 2	29.8	31.0	32.7	37.1	39.1	39.3	43.9	43.9	44.6	44.6
Alternative 2.5	29.8	31.0	32.7	37.1	39.1	39.3	44.3	44.3	45.1	45.1
Alternative 3	29.8	31.0	32.7	37.7	40.7	41.0	47.1	47.1	48.4	48.4

Table A-3-53 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	32.3	32.4	32.6	41.5	41.7	42.7	42.9	44.5	44.5	44.5
Alternative 1	32.3	32.4	32.6	41.2	41.4	42.3	42.5	44.2	44.2	44.2
Alternative 2	32.3	32.4	32.6	42.4	42.5	43.5	43.7	45.5	45.5	45.5
Alternative 2.5	32.3	32.4	32.6	43.2	43.4	44.5	44.7	46.5	46.5	46.5
Alternative 3	32.3	32.4	32.6	45.2	45.4	46.5	46.8	48.8	48.8	48.8

Table A-3-54 - Estimated Achieved Average Fuel Economy (mpg), Light Truck Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	30.7	32.5	34.1	35.2	38.3	40.5	41.5	41.7	41.7	41.7
Alternative 1	30.7	32.5	34.1	35.2	39.6	42.0	43.1	43.4	43.4	43.4
Alternative 2	30.7	32.5	34.1	35.2	38.2	41.4	43.1	44.8	44.8	44.8
Alternative 2.5	30.7	32.5	34.1	35.2	38.2	41.4	43.1	44.8	44.8	44.8
Alternative 3	30.7	32.5	34.1	35.2	39.0	43.3	45.7	48.1	48.1	48.1

4. CAFE Cost per Vehicle

Table A-4-1 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Regulatory Costs (\$) for Total Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$)
Alternative 0 (Baseline)	39.5	44.1	1100
Alternative 1	44.9	46.8	1532
Alternative 2	48.2	49.3	2038
Alternative 2.5	49.3	50.0	2187
Alternative 3	51.4	51.7	2507

Table A-4-2 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Regulatory Costs (\$) for Passenger Car Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$)
Alternative 0 (Baseline)	47.3	53.3	960
Alternative 1	53.2	56.8	1358
Alternative 2	58.1	61.2	1943
Alternative 2.5	59.3	62.6	2084
Alternative 3	62.0	65.2	2353

Table A-4-3 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Regulatory Costs (\$) for Light Truck Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$)
Alternative 0 (Baseline)	33.9	37.5	1240
Alternative 1	39.0	40.0	1701
Alternative 2	41.5	41.6	2127
Alternative 2.5	42.4	42.1	2283
Alternative 3	44.3	43.4	2650

5. Various Impacts of Alternatives

Table A-5-1 - Impacts for Alternative 1, Average SCC

Category	Passenger Car	Light Truck	Combined Fleet
Fuel Economy			
Required Fuel Economy for MY 2029(mpg)	53.2	39.0	44.9
Achieved Fuel Economy for MY 2029 (mpg)	56.8	40.0	46.8
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.8	30.2	34.4
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	398	460	432
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-598	-938	-709
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-468	-720	-550
Payback Period Relative to MY 2020, 3% Discount Rate (years)	0.0	1.0	0.5
Payback Period Relative to MY 2020, 7% Discount Rate (years)	1.0	0.0	0.5
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-15	-14	-29
Total Lifetime CO2 Volume (million metric tons)	-166	-152	-318
Fatalities (Including Rebound Miles)	-205	883	677
Fatalities (Excluding Rebound Miles)	-348	665	317
Total Technology Costs, 3% Discount Rate (\$b)	14.2	17.5	31.7
Total Technology Costs, 7% Discount Rate (\$b)	11.5	14.2	25.8
Total Net Societal Benefits, 3% Discount Rate (\$b)	32.0	-11.4	20.6
Total Net Societal Benefits, 7% Discount Rate (\$b)	19.4	-7.9	11.5

Table A-5-2 - Impacts for Alternative 2, Average SCC

Category	Passenger Car	Light Truck	Combined Fleet
Fuel Economy			
Required Fuel Economy for MY 2029(mpg)	58.1	41.5	48.2
Achieved Fuel Economy for MY 2029 (mpg)	61.2	41.6	49.3
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.8	30.2	34.4
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	983	887	938
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-1,223	-1,416	-1,222
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-956	-1,090	-950
Payback Period Relative to MY 2020, 3% Discount Rate (years)	2.0	1.0	1.5
Payback Period Relative to MY 2020, 7% Discount Rate (years)	4.0	2.0	3.0
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-30	-19	-49
Total Lifetime CO2 Volume (million metric tons)	-330	-213	-542
Fatalities (Including Rebound Miles)	-303	1,508	1,204
Fatalities (Excluding Rebound Miles)	-567	1,210	643
Total Technology Costs, 3% Discount Rate (\$b)	36.9	30.4	67.4
Total Technology Costs, 7% Discount Rate (\$b)	30.1	24.5	54.7
Total Net Societal Benefits, 3% Discount Rate (\$b)	46.6	-31.1	15.5
Total Net Societal Benefits, 7% Discount Rate (\$b)	26.0	-21.6	4.3

Table A-5-3 - Impacts for Alternative 2.5, Average SCC

Category	Passenger Car	Light Truck	Combined Fleet
Fuel Economy			
Required Fuel Economy for MY 2029(mpg)	59.3	42.4	49.3
Achieved Fuel Economy for MY 2029 (mpg)	62.6	42.1	50.0
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.8	30.2	34.4
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	1,124	1,043	1,087
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-1,413	-1,554	-1,377
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-1,104	-1,196	-1,070
Payback Period Relative to MY 2020, 3% Discount Rate (years)	2.0	2.0	2.0
Payback Period Relative to MY 2020, 7% Discount Rate (years)	4.0	2.0	3.0
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-34	-21	-55
Total Lifetime CO2 Volume (million metric tons)	-374	-233	-607
Fatalities (Including Rebound Miles)	-330	1,665	1,335
Fatalities (Excluding Rebound Miles)	-639	1,354	714
Total Technology Costs, 3% Discount Rate (\$b)	41.7	34.7	76.4
Total Technology Costs, 7% Discount Rate (\$b)	34.1	27.9	62.0
Total Net Societal Benefits, 3% Discount Rate (\$b)	53.2	-37.0	16.3
Total Net Societal Benefits, 7% Discount Rate (\$b)	29.8	-25.8	3.9

Table A-5-4 - Impacts for Alternative 3, Average SCC

Category	Passenger Car	Light Truck	Combined Fleet
Fuel Economy			
Required Fuel Economy for MY 2029(mpg)	62.0	44.3	51.4
Achieved Fuel Economy for MY 2029 (mpg)	65.2	43.4	51.7
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.8	30.2	34.4
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	1,393	1,409	1,407
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-1,736	-1,921	-1,692
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-1,356	-1,477	-1,315
Payback Period Relative to MY 2020, 3% Discount Rate (years)	2.0	2.0	2.0
Payback Period Relative to MY 2020, 7% Discount Rate (years)	5.0	3.0	4.0
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-41	-28	-69
Total Lifetime CO2 Volume (million metric tons)	-456	-310	-767
Fatalities (Including Rebound Miles)	-407	2,112	1,704
Fatalities (Excluding Rebound Miles)	-779	1,725	946
Total Technology Costs, 3% Discount Rate (\$b)	50.6	49.6	100.2
Total Technology Costs, 7% Discount Rate (\$b)	41.3	40.1	81.4
Total Net Societal Benefits, 3% Discount Rate (\$b)	66.3	-49.9	16.4
Total Net Societal Benefits, 7% Discount Rate (\$b)	37.1	-35.5	1.5

6. Required and Achieved CAFE Levels, Baseline vs. Alternative 2.5

Table A-6-1 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 1 of 6

Model Year	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	37.7	34.5	37.7	34.5	35.6	31.7	35.6	31.7	31.3	28.3	31.3	28.3
2021	38.4	37.2	38.4	37.2	36.3	33.8	36.3	33.8	31.7	29.4	31.7	29.4
2022	39.2	40.5	39.2	40.5	37.0	34.7	37.0	34.7	32.3	31.9	32.3	31.9
2023	39.9	43.0	39.9	43.5	37.6	36.6	37.6	36.9	32.8	34.0	32.8	34.0
2024	40.6	44.8	43.4	45.3	38.4	39.2	41.0	39.9	33.4	34.4	35.7	34.3
2025	41.3	47.0	47.2	48.9	39.0	40.5	44.6	41.4	33.9	34.5	38.8	34.3
2026	42.0	48.3	52.5	50.8	39.6	41.4	49.5	42.4	34.4	35.2	43.1	35.9
2027	42.0	48.4	52.5	52.5	39.7	41.8	49.5	44.4	34.4	35.5	43.1	37.2
2028	42.1	48.5	52.5	52.7	39.7	42.0	49.6	45.5	34.4	36.0	43.1	38.2
2029	42.2	48.8	52.6	52.9	39.8	42.4	49.6	45.8	34.4	36.1	43.1	38.6

Table A-6-2 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 2 of 6

Model Year	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.8	31.4	31.8	31.4	32.7	30.9	32.7	30.9	38.6	40.2	38.6	40.2
2021	32.4	33.1	32.4	33.1	33.2	32.4	33.2	32.4	39.3	41.2	39.3	41.2
2022	33.0	35.2	33.0	35.2	33.9	34.0	33.9	34.0	40.1	44.5	40.1	44.5
2023	33.6	37.8	33.6	38.9	34.4	34.7	34.4	34.8	40.7	45.5	40.7	47.9
2024	34.1	39.1	36.4	40.1	35.0	35.5	37.1	37.3	41.4	46.6	44.4	50.3
2025	34.7	39.4	39.6	40.5	35.6	36.2	40.4	40.6	42.2	48.6	48.2	52.6
2026	35.2	40.7	44.0	44.3	36.1	36.7	44.9	44.7	42.8	49.6	53.6	53.9
2027	35.3	40.8	44.0	44.4	36.2	36.8	44.9	45.5	42.9	49.7	53.6	54.0
2028	35.3	40.9	44.0	44.5	36.2	36.9	44.9	45.6	43.0	49.7	53.7	54.4
2029	35.4	41.0	44.1	44.5	36.3	37.5	45.0	46.2	43.0	49.8	53.7	54.8

Table A-6-3 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 3 of 6

Model Year	Hyundai Kia-H				Hyundai Kia-K				JLR			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.6	38.0	41.6	38.0	38.9	36.7	38.9	36.7	32.6	28.9	32.6	28.9
2021	42.3	39.3	42.3	39.3	39.7	40.7	39.7	40.7	33.1	30.1	33.1	30.1
2022	43.1	42.3	43.1	42.3	40.5	41.5	40.5	41.5	33.7	31.5	33.7	31.5
2023	43.8	43.9	43.8	43.9	41.3	41.9	41.3	41.9	34.2	33.9	34.2	35.0
2024	44.5	46.1	47.6	48.3	42.0	44.6	44.9	50.4	34.7	35.7	37.2	37.2
2025	45.2	46.4	51.7	50.7	42.7	45.2	48.8	52.8	35.3	36.0	40.5	38.7
2026	45.9	47.1	57.5	57.5	43.5	45.4	54.2	54.2	35.9	36.4	45.0	42.3
2027	45.9	47.4	57.5	58.0	43.5	46.1	54.2	55.1	35.9	36.5	45.0	43.3
2028	45.9	47.5	57.5	58.2	43.6	46.2	54.3	55.6	35.9	36.5	45.0	43.3
2029	46.0	47.8	57.5	58.3	43.7	46.2	54.4	55.6	35.9	36.8	45.0	44.8

Table A-6-4 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 4 of 6

	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	38.7	36.6	38.7	36.6	40.7	39.3	40.7	39.3	39.2	37.8	39.2	37.8
2021	39.3	37.8	39.3	37.8	41.3	39.9	41.3	39.9	39.9	40.2	39.9	40.2
2022	40.0	38.7	40.0	38.7	42.1	40.1	42.1	40.1	40.6	42.3	40.6	42.3
2023	40.7	43.6	40.7	43.7	42.8	40.3	42.8	40.3	41.3	43.0	41.3	45.2
2024	41.3	44.2	44.3	45.1	43.5	40.4	46.5	40.4	42.0	44.6	45.0	49.2
2025	42.0	45.2	48.1	51.2	44.2	46.0	50.6	56.1	42.7	45.3	48.9	52.2
2026	42.7	45.9	53.5	55.5	44.8	46.1	56.2	56.2	43.4	45.6	54.4	53.4
2027	42.8	46.0	53.5	55.5	44.9	46.2	56.2	56.2	43.4	45.7	54.4	54.1
2028	42.8	46.0	53.5	55.6	44.9	46.3	56.3	56.3	43.5	46.0	54.4	55.5
2029	42.8	46.1	53.6	55.6	45.0	46.3	56.3	56.4	43.5	46.1	54.4	56.0

Table A-6-5 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 5 of 6

Model Year	Subaru				Tesla				Toyota			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	37.0	39.3	37.0	39.3	40.5	720.0	40.5	720.0	37.1	36.6	37.1	36.6
2021	37.7	40.1	37.7	40.1	40.4	740.6	40.4	740.6	37.9	38.1	37.9	38.1
2022	38.3	42.9	38.3	42.9	41.1	745.1	41.1	745.1	38.6	40.3	38.6	40.3
2023	39.0	46.1	39.0	46.8	41.8	751.8	41.8	751.8	39.3	41.6	39.3	43.7
2024	39.7	48.3	42.5	49.5	42.4	754.5	45.3	754.2	40.1	42.7	42.8	47.9
2025	40.3	49.9	46.2	51.1	43.1	756.8	49.3	755.7	40.8	43.0	46.6	48.5
2026	41.0	50.5	51.3	53.3	43.7	757.6	54.8	756.0	41.4	45.3	51.8	52.2
2027	41.0	50.7	51.3	53.5	43.7	758.0	54.8	756.1	41.5	45.8	51.8	52.5
2028	41.1	50.7	51.4	53.5	43.7	758.7	54.8	756.7	41.6	46.2	51.8	53.2
2029	41.1	50.8	51.5	53.7	43.8	759.2	54.8	757.2	41.6	47.1	51.9	53.3

Table A-6-6 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Total Fleet (mpg), Part 6 of 6

Model Year	Volvo				VWA				Total			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	34.3	33.1	34.3	33.1	37.1	33.4	37.1	33.4	35.4	34.4	35.4	34.4
2021	34.9	33.4	34.9	33.4	37.9	34.9	37.9	34.9	36.0	36.0	36.0	36.0
2022	35.5	33.6	35.5	33.6	38.7	36.8	38.7	36.8	36.7	38.2	36.7	38.2
2023	36.0	41.3	36.0	42.5	39.4	38.7	39.4	38.7	37.4	40.0	37.4	40.8
2024	36.6	41.5	39.2	42.7	40.1	44.6	42.9	44.5	38.1	41.4	40.6	43.5
2025	37.2	42.6	42.6	43.9	40.8	46.6	46.6	47.1	38.7	42.2	44.2	45.4
2026	37.8	43.6	47.3	44.9	41.5	47.9	51.8	48.9	39.4	43.2	49.1	48.4
2027	37.9	45.3	47.3	48.9	41.5	48.2	51.8	50.1	39.4	43.4	49.1	49.1
2028	37.9	45.3	47.4	48.9	41.6	48.5	51.9	51.2	39.5	43.7	49.2	49.7
2029	37.9	45.3	47.4	49.0	41.7	48.7	52.0	51.4	39.5	44.1	49.3	50.0

Table A-6-7 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 1 of 6

Model Year	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.5	36.7	42.5	36.7	41.4	33.9	41.4	33.9	41.6	30.7	41.6	30.7
2021	43.1	40.1	43.1	40.1	42.0	37.3	42.0	37.3	42.0	38.9	42.0	38.9
2022	43.8	43.8	43.8	43.8	42.7	38.9	42.7	38.9	42.5	41.1	42.5	41.1
2023	44.4	45.9	44.4	46.1	43.3	39.8	43.3	40.0	43.0	43.4	43.0	44.6
2024	45.1	48.2	48.3	48.4	44.0	45.8	47.1	47.3	43.6	44.9	46.8	46.0
2025	45.8	51.9	52.5	54.8	44.6	47.3	51.2	48.9	44.2	45.1	50.9	46.2
2026	46.5	54.1	58.3	58.3	45.3	47.5	56.8	49.2	44.9	47.4	56.4	55.3
2027	46.5	54.1	58.3	58.4	45.3	47.8	56.8	53.8	44.9	47.5	56.4	56.4
2028	46.5	54.1	58.3	58.4	45.3	47.9	56.8	56.8	44.8	48.4	56.4	56.8
2029	46.5	54.4	58.3	58.7	45.3	48.6	56.8	56.8	44.7	48.4	56.4	56.8

Table A-6-8 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 2 of 6

Model Year	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.2	36.9	42.2	36.9	43.9	40.3	43.9	40.3	43.6	45.0	43.6	45.0
2021	42.8	37.4	42.8	37.4	44.5	40.8	44.5	40.8	44.3	46.0	44.3	46.0
2022	43.5	43.9	43.5	43.9	45.2	44.0	45.2	44.0	45.0	48.9	45.0	48.9
2023	44.1	48.8	44.1	56.9	45.8	45.8	45.8	46.2	45.6	49.6	45.6	54.4
2024	44.8	48.9	47.9	56.9	46.5	46.8	49.8	49.3	46.3	50.2	49.6	55.6
2025	45.5	49.2	52.2	58.4	47.3	48.7	54.2	55.3	47.0	52.0	53.9	58.0
2026	46.1	51.6	57.9	59.6	48.0	48.9	60.2	58.6	47.7	53.7	59.9	60.5
2027	46.1	51.9	57.9	59.8	48.0	49.0	60.2	60.8	47.7	53.8	59.9	60.7
2028	46.1	51.9	57.9	59.8	48.0	49.0	60.1	60.8	47.7	53.8	59.9	61.3
2029	46.1	52.0	57.9	59.7	47.9	49.0	60.1	60.7	47.7	53.9	59.9	61.4

Table A-6-9 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 3 of 6

Model Year	Hyundai Kia-H				Hyundai Kia-K				JLR			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.3	39.4	43.3	39.4	44.0	41.9	44.0	41.9	42.1	35.7	42.1	35.7
2021	44.0	40.9	44.0	40.9	44.7	45.7	44.7	45.7	42.7	36.9	42.7	36.9
2022	44.7	44.5	44.7	44.5	45.4	46.8	45.4	46.8	43.3	37.0	43.3	37.0
2023	45.5	45.7	45.5	45.7	46.1	47.0	46.1	47.0	44.0	38.7	44.0	39.5
2024	46.2	48.3	49.4	51.0	46.8	49.3	50.1	53.9	44.7	46.1	47.8	47.3
2025	46.9	48.5	53.7	53.9	47.5	50.3	54.5	58.1	45.4	46.1	52.0	47.3
2026	47.6	48.7	59.6	59.6	48.3	50.4	60.5	60.5	46.1	46.1	57.8	47.3
2027	47.6	49.0	59.6	60.2	48.3	50.7	60.5	61.0	46.1	46.9	57.8	49.5
2028	47.6	49.2	59.6	60.4	48.3	50.7	60.5	61.6	46.1	46.9	57.8	49.5
2029	47.6	49.5	59.6	60.5	48.3	50.7	60.5	61.6	46.1	46.9	57.8	53.5

Table A-6-10 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 4 of 6

Model Year	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.9	38.8	43.9	38.8	46.5	42.8	46.5	42.8	43.2	42.0	43.2	42.0
2021	44.6	41.3	44.6	41.3	47.2	44.3	47.2	44.3	43.9	43.4	43.9	43.4
2022	45.2	43.1	45.2	43.1	48.0	44.7	48.0	44.7	44.5	45.5	44.5	45.5
2023	45.9	48.1	45.9	48.4	48.8	45.0	48.8	45.0	45.1	46.1	45.1	48.3
2024	46.6	48.8	50.0	50.9	49.6	45.3	53.1	45.2	45.8	48.3	49.1	54.2
2025	47.3	50.5	54.3	57.9	50.4	52.1	57.7	63.9	46.5	48.7	53.4	58.4
2026	48.0	50.7	60.3	60.5	51.1	52.3	64.1	64.1	47.3	48.9	59.3	58.8
2027	48.0	50.8	60.3	60.5	51.2	52.4	64.1	64.1	47.3	49.0	59.3	59.5
2028	48.0	50.8	60.3	60.5	51.2	52.5	64.1	64.2	47.2	49.1	59.3	61.0
2029	48.0	50.8	60.3	60.5	51.2	52.6	64.2	64.3	47.2	49.2	59.3	61.4

Table A-6-11 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 5 of 6

Model Year	Subaru				Tesla				Toyota			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	44.9	38.1	44.9	38.1	40.9	731.7	40.9	731.7	43.6	45.9	43.6	45.9
2021	45.5	40.1	45.5	40.1	40.8	752.4	40.8	752.4	44.3	47.1	44.3	47.1
2022	46.2	46.1	46.2	46.1	41.4	754.5	41.4	754.5	45.0	49.1	45.0	49.1
2023	46.9	47.9	46.9	47.9	42.1	755.8	42.1	755.8	45.6	49.8	45.6	50.4
2024	47.7	50.0	51.0	52.0	42.7	756.8	45.7	756.5	46.3	50.7	49.7	57.5
2025	48.4	50.4	55.5	52.3	43.4	757.5	49.7	756.4	47.1	51.1	53.9	58.5
2026	49.1	52.1	61.6	61.6	44.0	758.3	55.2	756.7	47.8	51.8	59.9	60.0
2027	49.1	52.1	61.6	61.6	44.0	758.7	55.2	756.8	47.8	52.8	59.9	60.8
2028	49.1	52.1	61.6	61.6	44.0	759.4	55.2	757.4	47.8	53.0	59.9	61.0
2029	49.1	52.1	61.6	61.6	44.1	759.9	55.2	757.9	47.8	54.5	59.9	61.0

Table A-6-12 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Passenger Car Fleet (mpg), Part 6 of 6

Model Year	Volvo				VWA				Total			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	40.9	35.7	40.9	35.7	43.6	38.0	43.6	38.0	43.3	41.8	43.3	41.8
2021	41.5	36.4	41.5	36.4	44.3	38.7	44.3	38.7	43.9	43.7	43.9	43.7
2022	42.2	36.5	42.2	36.5	45.0	40.7	45.0	40.7	44.6	46.9	44.6	46.9
2023	42.8	40.7	42.8	40.7	45.7	43.6	45.7	43.6	45.2	48.4	45.2	50.0
2024	43.4	41.0	46.5	41.0	46.4	54.4	49.7	54.3	45.9	50.4	49.2	54.7
2025	44.1	42.5	50.5	42.5	47.1	55.3	54.0	55.6	46.6	51.5	53.4	57.9
2026	44.7	45.5	56.1	45.5	47.8	56.8	60.0	57.4	47.3	52.4	59.4	60.9
2027	44.7	47.3	56.1	56.1	47.8	57.2	60.0	57.5	47.3	52.8	59.4	61.8
2028	44.7	47.4	56.1	56.2	47.9	57.6	60.0	60.3	47.3	52.9	59.3	62.5
2029	44.7	47.5	56.1	56.3	47.9	58.0	60.0	60.7	47.3	53.3	59.3	62.6

Table A-6-13 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 1 of 6

Model Year	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.7	31.3	31.7	31.3	31.7	29.9	31.7	29.9	30.1	28.0	30.1	28.0
2021	32.2	32.9	32.2	32.9	32.2	31.0	32.2	31.0	30.5	28.2	30.5	28.2
2022	32.6	35.3	32.6	35.3	32.6	31.3	32.6	31.3	31.0	30.7	31.0	30.7
2023	33.1	38.3	33.1	39.2	33.1	33.8	33.1	34.1	31.5	32.7	31.5	32.6
2024	33.6	39.0	36.0	40.0	33.7	33.9	36.0	34.2	32.0	33.0	34.2	32.8
2025	34.2	39.2	39.2	40.2	34.2	35.0	39.2	35.6	32.5	33.0	37.2	32.8
2026	34.7	39.2	43.5	40.2	34.7	36.1	43.5	36.9	32.9	33.5	41.3	33.7
2027	34.7	39.3	43.5	43.5	34.7	36.5	43.5	37.4	32.9	33.8	41.3	35.0
2028	34.7	39.3	43.5	43.6	34.7	36.6	43.5	37.4	32.9	34.3	41.3	36.0
2029	34.7	39.3	43.5	43.6	34.7	36.8	43.5	37.6	32.9	34.4	41.3	36.4

Table A-6-14 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 2 of 6

Model Year	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	29.2	29.8	29.2	29.8	29.1	27.8	29.1	27.8	33.3	35.1	33.3	35.1
2021	29.7	31.7	29.7	31.7	29.5	29.4	29.5	29.4	33.8	35.7	33.8	35.7
2022	30.1	32.7	30.1	32.7	30.0	30.4	30.0	30.4	34.3	39.1	34.3	39.1
2023	30.6	34.6	30.6	34.5	30.4	30.8	30.4	30.8	34.8	40.1	34.8	40.3
2024	31.0	36.1	33.1	35.8	30.9	31.4	32.7	33.0	35.3	41.7	37.8	43.4
2025	31.5	36.3	36.0	36.0	31.4	31.8	35.6	35.6	35.9	43.7	41.1	45.7
2026	32.0	37.3	40.0	40.0	31.8	32.2	39.5	39.6	36.4	43.7	45.7	45.7
2027	32.0	37.3	40.0	40.1	31.8	32.3	39.5	40.1	36.4	43.7	45.7	45.7
2028	32.0	37.4	40.0	40.2	31.8	32.3	39.5	40.2	36.4	43.7	45.7	45.7
2029	32.0	37.4	40.0	40.2	31.8	33.1	39.5	40.9	36.4	43.7	45.7	46.2

Table A-6-15 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 3 of 6

Model Year	Hyundai Kia-H				Hyundai Kia-K				JLR			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.3	29.5	31.3	29.5	32.8	30.6	32.8	30.6	32.3	28.7	32.3	28.7
2021	31.7	29.5	31.7	29.5	33.3	34.3	33.3	34.3	32.8	29.8	32.8	29.8
2022	32.2	29.5	32.2	29.5	33.9	34.4	33.9	34.4	33.3	31.3	33.3	31.3
2023	32.7	32.3	32.7	32.3	34.4	34.7	34.4	34.7	33.8	33.7	33.8	34.8
2024	33.2	32.4	35.5	32.4	34.9	37.5	37.4	44.8	34.3	35.3	36.8	36.8
2025	33.7	32.5	38.6	32.5	35.4	37.5	40.6	44.9	34.9	35.5	40.0	38.3
2026	34.2	35.4	42.9	42.9	36.0	37.7	45.1	45.1	35.4	35.9	44.4	42.0
2027	34.2	35.4	42.9	43.0	36.0	38.7	45.1	46.4	35.4	36.0	44.4	43.0
2028	34.2	35.4	42.9	43.0	36.0	38.7	45.1	46.4	35.4	36.0	44.4	43.0
2029	34.2	35.4	42.9	43.0	36.0	38.7	45.1	46.4	35.4	36.3	44.4	44.4

Table A-6-16 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 4 of 6

Model Year	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	34.8	34.7	34.8	34.7	36.8	36.8	36.8	36.8	32.5	31.0	32.5	31.0
2021	35.3	35.0	35.3	35.0	37.3	36.8	37.3	36.8	33.0	34.3	33.0	34.3
2022	35.8	35.1	35.8	35.1	37.9	36.8	37.9	36.8	33.5	36.1	33.5	36.1
2023	36.4	39.8	36.4	39.8	38.5	36.8	38.5	36.8	34.0	36.7	34.0	38.8
2024	36.9	40.2	39.6	40.2	39.0	36.8	41.8	36.8	34.6	37.2	37.0	39.8
2025	37.5	40.6	43.0	45.6	39.6	41.5	45.4	50.5	35.1	38.1	40.2	40.9
2026	38.1	41.6	47.8	51.1	40.2	41.5	50.5	50.5	35.6	38.5	44.7	43.2
2027	38.1	41.6	47.8	51.1	40.2	41.5	50.5	50.5	35.6	38.5	44.7	43.8
2028	38.1	41.6	47.8	51.1	40.2	41.5	50.5	50.5	35.6	39.1	44.7	44.7
2029	38.1	41.6	47.8	51.1	40.2	41.5	50.5	50.5	35.6	39.1	44.7	45.4

Table A-6-17 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 5 of 6

Model Year	Subaru				Tesla				Toyota			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	35.4	39.6	35.4	39.6	30.6	477.8	30.6	477.8	31.8	29.8	31.8	29.8
2021	35.9	40.1	35.9	40.1	31.1	483.0	31.1	483.0	32.3	31.0	32.3	31.0
2022	36.4	42.0	36.4	42.0	31.6	510.7	31.6	510.7	32.7	32.7	32.7	32.7
2023	37.0	45.6	37.0	46.4	32.0	625.8	32.0	625.8	33.2	34.2	33.2	37.1
2024	37.6	47.8	40.2	48.7	32.5	673.3	34.8	673.2	33.8	35.0	36.1	39.1
2025	38.1	49.7	43.7	50.7	33.0	728.4	37.8	728.4	34.3	35.2	39.3	39.3
2026	38.7	50.0	48.6	51.0	33.5	728.4	42.1	728.4	34.8	38.4	43.6	44.3
2027	38.7	50.2	48.6	51.2	33.5	728.4	42.1	728.4	34.8	38.4	43.6	44.3
2028	38.7	50.2	48.6	51.2	33.5	728.4	42.1	728.4	34.8	38.8	43.6	45.1
2029	38.7	50.3	48.6	51.3	33.5	728.4	42.1	728.4	34.8	38.9	43.6	45.1

Table A-6-18 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 6 of 6

Model Year	Volvo				VWA				Total			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	32.5	32.3	32.5	32.3	33.5	30.7	33.5	30.7	31.0	30.2	31.0	30.2
2021	33.0	32.4	33.0	32.4	34.1	32.5	34.1	32.5	31.5	31.5	31.5	31.5
2022	33.5	32.6	33.5	32.6	34.6	34.1	34.6	34.1	31.9	33.0	31.9	33.0
2023	34.0	41.5	34.0	43.2	35.1	35.2	35.1	35.2	32.4	34.6	32.4	35.0
2024	34.5	41.7	36.9	43.4	35.6	38.3	38.2	38.2	32.9	35.6	35.1	36.8
2025	35.0	42.7	40.2	44.5	36.2	40.5	41.5	41.4	33.5	36.1	38.2	38.0
2026	35.6	42.9	44.6	44.7	36.7	41.5	46.1	43.1	33.9	36.9	42.4	40.7
2027	35.6	44.5	44.6	46.5	36.7	41.7	46.1	44.8	33.9	37.1	42.4	41.4
2028	35.6	44.5	44.6	46.5	36.7	41.7	46.1	44.8	33.9	37.3	42.4	41.8
2029	35.6	44.5	44.6	46.5	36.7	41.7	46.1	44.8	33.9	37.5	42.4	42.1

Table A-6-19 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 1 of 6

Model Year	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9	29.9	40.9	29.9
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.3	39.4	41.3	39.4
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.8	39.7	41.8	39.7
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	42.2	42.3	43.8
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	43.3	46.0	44.9
2025	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5	43.5	50.0	45.1
2026	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.2	46.0	55.5	55.5
2027	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	46.1	55.5	55.5
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	47.2	55.5	55.8
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.0	47.2	55.4	55.8

Table A-6-20 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 2 of 6

Model Year	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.9	36.8	41.9	36.8	42.9	40.1	42.9	40.1	43.2	44.7	43.2	44.7
2021	42.5	37.3	42.5	37.3	43.5	40.3	43.5	40.3	43.9	45.8	43.9	45.8
2022	43.2	44.2	43.2	44.2	44.2	42.8	44.2	42.8	44.6	48.2	44.6	48.2
2023	43.8	47.7	43.8	56.0	44.8	44.8	44.8	45.4	45.2	49.0	45.2	54.8
2024	44.5	47.8	47.6	56.0	45.5	45.5	48.7	48.7	45.9	49.6	49.2	56.3
2025	45.2	48.2	51.8	57.5	46.2	47.9	53.0	56.8	46.6	50.9	53.5	58.0
2026	45.8	50.6	57.5	58.8	46.9	48.1	58.9	59.5	47.3	53.0	59.4	61.1
2027	45.8	50.9	57.5	59.0	46.9	48.1	58.9	59.6	47.3	53.1	59.4	61.1
2028	45.8	50.9	57.5	59.0	46.9	48.1	58.8	59.6	47.3	53.1	59.4	61.1
2029	45.8	51.1	57.5	58.9	46.9	48.0	58.8	59.5	47.3	53.2	59.4	61.2

Table A-6-22 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 4 of 6

Model Year	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	45.0	38.7	45.0	38.7	0.0	0.0	0.0	0.0	43.0	43.5	43.0	43.5
2021	45.7	38.9	45.7	38.9	0.0	0.0	0.0	0.0	43.7	43.8	43.7	43.8
2022	46.4	39.2	46.4	39.2	0.0	0.0	0.0	0.0	44.3	45.7	44.3	45.7
2023	47.1	44.4	47.1	44.4	0.0	0.0	0.0	0.0	45.0	45.9	45.0	46.9
2024	47.8	44.7	51.2	44.7	0.0	0.0	0.0	0.0	45.7	48.6	48.9	53.3
2025	48.5	59.3	55.6	63.3	0.0	0.0	0.0	0.0	46.4	49.1	53.2	58.8
2026	49.3	59.5	61.8	63.6	0.0	0.0	0.0	0.0	47.1	49.3	59.1	59.1
2027	49.3	59.5	61.8	63.6	0.0	0.0	0.0	0.0	47.1	49.4	59.1	59.4
2028	49.3	59.5	61.8	63.6	0.0	0.0	0.0	0.0	47.1	49.5	59.1	61.4
2029	49.3	59.5	61.8	63.6	0.0	0.0	0.0	0.0	47.1	49.6	59.1	61.5

Table A-6-23 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 5 of 6

	Subaru				Tesla				Toyota			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	0.0	0.0	0.0	0.0	40.9	731.7	40.9	731.7	42.1	43.7	42.1	43.7
2021	0.0	0.0	0.0	0.0	40.8	752.4	40.8	752.4	42.8	45.7	42.8	45.7
2022	0.0	0.0	0.0	0.0	41.4	754.5	41.4	754.5	43.4	46.0	43.4	46.0
2023	0.0	0.0	0.0	0.0	42.1	755.8	42.1	755.8	44.1	46.9	44.1	48.6
2024	0.0	0.0	0.0	0.0	42.7	756.8	45.7	756.5	44.7	47.3	47.9	55.6
2025	0.0	0.0	0.0	0.0	43.4	757.5	49.7	756.4	45.4	47.5	52.1	57.6
2026	0.0	0.0	0.0	0.0	44.0	758.3	55.2	756.7	46.1	47.7	57.9	58.0
2027	0.0	0.0	0.0	0.0	44.0	758.7	55.2	756.8	46.1	48.8	57.9	59.0
2028	0.0	0.0	0.0	0.0	44.0	759.4	55.2	757.4	46.1	49.2	57.9	59.0
2029	0.0	0.0	0.0	0.0	44.1	759.9	55.2	757.9	46.1	49.2	57.9	59.0

Table A-6-24 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 6 of 6

Model Year	Volvo				VWA				Total			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.0	36.4	41.0	36.4	41.2	34.3	41.2	34.3	42.5	43.3	42.5	43.3
2021	41.6	36.4	41.6	36.4	41.9	34.5	41.9	34.5	43.1	45.0	43.1	45.0
2022	42.3	36.4	42.3	36.4	42.7	34.8	42.7	34.8	43.7	48.0	43.7	48.0
2023	42.9	40.6	42.9	40.6	43.4	36.1	43.4	36.1	44.4	49.8	44.4	52.9
2024	43.6	40.9	46.7	40.9	44.1	42.5	47.2	42.4	45.0	50.9	48.2	56.5
2025	44.2	42.8	50.7	42.8	44.8	42.6	51.3	42.5	45.7	52.1	52.5	60.5
2026	44.9	42.9	56.3	42.9	45.5	45.8	57.0	45.0	46.4	53.4	58.3	63.2
2027	44.9	44.9	56.3	56.3	45.5	45.8	57.0	45.0	46.4	53.6	58.3	63.5
2028	44.9	44.9	56.3	56.3	45.6	46.8	57.0	57.1	46.4	53.8	58.3	64.2
2029	44.9	44.9	56.3	56.3	45.6	46.8	57.1	57.2	46.4	53.9	58.3	64.2

Table A-6-25 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 1 of 6

Model Year	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.5	36.7	42.5	36.7	41.4	33.9	41.4	33.9	44.8	34.4	44.8	34.4
2021	43.1	40.1	43.1	40.1	42.0	37.3	42.0	37.3	45.5	37.0	45.5	37.0
2022	43.8	43.8	43.8	43.8	42.7	38.9	42.7	38.9	46.1	48.7	46.1	48.7
2023	44.4	45.9	44.4	46.1	43.3	39.8	43.3	40.0	46.7	49.8	46.7	48.9
2024	45.1	48.2	48.3	48.4	44.0	45.8	47.1	47.3	47.4	54.0	50.8	52.2
2025	45.8	51.9	52.5	54.8	44.6	47.3	51.2	48.9	48.1	54.2	55.2	52.3
2026	46.5	54.1	58.3	58.3	45.3	47.5	56.8	49.2	48.8	55.3	61.3	54.3
2027	46.5	54.1	58.3	58.4	45.3	47.8	56.8	53.8	48.8	55.4	61.3	61.3
2028	46.5	54.1	58.3	58.4	45.3	47.9	56.8	56.8	48.8	55.5	61.3	61.8
2029	46.5	54.4	58.3	58.7	45.3	48.6	56.8	56.8	48.7	55.5	61.3	61.9

Table A-6-26 - Comparison of Alternative 0 (Baseline) and Alternative 3 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 2 of 6

Model Year	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	48.0	38.8	48.0	38.8	46.8	40.8	46.8	40.8	45.4	46.5	45.4	46.5
2021	48.7	38.9	48.7	38.9	47.5	42.1	47.5	42.1	46.1	47.0	46.1	47.0
2022	49.5	39.1	49.5	39.1	48.3	47.9	48.3	47.9	46.8	52.2	46.8	52.2
2023	50.2	79.1	50.2	79.1	49.1	48.7	49.1	48.7	47.5	52.6	47.5	52.6
2024	51.0	79.1	54.6	79.1	49.8	51.2	53.3	51.1	48.2	52.9	51.6	52.9
2025	51.8	79.1	59.3	79.1	50.6	51.4	58.0	51.5	48.9	57.2	56.0	58.0
2026	52.5	79.1	65.9	79.1	51.4	51.5	64.4	56.1	49.6	57.2	62.3	58.1
2027	52.5	79.1	65.9	79.1	51.4	52.0	64.4	64.4	49.6	57.3	62.3	58.9
2028	52.5	79.1	65.9	79.1	51.4	52.1	64.4	64.5	49.6	57.4	62.3	62.3
2029	52.5	79.1	65.9	79.1	51.4	52.2	64.4	64.5	49.6	57.5	62.2	62.4

Table A-6-27 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 3 of 6

Model Year	Hyundai Kia-H				Hyundai Kia-K				JLR			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.2	39.0	43.2	39.0	44.0	41.9	44.0	41.9	42.1	35.7	42.1	35.7
2021	43.9	40.5	43.9	40.5	44.7	45.7	44.7	45.7	42.7	36.9	42.7	36.9
2022	44.6	44.2	44.6	44.2	45.4	46.8	45.4	46.8	43.3	37.0	43.3	37.0
2023	45.3	45.1	45.3	45.1	46.1	47.0	46.1	47.0	44.0	38.7	44.0	39.5
2024	46.0	47.8	49.2	50.5	46.8	49.3	50.1	53.9	44.7	46.1	47.8	47.3
2025	46.7	48.0	53.5	53.5	47.5	50.3	54.5	58.1	45.4	46.1	52.0	47.3
2026	47.4	48.2	59.4	59.4	48.3	50.4	60.5	60.5	46.1	46.1	57.8	47.3
2027	47.4	48.5	59.4	60.0	48.3	50.7	60.5	61.0	46.1	46.9	57.8	49.5
2028	47.4	48.6	59.4	60.2	48.3	50.7	60.5	61.6	46.1	46.9	57.8	49.5
2029	47.4	48.9	59.4	60.3	48.3	50.7	60.5	61.6	46.1	46.9	57.8	53.5

Table A-6-28 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 4 of 6

Model Year	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.8	38.8	43.8	38.8	46.5	42.8	46.5	42.8	43.6	38.4	43.6	38.4
2021	44.4	41.6	44.4	41.6	47.2	44.3	47.2	44.3	44.3	42.3	44.3	42.3
2022	45.1	43.7	45.1	43.7	48.0	44.7	48.0	44.7	45.0	45.1	45.0	45.1
2023	45.8	48.6	45.8	48.9	48.8	45.0	48.8	45.0	45.6	46.6	45.6	53.1
2024	46.5	49.4	49.8	51.8	49.6	45.3	53.1	45.2	46.3	47.4	49.6	57.1
2025	47.2	49.6	54.1	57.3	50.4	52.1	57.7	63.9	47.0	47.6	53.9	57.4
2026	47.9	49.8	60.1	60.1	51.1	52.3	64.1	64.1	47.8	47.8	59.9	57.9
2027	47.9	49.9	60.1	60.1	51.2	52.4	64.1	64.1	47.8	47.8	59.9	59.7
2028	47.9	50.0	60.1	60.1	51.2	52.5	64.1	64.2	47.7	47.7	59.9	59.9
2029	47.9	50.0	60.1	60.2	51.2	52.6	64.2	64.3	47.7	47.7	59.9	60.9

Table A-6-29 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 5 of 6

Model Year	Subaru				Tesla				Toyota			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	44.9	38.1	44.9	38.1	0.0	0.0	0.0	0.0	44.2	46.8	44.2	46.8
2021	45.5	40.1	45.5	40.1	0.0	0.0	0.0	0.0	44.9	47.6	44.9	47.6
2022	46.2	46.1	46.2	46.1	0.0	0.0	0.0	0.0	45.6	50.5	45.6	50.5
2023	46.9	47.9	46.9	47.9	0.0	0.0	0.0	0.0	46.3	51.0	46.3	51.1
2024	47.7	50.0	51.0	52.0	0.0	0.0	0.0	0.0	47.0	52.3	50.4	58.3
2025	48.4	50.4	55.5	52.3	0.0	0.0	0.0	0.0	47.8	52.8	54.7	58.9
2026	49.1	52.1	61.6	61.6	0.0	0.0	0.0	0.0	48.5	53.7	60.8	60.8
2027	49.1	52.1	61.6	61.6	0.0	0.0	0.0	0.0	48.5	54.7	60.8	61.5
2028	49.1	52.1	61.6	61.6	0.0	0.0	0.0	0.0	48.5	54.8	60.8	61.8
2029	49.1	52.1	61.6	61.6	0.0	0.0	0.0	0.0	48.5	57.1	60.8	61.9

Table A-6-30 - Comparison of Alternative 0 (Baseline) and Alternative 2.5 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 6 of 6

Model Year	Volvo				VWA				Total			
	Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5		Alternative 0 (Baseline)		Alternative 2.5	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	40.8	35.1	40.8	35.1	44.1	38.9	44.1	38.9	44.0	40.6	44.0	40.6
2021	41.4	36.4	41.4	36.4	44.8	39.6	44.8	39.6	44.6	42.7	44.6	42.7
2022	42.0	36.6	42.0	36.6	45.5	42.1	45.5	42.1	45.3	45.9	45.3	45.9
2023	42.6	40.8	42.6	40.8	46.2	45.4	46.2	45.4	46.0	47.3	46.0	47.7
2024	43.2	41.2	46.3	41.1	46.9	57.4	50.2	57.4	46.7	50.0	50.0	53.1
2025	43.9	42.2	50.3	42.1	47.6	58.6	54.5	59.1	47.4	51.0	54.4	55.8
2026	44.5	49.0	55.9	48.7	48.3	59.5	60.6	60.6	48.1	51.6	60.4	59.0
2027	44.5	50.6	55.9	55.9	48.3	60.0	60.6	60.7	48.1	52.0	60.4	60.4
2028	44.5	50.8	55.9	56.1	48.3	60.2	60.6	60.9	48.1	52.1	60.4	61.0
2029	44.5	51.0	55.9	56.3	48.3	60.7	60.6	61.4	48.1	52.7	60.4	61.1

7. Incremental Benefits and Costs

Table A-7-1 - Incremental Benefits and Costs Over the Lifetimes of Total Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	31.7	67.4	76.4	100.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.2	0.3	0.5
Safety Costs Internalized by Drivers	5.0	7.9	8.7	10.7
Subtotal - Incremental Private Costs	36.7	75.4	85.4	111.4
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	6.1	9.8	10.8	13.0
Safety Costs Not Internalized by Drivers	4.5	8.8	9.7	12.8
Loss in Fuel Tax Revenue	11.3	20.0	22.4	28.6
Subtotal - Incremental External Costs	21.9	38.5	43.0	54.4
Total Incremental Social Costs	58.6	113.9	128.4	165.8
Private Benefits				
Reduced Fuel Costs	52.5	88.1	98.2	123.5
Benefits from Additional Driving	9.9	14.9	16.4	19.8
Less Frequent Refueling	0.3	-1.3	-0.8	0.1
Subtotal - Incremental Private Benefits	62.7	101.7	113.8	143.4
External Benefits				
Reduction in Petroleum Market Externality	0.9	1.6	1.8	2.3
Reduced Climate Damages, Average SCC	14.4	24.6	27.5	34.8
Reduced Health Damages	1.2	1.5	1.5	1.7
Subtotal - Incremental External Benefits	16.5	27.7	30.8	38.8
Total Incremental Social Benefits, Average SCC	79.2	129.4	144.6	182.2
Net Incremental Social Benefits, Average SCC				
Net Incremental Social Benefits, Average SCC	20.6	15.5	16.3	16.4

Table A-7-2 - Incremental Benefits and Costs Over the Lifetimes of Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	14.2	36.9	41.7	50.6
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.1	0.1	0.2
Safety Costs Internalized by Drivers	2.1	3.8	4.5	5.4
Subtotal - Incremental Private Costs	16.2	40.8	46.3	56.2
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	-7.5	-12.2	-13.3	-17.6
Safety Costs Not Internalized by Drivers	-5.5	-9.2	-10.3	-12.6
Loss in Fuel Tax Revenue	5.9	12.1	13.6	16.6
Subtotal - Incremental External Costs	-7.1	-9.3	-10.0	-13.6
Total Incremental Social Costs	9.2	31.5	36.3	42.7
Private Benefits				
Reduced Fuel Costs	27.7	54.0	61.5	75.0
Benefits from Additional Driving	3.7	6.5	7.7	9.2
Less Frequent Refueling	1.0	0.5	0.8	1.1
Subtotal - Incremental Private Benefits	32.4	61.0	70.0	85.3
External Benefits				
Reduction in Petroleum Market Externality	0.5	1.0	1.1	1.3
Reduced Climate Damages, Average SCC	7.6	15.0	17.0	20.8
Reduced Health Damages	0.7	1.2	1.4	1.7
Subtotal - Incremental External Benefits	8.8	17.1	19.5	23.7
Total Incremental Social Benefits, Average SCC	41.2	78.1	89.5	109.0
Net Incremental Social Benefits, Average SCC				
Net Incremental Social Benefits, Average SCC	32.0	46.6	53.2	66.3

Table A-7-3 - Incremental Benefits and Costs Over the Lifetimes of Light Truck Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	17.5	30.4	34.7	49.6
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.1	0.1	0.2
Safety Costs Internalized by Drivers	2.9	4.1	4.3	5.3
Subtotal - Incremental Private Costs	20.5	34.6	39.1	55.1
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	13.6	22.0	24.1	30.5
Safety Costs Not Internalized by Drivers	10.0	17.9	20.1	25.5
Loss in Fuel Tax Revenue	5.4	7.9	8.8	12.0
Subtotal - Incremental External Costs	29.0	47.8	53.0	68.0
Total Incremental Social Costs	49.4	82.4	92.1	123.1
Private Benefits				
Reduced Fuel Costs	24.8	34.1	36.7	48.5
Benefits from Additional Driving	6.2	8.4	8.7	10.7
Less Frequent Refueling	-0.7	-1.8	-1.6	-1.0
Subtotal - Incremental Private Benefits	30.3	40.7	43.8	58.2
External Benefits				
Reduction in Petroleum Market Externality	0.4	0.6	0.7	1.0
Reduced Climate Damages, Average SCC	6.8	9.6	10.5	14.0
Reduced Health Damages	0.5	0.3	0.2	0.1
Subtotal - Incremental External Benefits	7.7	10.6	11.3	15.0
Total Incremental Social Benefits, Average SCC	38.0	51.3	55.1	73.2
Net Incremental Social Benefits, Average SCC	-11.4	-31.1	-37.0	-49.9

Table A-7-4 - Incremental Benefits and Costs Over the Lifetimes of Total Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	25.8	54.7	62.0	81.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.2	0.2	0.4
Safety Costs Internalized by Drivers	3.0	4.8	5.3	6.5
Subtotal - Incremental Private Costs	28.8	59.6	67.5	88.2
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	3.9	6.3	7.1	8.5
Safety Costs Not Internalized by Drivers	3.1	6.3	7.1	9.4
Loss in Fuel Tax Revenue	7.2	12.7	14.2	18.1
Subtotal - Incremental External Costs	14.2	25.3	28.3	36.0
Total Incremental Social Costs	43.0	84.9	95.8	124.3
Private Benefits				
Reduced Fuel Costs	32.7	54.7	61.0	76.7
Benefits from Additional Driving	6.0	9.1	10.0	12.1
Less Frequent Refueling	0.1	-0.9	-0.6	-0.1
Subtotal - Incremental Private Benefits	38.8	62.9	70.3	88.8
External Benefits				
Reduction in Petroleum Market Externality	0.5	1.0	1.1	1.4
Reduced Climate Damages, Average SCC	14.4	24.6	27.5	34.8
Reduced Health Damages	0.7	0.8	0.8	0.9
Subtotal - Incremental External Benefits	15.6	26.4	29.4	37.0
Total Incremental Social Benefits, Average SCC	54.5	89.3	99.7	125.8
Net Incremental Social Benefits, Average SCC				
Net Incremental Social Benefits, Average SCC	11.5	4.3	3.9	1.5

Table A-7-5 - Incremental Benefits and Costs Over the Lifetimes of Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	11.5	30.1	34.1	41.3
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.1	0.1	0.2
Safety Costs Internalized by Drivers	1.3	2.3	2.7	3.3
Subtotal - Incremental Private Costs	12.8	32.6	36.9	44.8
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	-4.5	-7.3	-8.0	-10.5
Safety Costs Not Internalized by Drivers	-2.9	-4.7	-5.3	-6.3
Loss in Fuel Tax Revenue	3.8	7.7	8.7	10.6
Subtotal - Incremental External Costs	-3.7	-4.3	-4.6	-6.3
Total Incremental Social Costs	9.1	28.2	32.3	38.5
Private Benefits				
Reduced Fuel Costs	17.3	33.7	38.4	46.8
Benefits from Additional Driving	2.3	4.0	4.7	5.7
Less Frequent Refueling	0.6	0.3	0.5	0.6
Subtotal - Incremental Private Benefits	20.2	38.0	43.6	53.1
External Benefits				
Reduction in Petroleum Market Externality	0.3	0.6	0.7	0.8
Reduced Climate Damages, Average SCC	7.6	15.0	17.0	20.8
Reduced Health Damages	0.4	0.6	0.7	0.9
Subtotal - Incremental External Benefits	8.3	16.2	18.5	22.5
Total Incremental Social Benefits, Average SCC	28.5	54.2	62.1	75.6
Net Incremental Social Benefits, Average SCC				
Net Incremental Social Benefits, Average SCC	19.4	26.0	29.8	37.1

Table A-7-6 - Incremental Benefits and Costs Over the Lifetimes of Light Truck Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, by Alternative, Average SCC

Alternative	1	2	2.5	3
Private Costs				
Technology Costs to Increase Fuel Economy	14.2	24.5	27.9	40.1
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.1	0.1	0.2
Safety Costs Internalized by Drivers	1.7	2.4	2.5	3.2
Subtotal - Incremental Private Costs	16.0	27.0	30.6	43.4
External Costs				
Congestion and Noise Costs from Rebound-Effect Driving	8.4	13.7	15.0	19.0
Safety Costs Not Internalized by Drivers	6.1	11.0	12.4	15.7
Loss in Fuel Tax Revenue	3.4	4.9	5.5	7.5
Subtotal - Incremental External Costs	17.9	29.6	32.9	42.3
Total Incremental Social Costs	33.9	56.7	63.5	85.8
Private Benefits				
Reduced Fuel Costs	15.4	21.0	22.6	29.9
Benefits from Additional Driving	3.7	5.0	5.2	6.4
Less Frequent Refueling	-0.5	-1.2	-1.1	-0.7
Subtotal - Incremental Private Benefits	18.6	24.9	26.7	35.7
External Benefits				
Reduction in Petroleum Market Externality	0.3	0.4	0.4	0.6
Reduced Climate Damages, Average SCC	6.8	9.6	10.5	14.0
Reduced Health Damages	0.3	0.2	0.1	0.0
Subtotal - Incremental External Benefits	7.4	10.1	11.0	14.6
Total Incremental Social Benefits, Average SCC	26.0	35.0	37.6	50.2
Net Incremental Social Benefits, Average SCC				
	-7.9	-21.6	-25.8	-35.5

8. Technology Costs and Civil Penalties per Vehicle, by Model Year

Table A-8-1 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	194	287	494	585	712	768	819	801	788	775
Alternative 1	194	287	494	665	1,039	1,172	1,282	1,237	1,236	1,207
Alternative 2	194	287	494	806	1,193	1,518	1,868	1,791	1,768	1,712
Alternative 2.5	194	287	494	825	1,248	1,580	2,033	1,946	1,923	1,860
Alternative 3	194	287	494	877	1,481	1,920	2,391	2,280	2,257	2,180

Table A-8-2 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	290	317	489	545	657	723	771	742	717	698
Alternative 1	290	317	489	627	921	1,081	1,184	1,139	1,115	1,084
Alternative 2	290	317	489	872	1,266	1,628	1,870	1,774	1,725	1,654
Alternative 2.5	290	317	489	910	1,353	1,727	2,022	1,920	1,864	1,788
Alternative 3	290	317	489	955	1,533	1,988	2,323	2,195	2,136	2,051

Table A-8-3 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	119	263	498	620	763	810	865	859	857	853
Alternative 1	119	263	498	698	1,145	1,255	1,373	1,330	1,352	1,326
Alternative 2	119	263	498	747	1,127	1,417	1,866	1,806	1,809	1,767
Alternative 2.5	119	263	498	749	1,153	1,446	2,043	1,969	1,978	1,929
Alternative 3	119	263	498	809	1,435	1,860	2,453	2,357	2,367	2,300

Table A-8-4 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	75	740	838	1,017	1,218	1,448	1,659	1,608	1,551	1,511
Alternative 1	75	740	838	1,109	1,359	1,563	1,666	1,612	1,556	1,515
Alternative 2	75	740	838	1,128	1,313	1,754	2,227	2,170	2,089	2,024
Alternative 2.5	75	740	838	1,137	1,321	1,877	2,388	2,326	2,237	2,163
Alternative 3	75	740	838	1,184	1,446	2,141	2,711	2,669	2,582	2,500

Table A-8-5 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	422	506	774	789	1,081	1,242	1,265	1,228	1,188	1,129
Alternative 1	422	506	774	855	1,638	1,779	1,896	1,676	1,734	1,655
Alternative 2	422	506	774	857	1,458	1,905	2,403	2,131	2,107	2,006
Alternative 2.5	422	506	774	857	1,457	1,903	2,554	2,277	2,229	2,113
Alternative 3	422	506	774	857	1,651	2,236	2,931	2,625	2,524	2,388

Table A-8-6 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	392	346	875	1,048	1,108	1,082	1,136	1,160	1,217	1,202
Alternative 1	392	346	875	1,061	1,437	1,567	1,708	1,556	1,711	1,667
Alternative 2	392	346	875	1,061	1,270	1,665	2,149	1,969	2,121	2,067
Alternative 2.5	392	346	875	1,061	1,271	1,664	2,281	2,110	2,272	2,212
Alternative 3	392	346	875	1,061	1,372	1,901	2,556	2,357	2,525	2,459

Table A-8-7 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	137	565	890	1,074	1,203	1,197	1,309	1,265	1,233	1,190
Alternative 1	137	565	890	1,149	1,211	1,264	1,391	1,352	1,316	1,271
Alternative 2	137	565	890	1,555	1,615	1,633	2,172	2,086	2,010	1,916
Alternative 2.5	137	565	890	1,555	1,615	1,633	2,382	2,289	2,204	2,103
Alternative 3	137	565	890	1,600	1,966	2,078	2,771	2,667	2,569	2,457

Table A-8-8 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	276	373	457	477	508	624	629	615	596	620
Alternative 1	276	373	457	525	1,222	1,550	1,675	1,640	1,601	1,581
Alternative 2	276	373	457	504	991	1,767	2,368	2,308	2,249	2,200
Alternative 2.5	276	373	457	504	990	1,812	2,596	2,521	2,452	2,395
Alternative 3	276	373	457	546	1,187	2,283	2,996	2,882	2,794	2,703

Table A-8-9 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	16	246	287	390	656	825	799	771	744
Alternative 1	0	16	246	301	357	618	786	761	734	708
Alternative 2	0	16	246	589	740	1,102	1,344	1,251	1,214	1,164
Alternative 2.5	0	16	246	730	1,033	1,384	1,637	1,511	1,480	1,422
Alternative 3	0	16	246	919	1,357	1,718	1,994	1,812	1,798	1,728

Table A-8-10 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	521	307	365	433	537	522	554	534	515	508
Alternative 1	521	307	365	433	791	971	1,215	1,194	1,168	1,138
Alternative 2	521	307	365	433	869	1,273	1,939	1,893	1,848	1,798
Alternative 2.5	521	307	365	433	870	1,273	2,125	2,072	2,024	1,969
Alternative 3	521	307	365	438	1,132	1,683	2,515	2,462	2,399	2,333

Table A-8-11 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	211	298	301	294	545	556	532	535	516	495
Alternative 1	211	298	301	293	837	904	999	1,013	1,009	982
Alternative 2	211	298	301	293	1,171	1,522	1,668	1,665	1,657	1,609
Alternative 2.5	211	298	301	293	1,416	1,659	1,786	1,775	1,762	1,710
Alternative 3	211	298	301	293	1,602	2,011	2,137	2,108	2,085	2,022

Table A-8-12 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	96	78	401	660	863	847	834	843	820	830
Alternative 1	96	78	401	697	1,303	1,546	1,954	2,038	1,973	1,937
Alternative 2	96	78	401	942	1,213	1,680	2,363	2,236	2,158	2,130
Alternative 2.5	96	78	401	942	1,213	1,680	2,510	2,292	2,363	2,280
Alternative 3	96	78	401	942	1,329	1,920	2,803	2,579	2,659	2,586

Table A-8-13 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	329	960	1,028	1,179	1,162	1,221	1,204	1,163	1,131	1,092
Alternative 1	329	960	1,028	1,183	1,297	1,467	1,507	1,457	1,419	1,375
Alternative 2	329	960	1,028	1,183	1,304	1,856	2,091	2,024	1,973	1,917
Alternative 2.5	329	960	1,028	1,194	1,312	1,969	2,284	2,209	2,152	2,090
Alternative 3	329	960	1,028	1,191	1,329	2,160	2,441	2,360	2,296	2,229

Table A-8-14 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	141	43	104	414	503	396	382	369	358	346
Alternative 1	141	43	104	414	1,122	959	942	925	911	897
Alternative 2	141	43	104	414	955	1,380	1,354	1,330	1,309	1,291
Alternative 2.5	141	43	104	414	955	1,569	1,539	1,511	1,485	1,459
Alternative 3	141	43	104	414	1,096	1,937	1,885	1,843	1,804	1,766

Table A-8-15 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	87	222	264	270	395	403	396	389	394	388
Alternative 1	87	222	264	522	724	762	771	751	791	775
Alternative 2	87	222	264	1,108	1,951	2,208	2,298	2,217	2,226	2,156
Alternative 2.5	87	222	264	1,108	2,043	2,295	2,456	2,332	2,346	2,272
Alternative 3	87	222	264	1,119	2,259	2,532	2,797	2,589	2,641	2,563

Table A-8-16 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28	46	335	602	636	661	655	633	615	598
Alternative 1	28	46	335	786	946	1,002	974	946	923	902
Alternative 2	28	46	335	786	945	1,073	1,109	1,077	1,053	1,031
Alternative 2.5	28	46	335	786	944	1,072	1,151	1,117	1,093	1,070
Alternative 3	28	46	335	892	1,154	1,307	1,365	1,323	1,292	1,262

Table A-8-18 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	49	45	235	254	341	345	419	399	393	411
Alternative 1	49	45	235	457	846	839	928	907	919	918
Alternative 2	49	45	235	589	1,018	1,041	1,134	1,110	1,096	1,055
Alternative 2.5	49	45	235	615	1,062	1,085	1,209	1,191	1,184	1,141
Alternative 3	49	45	235	696	1,423	1,444	1,678	1,673	1,687	1,633

Table A-8-19 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	171	297	342	1,582	1,491	1,604	1,725	1,783	1,704	1,625
Alternative 1	171	297	342	1,499	1,564	1,713	2,386	2,428	2,345	2,257
Alternative 2	171	297	342	1,695	1,719	1,944	2,704	2,695	2,589	2,477
Alternative 2.5	171	297	342	1,844	1,854	2,067	2,860	2,836	2,721	2,596
Alternative 3	171	297	342	2,234	2,248	2,481	3,249	3,168	3,021	2,862

Table A-8-20 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Total Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	363	262	669	728	1,875	1,943	1,918	1,875	1,823	1,769
Alternative 1	363	262	669	728	2,130	2,191	2,184	2,130	2,041	1,981
Alternative 2	363	262	669	728	1,882	2,078	2,285	2,180	2,063	1,998
Alternative 2.5	363	262	669	728	1,885	2,084	2,397	2,288	2,165	2,097
Alternative 3	363	262	669	729	1,956	2,263	2,766	2,647	2,478	2,395

Table A-8-21 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	119	987	948	1,012	1,285	1,634	1,950	1,877	1,798	1,747
Alternative 1	119	987	948	1,057	1,410	1,731	1,897	1,827	1,754	1,708
Alternative 2	119	987	948	1,026	1,286	1,969	2,522	2,429	2,325	2,254
Alternative 2.5	119	987	948	1,038	1,297	2,151	2,700	2,600	2,487	2,410
Alternative 3	119	987	948	1,131	1,505	2,513	3,051	2,945	2,845	2,763

Table A-8-22 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	620	805	1,279	1,284	1,839	1,840	1,761	1,696	1,633	1,540
Alternative 1	620	805	1,279	1,299	2,388	2,359	2,422	2,245	2,226	2,130
Alternative 2	620	805	1,279	1,299	2,227	2,529	3,044	2,752	2,577	2,435
Alternative 2.5	620	805	1,279	1,299	2,227	2,529	3,217	2,920	2,680	2,525
Alternative 3	620	805	1,279	1,299	2,498	2,961	3,688	3,341	2,999	2,816

Table A-8-23 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	1,219	1,854	2,214	2,227	2,316	2,205	2,321	2,227	2,250	2,165
Alternative 1	1,219	1,854	2,214	2,424	2,674	2,740	2,646	2,457	2,429	2,340
Alternative 2	1,219	1,854	2,214	2,424	2,612	3,000	3,436	3,082	3,088	2,972
Alternative 2.5	1,219	1,854	2,214	2,424	2,621	2,998	3,683	3,459	3,373	3,240
Alternative 3	1,219	1,854	2,214	2,424	2,736	3,326	4,050	3,598	3,575	3,434

Table A-8-24 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	516	694	1,130	1,463	1,368	1,345	1,424	1,363	1,302	1,236
Alternative 1	516	694	1,130	1,795	1,687	1,852	1,957	1,873	1,787	1,701
Alternative 2	516	694	1,130	3,213	2,957	3,013	2,860	2,681	2,519	2,336
Alternative 2.5	516	694	1,130	3,213	2,959	3,019	2,866	2,689	2,526	2,342
Alternative 3	516	694	1,130	3,213	2,964	3,033	2,988	2,812	2,646	2,452

Table A-8-25 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	479	133	323	423	456	790	754	722	688	654
Alternative 1	479	133	323	560	1,076	1,639	1,779	1,685	1,620	1,556
Alternative 2	479	133	323	500	981	1,914	2,354	2,178	2,090	2,006
Alternative 2.5	479	133	323	500	981	2,044	2,519	2,311	2,215	2,122
Alternative 3	479	133	323	621	1,132	2,306	2,768	2,484	2,371	2,261

Table A-8-26 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	16	173	196	215	352	648	630	608	587
Alternative 1	0	16	173	219	249	441	730	706	680	654
Alternative 2	0	16	173	636	618	893	1,315	1,194	1,162	1,100
Alternative 2.5	0	16	173	866	941	1,204	1,650	1,478	1,461	1,389
Alternative 3	0	16	173	1,058	1,124	1,392	1,892	1,641	1,666	1,588

Table A-8-27 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	554	328	363	432	540	518	499	482	467	463
Alternative 1	554	328	363	432	765	950	1,144	1,128	1,106	1,078
Alternative 2	554	328	363	432	872	1,276	1,872	1,831	1,790	1,744
Alternative 2.5	554	328	363	432	873	1,277	2,059	2,011	1,967	1,916
Alternative 3	554	328	363	439	1,151	1,704	2,439	2,393	2,335	2,274

Table A-8-28 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	154	217	232	226	390	425	406	390	375	357
Alternative 1	154	217	232	223	511	636	802	778	792	769
Alternative 2	154	217	232	223	684	1,250	1,504	1,465	1,481	1,437
Alternative 2.5	154	217	232	223	940	1,349	1,578	1,536	1,550	1,504
Alternative 3	154	217	232	223	1,033	1,697	1,932	1,878	1,883	1,825

Table A-8-29 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	56	54	469	1,206	1,148	1,097	1,085	1,043	1,002
Alternative 1	0	56	54	622	1,509	1,682	1,863	1,610	1,568	1,353
Alternative 2	0	56	54	621	1,436	1,944	2,554	2,271	2,251	2,131
Alternative 2.5	0	56	54	621	1,435	1,944	2,742	2,483	2,470	2,316
Alternative 3	0	56	54	621	1,593	2,266	3,120	2,852	2,851	2,702

Table A-8-30 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	682	1,951	2,046	2,075	2,027	2,130	2,050	1,965	1,892	1,812
Alternative 1	682	1,951	2,046	2,084	2,186	2,436	2,448	2,351	2,270	2,181
Alternative 2	682	1,951	2,046	2,085	2,309	2,845	2,922	2,811	2,720	2,622
Alternative 2.5	682	1,951	2,046	2,106	2,327	2,933	3,006	2,892	2,799	2,698
Alternative 3	682	1,951	2,046	2,099	2,334	3,310	3,360	3,232	3,121	3,008

Table A-8-31 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	309	92	211	615	708	535	509	484	465	443
Alternative 1	309	92	211	615	1,320	933	908	883	863	841
Alternative 2	309	92	211	615	1,220	1,495	1,457	1,420	1,388	1,354
Alternative 2.5	309	92	211	615	1,220	1,684	1,640	1,600	1,563	1,525
Alternative 3	309	92	211	615	1,376	2,014	1,945	1,891	1,837	1,784

Table A-8-32 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	121	169	188	195	315	314	311	307	305	302
Alternative 1	121	169	188	435	648	688	670	655	707	688
Alternative 2	121	169	188	1,194	1,951	2,313	2,262	2,189	2,219	2,133
Alternative 2.5	121	169	188	1,194	2,080	2,434	2,425	2,345	2,371	2,281
Alternative 3	121	169	188	1,210	2,369	2,707	2,787	2,703	2,713	2,625

Table A-8-33 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	134	144	1,050	1,067	977	934	958	924	894	863
Alternative 1	134	144	1,050	1,067	1,500	1,597	1,550	1,505	1,463	1,423
Alternative 2	134	144	1,050	1,067	1,500	1,889	2,095	2,035	1,979	1,925
Alternative 2.5	134	144	1,050	1,067	1,500	1,889	2,268	2,203	2,141	2,082
Alternative 3	134	144	1,050	1,067	1,935	2,461	2,778	2,698	2,618	2,544

Table A-8-35 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	21	131	134	176	205	205	190	178	219
Alternative 1	0	21	131	135	397	429	428	435	437	479
Alternative 2	0	21	131	172	660	753	776	785	770	750
Alternative 2.5	0	21	131	216	736	828	858	877	862	840
Alternative 3	0	21	131	218	986	1,087	1,175	1,229	1,214	1,187

Table A-8-36 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	592	1,135	1,254	1,030	1,070	1,206	1,875	1,859	1,801	1,748
Alternative 1	592	1,135	1,254	1,030	1,596	1,837	4,421	4,266	4,150	4,032
Alternative 2	592	1,135	1,254	1,030	1,518	2,099	5,077	4,801	4,649	4,491
Alternative 2.5	592	1,135	1,254	1,030	1,517	2,104	5,252	4,967	4,809	4,645
Alternative 3	592	1,135	1,254	1,030	1,658	2,422	5,606	5,211	5,027	4,833

Table A-8-37 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Passenger Car Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	569	131	711	797	2,129	2,094	2,020	1,953	1,893	1,828
Alternative 1	569	131	711	797	2,039	2,026	1,990	1,926	1,822	1,768
Alternative 2	569	131	711	797	2,193	2,243	2,244	2,167	1,979	1,912
Alternative 2.5	569	131	711	797	2,200	2,257	2,319	2,240	2,034	1,965
Alternative 3	569	131	711	797	2,004	2,146	2,554	2,468	2,219	2,147

Table A-8-38 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	296	628	1,025	1,079	1,054	1,027	1,012	991	964
Alternative 1	0	296	628	1,211	1,253	1,213	1,176	1,154	1,123	1,088
Alternative 2	0	296	628	1,333	1,367	1,316	1,615	1,632	1,590	1,529
Alternative 2.5	0	296	628	1,336	1,370	1,318	1,748	1,761	1,708	1,634
Alternative 3	0	296	628	1,290	1,326	1,393	2,020	2,109	2,039	1,947

Table A-8-39 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	246	224	267	272	263	582	703	690	663	634
Alternative 1	246	224	267	390	832	1,150	1,317	1,043	1,175	1,107
Alternative 2	246	224	267	395	637	1,238	1,711	1,457	1,587	1,524
Alternative 2.5	246	224	267	395	637	1,238	1,841	1,584	1,733	1,652
Alternative 3	246	224	267	395	751	1,474	2,130	1,867	2,011	1,919

Table A-8-40 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	260	94	641	836	885	871	909	953	1,013	1,009
Alternative 1	260	94	641	816	1,209	1,350	1,532	1,385	1,573	1,536
Alternative 2	260	94	641	816	1,024	1,420	1,911	1,763	1,939	1,895
Alternative 2.5	260	94	641	816	1,024	1,420	2,024	1,862	2,066	2,017
Alternative 3	260	94	641	816	1,124	1,643	2,284	2,132	2,331	2,278

Table A-8-41 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	517	795	917	1,135	1,135	1,260	1,223	1,202	1,169
Alternative 1	0	517	795	887	1,014	1,019	1,154	1,131	1,113	1,084
Alternative 2	0	517	795	885	1,063	1,066	1,887	1,838	1,795	1,737
Alternative 2.5	0	517	795	885	1,063	1,065	2,182	2,124	2,069	2,002
Alternative 3	0	517	795	949	1,557	1,690	2,683	2,608	2,537	2,460

Table A-8-42 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	178	493	527	506	535	534	560	556	544	601
Alternative 1	178	493	527	506	1,301	1,503	1,619	1,616	1,590	1,594
Alternative 2	178	493	527	506	996	1,689	2,375	2,378	2,335	2,307
Alternative 2.5	178	493	527	506	996	1,689	2,637	2,633	2,581	2,544
Alternative 3	178	493	527	506	1,217	2,272	3,117	3,094	3,022	2,943

Table A-8-43 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	17	359	433	681	1,172	1,134	1,098	1,065	1,033
Alternative 1	0	17	359	433	535	912	882	854	829	804
Alternative 2	0	17	359	513	941	1,445	1,393	1,347	1,303	1,275
Alternative 2.5	0	17	359	513	1,184	1,677	1,614	1,565	1,513	1,478
Alternative 3	0	17	359	695	1,735	2,244	2,159	2,090	2,018	1,964

Table A-8-44 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	246	125	378	435	512	558	1,090	1,044	1,005	964
Alternative 1	246	125	378	435	1,039	1,170	1,888	1,829	1,776	1,723
Alternative 2	246	125	378	435	840	1,240	2,568	2,483	2,402	2,323
Alternative 2.5	246	125	378	435	840	1,240	2,745	2,652	2,567	2,482
Alternative 3	246	125	378	435	954	1,490	3,217	3,106	3,003	2,900

Table A-8-45 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	301	437	428	425	850	819	792	842	821	798
Alternative 1	301	437	428	425	1,474	1,433	1,397	1,491	1,462	1,432
Alternative 2	301	437	428	425	2,119	2,051	1,992	2,062	2,013	1,964
Alternative 2.5	301	437	428	425	2,338	2,261	2,194	2,243	2,187	2,132
Alternative 3	301	437	428	425	2,702	2,611	2,531	2,550	2,483	2,416

Table A-8-46 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	100	79	418	671	844	830	819	828	806	819
Alternative 1	100	79	418	701	1,292	1,538	1,960	2,063	1,997	1,972
Alternative 2	100	79	418	959	1,200	1,665	2,352	2,234	2,153	2,130
Alternative 2.5	100	79	418	959	1,200	1,665	2,497	2,281	2,357	2,278
Alternative 3	100	79	418	959	1,314	1,902	2,785	2,564	2,649	2,580

Table A-8-47 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	0	0	249	245	242	277	274	272	269
Alternative 1	0	0	0	249	359	436	496	490	484	479
Alternative 2	0	0	0	249	245	814	1,208	1,187	1,167	1,149
Alternative 2.5	0	0	0	249	245	956	1,520	1,487	1,457	1,429
Alternative 3	0	0	0	249	274	961	1,480	1,449	1,421	1,395

Table A-8-48 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	0	8	232	313	267	262	258	254	251
Alternative 1	0	0	8	232	940	983	973	965	957	950
Alternative 2	0	0	8	232	712	1,273	1,259	1,247	1,235	1,232
Alternative 2.5	0	0	8	232	712	1,464	1,445	1,428	1,412	1,398
Alternative 3	0	0	8	232	840	1,867	1,829	1,799	1,773	1,749

Table A-8-49 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	12	347	451	460	602	638	626	613	642	630
Alternative 1	12	347	451	743	921	955	1,038	1,008	1,018	1,012
Alternative 2	12	347	451	890	1,950	1,936	2,390	2,289	2,246	2,216
Alternative 2.5	12	347	451	890	1,950	1,936	2,535	2,298	2,278	2,247
Alternative 3	12	347	451	890	1,978	2,088	2,821	2,298	2,452	2,401

Table A-8-50 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	18	113	450	520	566	545	526	509	495
Alternative 1	0	18	113	694	758	798	772	748	727	709
Alternative 2	0	18	113	694	758	798	772	748	727	709
Alternative 2.5	0	18	113	694	758	798	772	748	727	709
Alternative 3	0	18	113	835	893	926	894	866	838	816

Table A-8-52 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	105	74	368	414	567	541	728	705	717	705
Alternative 1	105	74	368	886	1,459	1,404	1,629	1,575	1,617	1,565
Alternative 2	105	74	368	1,145	1,504	1,434	1,627	1,559	1,555	1,491
Alternative 2.5	105	74	368	1,145	1,504	1,434	1,689	1,620	1,634	1,570
Alternative 3	105	74	368	1,331	2,015	1,923	2,356	2,271	2,338	2,256

Table A-8-53 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	27	0	3	1,794	1,657	1,763	1,664	1,752	1,663	1,572
Alternative 1	27	0	3	1,678	1,552	1,665	1,573	1,689	1,608	1,523
Alternative 2	27	0	3	1,949	1,797	1,884	1,770	1,864	1,764	1,660
Alternative 2.5	27	0	3	2,156	1,985	2,053	1,923	2,001	1,888	1,769
Alternative 3	27	0	3	2,696	2,477	2,503	2,336	2,377	2,231	2,078

Table A-8-54 - Estimated Average Per Vehicle Technology and Civil Penalties Costs (\$), Light Truck Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	213	365	633	668	1,642	1,801	1,819	1,798	1,752	1,707
Alternative 1	213	365	633	668	2,213	2,344	2,367	2,326	2,255	2,193
Alternative 2	213	365	633	668	1,600	1,928	2,323	2,192	2,143	2,081
Alternative 2.5	213	365	633	668	1,600	1,928	2,468	2,332	2,289	2,223
Alternative 3	213	365	633	668	1,913	2,367	2,956	2,807	2,716	2,627

9. Regulatory Costs per Vehicle, by Model Year

Table A-9-1 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	194	311	544	776	957	1,064	1,144	1,135	1,116	1,100
Alternative 1	194	311	544	856	1,283	1,468	1,608	1,572	1,566	1,532
Alternative 2	194	311	544	997	1,438	1,814	2,195	2,126	2,099	2,038
Alternative 2.5	194	311	544	1,016	1,493	1,876	2,360	2,281	2,254	2,187
Alternative 3	194	311	544	1,068	1,726	2,217	2,718	2,616	2,588	2,507

Table A-9-2 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	250	328	560	667	827	956	1,029	1,012	983	960
Alternative 1	250	328	560	748	1,106	1,321	1,455	1,417	1,395	1,358
Alternative 2	250	328	560	994	1,441	1,853	2,136	2,063	2,020	1,943
Alternative 2.5	250	328	560	1,031	1,528	1,952	2,294	2,212	2,167	2,084
Alternative 3	250	328	560	1,076	1,709	2,210	2,588	2,490	2,444	2,353

Table A-9-3 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Total)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	150	297	531	873	1,075	1,165	1,254	1,255	1,248	1,240
Alternative 1	150	297	531	951	1,445	1,604	1,750	1,718	1,729	1,701
Alternative 2	150	297	531	1,000	1,435	1,779	2,248	2,184	2,173	2,127
Alternative 2.5	150	297	531	1,002	1,461	1,808	2,420	2,344	2,335	2,283
Alternative 3	150	297	531	1,061	1,742	2,224	2,835	2,730	2,719	2,650

Table A-9-4 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	75	742	878	1,186	1,449	1,701	1,907	1,851	1,790	1,745
Alternative 1	75	742	878	1,278	1,591	1,816	1,915	1,857	1,796	1,751
Alternative 2	75	742	878	1,298	1,545	2,009	2,477	2,416	2,331	2,261
Alternative 2.5	75	742	878	1,307	1,553	2,131	2,639	2,572	2,478	2,401
Alternative 3	75	742	878	1,354	1,678	2,396	2,961	2,916	2,825	2,738

Table A-9-5 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	422	494	808	875	1,218	1,485	1,592	1,671	1,640	1,607
Alternative 1	422	494	808	940	1,774	2,022	2,224	2,120	2,188	2,135
Alternative 2	422	494	808	943	1,595	2,149	2,731	2,575	2,562	2,487
Alternative 2.5	422	494	808	943	1,594	2,147	2,882	2,722	2,684	2,594
Alternative 3	422	494	808	943	1,787	2,480	3,259	3,070	2,979	2,870

Table A-9-6 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	392	345	882	1,400	1,460	1,434	1,482	1,501	1,552	1,532
Alternative 1	392	345	882	1,412	1,788	1,920	2,055	1,897	2,046	1,997
Alternative 2	392	345	882	1,412	1,621	2,018	2,496	2,311	2,458	2,398
Alternative 2.5	392	345	882	1,412	1,623	2,017	2,629	2,452	2,609	2,543
Alternative 3	392	345	882	1,412	1,724	2,254	2,904	2,700	2,862	2,791

Table A-9-7 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	137	574	925	1,360	1,540	1,529	1,635	1,586	1,547	1,499
Alternative 1	137	574	925	1,434	1,548	1,596	1,718	1,673	1,632	1,581
Alternative 2	137	574	925	1,840	1,952	1,966	2,499	2,408	2,326	2,228
Alternative 2.5	137	574	925	1,840	1,952	1,966	2,709	2,611	2,521	2,415
Alternative 3	137	574	925	1,886	2,303	2,411	3,099	2,990	2,887	2,770

Table A-9-8 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	276	397	502	695	787	963	962	943	919	937
Alternative 1	276	397	502	743	1,501	1,890	2,009	1,969	1,924	1,898
Alternative 2	276	397	502	722	1,270	2,107	2,702	2,637	2,572	2,519
Alternative 2.5	276	397	502	722	1,270	2,152	2,930	2,850	2,776	2,713
Alternative 3	276	397	502	763	1,467	2,623	3,330	3,212	3,118	3,022

Table A-9-9 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	64	313	501	656	1,063	1,226	1,194	1,160	1,127
Alternative 1	0	64	313	516	623	1,024	1,187	1,155	1,123	1,091
Alternative 2	0	64	313	803	1,006	1,509	1,745	1,646	1,603	1,547
Alternative 2.5	0	64	313	945	1,300	1,790	2,037	1,905	1,869	1,805
Alternative 3	0	64	313	1,133	1,623	2,125	2,395	2,207	2,187	2,111

Table A-9-10 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	521	317	403	492	603	637	711	759	738	729
Alternative 1	521	317	403	492	857	1,087	1,372	1,418	1,391	1,358
Alternative 2	521	317	403	492	935	1,388	2,096	2,118	2,070	2,019
Alternative 2.5	521	317	403	492	935	1,389	2,282	2,297	2,246	2,190
Alternative 3	521	317	403	498	1,198	1,798	2,672	2,687	2,622	2,554

Table A-9-11 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	211	305	331	361	588	572	599	652	630	607
Alternative 1	211	305	331	359	880	921	1,066	1,130	1,124	1,094
Alternative 2	211	305	331	359	1,214	1,539	1,736	1,782	1,771	1,722
Alternative 2.5	211	305	331	359	1,459	1,676	1,854	1,891	1,877	1,823
Alternative 3	211	305	331	359	1,645	2,028	2,205	2,224	2,199	2,135

Table A-9-12 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	96	78	401	812	1,091	1,145	1,199	1,210	1,182	1,186
Alternative 1	96	78	401	848	1,531	1,844	2,320	2,406	2,335	2,293
Alternative 2	96	78	401	1,093	1,440	1,978	2,729	2,604	2,521	2,487
Alternative 2.5	96	78	401	1,093	1,440	1,978	2,875	2,660	2,726	2,637
Alternative 3	96	78	401	1,093	1,556	2,219	3,169	2,947	3,022	2,943

Table A-9-13 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	329	981	1,114	1,343	1,402	1,533	1,575	1,546	1,513	1,473
Alternative 1	329	981	1,114	1,347	1,538	1,779	1,878	1,841	1,802	1,756
Alternative 2	329	981	1,114	1,348	1,544	2,168	2,462	2,408	2,356	2,299
Alternative 2.5	329	981	1,114	1,359	1,552	2,281	2,655	2,594	2,535	2,472
Alternative 3	329	981	1,114	1,355	1,569	2,472	2,813	2,745	2,680	2,611

Table A-9-14 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	141	43	104	417	519	428	421	406	395	382
Alternative 1	141	43	104	417	1,139	990	980	963	948	933
Alternative 2	141	43	104	417	972	1,411	1,392	1,368	1,346	1,327
Alternative 2.5	141	43	104	417	972	1,600	1,577	1,548	1,522	1,496
Alternative 3	141	43	104	417	1,113	1,968	1,923	1,880	1,840	1,803

Table A-9-15 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	87	265	349	409	585	682	724	717	716	704
Alternative 1	87	265	349	661	914	1,042	1,100	1,080	1,114	1,092
Alternative 2	87	265	349	1,246	2,141	2,488	2,627	2,546	2,550	2,474
Alternative 2.5	87	265	349	1,246	2,234	2,575	2,785	2,662	2,669	2,590
Alternative 3	87	265	349	1,258	2,450	2,813	3,127	2,919	2,965	2,882

Table A-9-16 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	28	61	360	674	785	902	968	997	973	950
Alternative 1	28	61	360	857	1,095	1,242	1,287	1,310	1,281	1,255
Alternative 2	28	61	360	857	1,094	1,313	1,422	1,441	1,411	1,383
Alternative 2.5	28	61	360	857	1,093	1,312	1,464	1,481	1,451	1,422
Alternative 3	28	61	360	964	1,303	1,547	1,677	1,687	1,650	1,615

Table A-9-17 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	8	26	28	29	33	33	32	31	31
Alternative 1	0	8	26	28	29	34	33	32	32	31
Alternative 2	0	8	26	28	29	34	33	32	32	31
Alternative 2.5	0	8	26	28	29	34	33	33	32	31
Alternative 3	0	8	26	28	29	34	33	33	32	31

Table A-9-18 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	49	116	356	433	656	715	896	872	858	868
Alternative 1	49	116	356	636	1,161	1,210	1,405	1,381	1,386	1,377
Alternative 2	49	116	356	768	1,333	1,412	1,613	1,586	1,563	1,514
Alternative 2.5	49	116	356	793	1,378	1,456	1,687	1,666	1,651	1,601
Alternative 3	49	116	356	874	1,739	1,816	2,157	2,149	2,156	2,094

Table A-9-19 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	171	336	397	1,688	1,673	1,850	2,032	2,085	2,001	1,916
Alternative 1	171	336	397	1,604	1,746	1,960	2,694	2,731	2,643	2,550
Alternative 2	171	336	397	1,800	1,901	2,191	3,012	2,999	2,888	2,771
Alternative 2.5	171	336	397	1,950	2,036	2,314	3,169	3,141	3,020	2,890
Alternative 3	171	336	397	2,340	2,430	2,728	3,558	3,472	3,320	3,156

Table A-9-20 - Estimated Average Per Vehicle Regulatory Costs (\$), Total Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	363	253	673	906	2,087	2,189	2,197	2,149	2,092	2,032
Alternative 1	363	253	673	906	2,342	2,439	2,464	2,406	2,311	2,246
Alternative 2	363	253	673	906	2,095	2,326	2,567	2,458	2,335	2,265
Alternative 2.5	363	253	673	906	2,098	2,333	2,679	2,566	2,438	2,364
Alternative 3	363	253	673	906	2,169	2,512	3,049	2,926	2,751	2,663

Table A-9-21 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	99	945	1,008	1,126	1,476	1,823	2,136	2,059	1,978	1,924
Alternative 1	99	945	1,008	1,171	1,601	1,919	2,083	2,010	1,934	1,885
Alternative 2	99	945	1,008	1,140	1,477	2,157	2,832	2,611	2,504	2,431
Alternative 2.5	99	945	1,008	1,152	1,488	2,340	3,053	2,782	2,667	2,587
Alternative 3	99	945	1,008	1,245	1,695	2,743	3,505	3,128	3,025	2,940

Table A-9-22 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	644	868	1,281	1,269	1,984	2,071	2,075	2,090	2,021	1,922
Alternative 1	644	868	1,281	1,290	2,772	2,805	2,905	2,732	2,787	2,664
Alternative 2	644	868	1,281	1,290	2,517	2,906	3,444	3,359	3,341	3,173
Alternative 2.5	644	868	1,281	1,290	2,517	2,906	3,610	3,518	3,509	3,320
Alternative 3	644	868	1,281	1,290	2,849	3,376	4,100	3,976	3,942	3,721

Table A-9-23 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	970	1,909	2,257	2,291	2,419	2,345	2,459	2,363	2,384	2,296
Alternative 1	970	1,909	2,257	2,488	3,054	3,162	3,228	2,807	2,839	2,695
Alternative 2	970	1,909	2,257	2,489	2,871	3,331	4,120	3,724	3,769	3,607
Alternative 2.5	970	1,909	2,257	2,488	2,871	3,328	4,496	4,141	4,136	3,958
Alternative 3	970	1,909	2,257	2,489	3,010	3,642	4,766	4,408	4,487	4,303

Table A-9-24 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	284	503	1,246	1,660	1,562	1,537	1,613	1,549	1,485	1,416
Alternative 1	284	503	1,246	1,992	1,881	2,044	2,145	2,059	1,970	1,881
Alternative 2	284	503	1,246	3,410	3,152	3,205	3,049	2,867	2,702	2,516
Alternative 2.5	284	503	1,246	3,410	3,154	3,210	3,055	2,875	2,709	2,522
Alternative 3	284	503	1,246	3,410	3,158	3,225	3,177	2,998	2,829	2,633

Table A-9-25 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	392	152	437	583	658	1,027	987	952	915	877
Alternative 1	392	152	437	721	1,228	1,799	1,984	1,915	1,847	1,779
Alternative 2	392	152	437	660	1,144	2,026	2,463	2,408	2,317	2,229
Alternative 2.5	392	152	437	660	1,143	2,154	2,601	2,541	2,441	2,345
Alternative 3	392	152	437	781	1,277	2,364	2,790	2,714	2,597	2,484

Table A-9-26 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	94	278	341	400	766	1,056	1,032	1,004	977
Alternative 1	0	94	278	364	433	855	1,138	1,108	1,075	1,044
Alternative 2	0	94	278	782	802	1,308	1,703	1,596	1,558	1,489
Alternative 2.5	0	94	278	1,011	1,126	1,619	2,025	1,880	1,857	1,779
Alternative 3	0	94	278	1,204	1,309	1,804	2,246	2,043	2,062	1,977

Table A-9-27 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	549	335	437	497	619	647	649	705	685	678
Alternative 1	549	335	437	497	891	1,133	1,294	1,350	1,324	1,294
Alternative 2	549	335	437	497	980	1,467	2,022	2,053	2,009	1,959
Alternative 2.5	549	335	437	497	981	1,468	2,208	2,233	2,185	2,131
Alternative 3	549	335	437	504	1,268	1,918	2,589	2,615	2,554	2,489

Table A-9-28 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	228	219	254	266	432	427	447	504	488	469
Alternative 1	228	219	254	263	552	639	842	893	905	880
Alternative 2	228	219	254	263	725	1,253	1,544	1,579	1,594	1,548
Alternative 2.5	228	219	254	263	982	1,351	1,618	1,650	1,663	1,616
Alternative 3	228	219	254	263	1,075	1,699	1,973	1,993	1,996	1,936

Table A-9-29 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	141	56	62	477	1,293	1,233	1,180	1,318	1,273	1,228
Alternative 1	141	56	62	630	1,796	1,789	1,356	1,561	1,506	1,579
Alternative 2	141	56	62	629	1,456	1,774	1,787	1,638	1,587	1,971
Alternative 2.5	141	56	62	629	1,456	1,773	2,037	1,734	1,946	1,989
Alternative 3	141	56	62	629	1,616	2,147	2,513	2,215	2,432	2,027

Table A-9-30 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	551	1,962	2,146	2,259	2,268	2,436	2,398	2,324	2,246	2,159
Alternative 1	551	1,962	2,146	2,267	2,474	2,741	2,796	2,710	2,623	2,528
Alternative 2	551	1,962	2,146	2,268	2,535	3,150	3,270	3,170	3,073	2,969
Alternative 2.5	551	1,962	2,146	2,289	2,553	3,239	3,354	3,251	3,152	3,046
Alternative 3	551	1,962	2,146	2,283	2,571	3,616	3,708	3,591	3,475	3,356

Table A-9-31 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	236	92	182	612	730	576	565	539	519	496
Alternative 1	236	92	182	612	1,304	974	964	938	917	894
Alternative 2	236	92	182	612	1,202	1,536	1,512	1,475	1,442	1,407
Alternative 2.5	236	92	182	612	1,203	1,725	1,696	1,655	1,617	1,578
Alternative 3	236	92	182	612	1,340	2,055	2,001	1,946	1,891	1,838

Table A-9-32 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	89	178	238	297	468	555	587	578	572	565
Alternative 1	89	178	238	537	801	929	945	926	974	951
Alternative 2	89	178	238	1,296	2,104	2,554	2,553	2,460	2,486	2,396
Alternative 2.5	89	178	238	1,296	2,232	2,676	2,748	2,616	2,638	2,544
Alternative 3	89	178	238	1,311	2,522	2,983	3,161	2,974	2,980	2,888

Table A-9-33 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	88	210	1,148	1,224	1,176	1,230	1,296	1,256	1,221	1,185
Alternative 1	88	210	1,148	1,224	1,698	1,819	1,888	1,837	1,790	1,744
Alternative 2	88	210	1,148	1,224	1,698	1,977	2,433	2,367	2,306	2,246
Alternative 2.5	88	210	1,148	1,224	1,698	1,977	2,606	2,535	2,468	2,404
Alternative 3	88	210	1,148	1,224	2,134	2,468	3,115	3,031	2,945	2,866

Table A-9-34 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	8	23	23	23	25	25	24	24	24
Alternative 1	0	8	23	23	23	25	25	24	24	24
Alternative 2	0	8	23	23	23	25	25	24	24	24
Alternative 2.5	0	8	23	23	23	25	25	24	24	24
Alternative 3	0	8	23	23	23	25	25	24	24	24

Table A-9-35 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	34	72	232	330	487	550	621	600	581	616
Alternative 1	34	72	232	331	708	775	844	845	841	876
Alternative 2	34	72	232	368	971	1,098	1,193	1,195	1,174	1,148
Alternative 2.5	34	72	232	412	1,047	1,173	1,274	1,287	1,266	1,237
Alternative 3	34	72	232	414	1,297	1,432	1,591	1,638	1,618	1,584

Table A-9-36 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	327	780	832	997	1,094	1,287	1,998	2,027	1,967	1,912
Alternative 1	327	780	832	997	1,280	1,527	4,215	4,434	4,316	4,196
Alternative 2	327	780	832	997	1,318	1,676	4,503	4,970	4,814	4,655
Alternative 2.5	327	780	832	997	1,320	1,683	4,571	5,135	4,975	4,808
Alternative 3	327	780	832	996	1,374	1,826	4,708	5,379	5,193	4,996

Table A-9-37 - Estimated Average Per Vehicle Regulatory Costs (\$), Passenger Car Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	448	118	604	836	2,214	2,214	2,194	2,124	2,062	1,994
Alternative 1	448	118	604	836	2,078	2,096	2,117	2,052	1,991	1,935
Alternative 2	448	118	604	836	2,241	2,306	2,477	2,234	2,156	2,086
Alternative 2.5	448	118	604	835	2,248	2,319	2,614	2,374	2,290	2,215
Alternative 3	448	118	604	836	2,042	2,179	2,793	2,498	2,388	2,313

Table A-9-38 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (BMW)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	35	379	630	1,306	1,395	1,444	1,411	1,390	1,363	1,330
Alternative 1	35	379	630	1,492	1,569	1,603	1,560	1,531	1,495	1,454
Alternative 2	35	379	630	1,614	1,683	1,705	1,742	2,010	1,962	1,896
Alternative 2.5	35	379	630	1,617	1,686	1,707	1,785	2,139	2,080	2,001
Alternative 3	35	379	630	1,570	1,642	1,699	1,861	2,486	2,411	2,313

Table A-9-39 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Daimler)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	226	141	333	464	392	839	1,046	1,189	1,191	1,227
Alternative 1	226	141	333	576	704	1,174	1,474	1,439	1,507	1,524
Alternative 2	226	141	333	580	610	1,339	1,961	1,726	1,700	1,716
Alternative 2.5	226	141	333	580	610	1,339	2,100	1,865	1,776	1,783
Alternative 3	226	141	333	580	660	1,538	2,370	2,113	1,939	1,940

Table A-9-40 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (FCA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	300	84	642	1,239	1,283	1,263	1,295	1,334	1,388	1,378
Alternative 1	300	84	642	1,219	1,556	1,690	1,835	1,725	1,894	1,862
Alternative 2	300	84	642	1,219	1,393	1,777	2,196	2,049	2,211	2,168
Alternative 2.5	300	84	642	1,219	1,394	1,777	2,285	2,141	2,322	2,275
Alternative 3	300	84	642	1,219	1,490	2,003	2,565	2,390	2,562	2,509

Table A-9-41 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Ford)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	83	600	799	1,238	1,530	1,525	1,644	1,601	1,575	1,536
Alternative 1	83	600	799	1,209	1,410	1,410	1,538	1,510	1,486	1,451
Alternative 2	83	600	799	1,206	1,458	1,456	2,271	2,217	2,168	2,104
Alternative 2.5	83	600	799	1,206	1,458	1,456	2,566	2,502	2,442	2,369
Alternative 3	83	600	799	1,270	1,953	2,080	3,067	2,986	2,910	2,827

Table A-9-42 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (GM)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	219	518	536	754	856	928	948	938	921	972
Alternative 1	219	518	536	754	1,648	1,938	2,023	1,998	1,967	1,965
Alternative 2	219	518	536	754	1,337	2,149	2,831	2,760	2,712	2,678
Alternative 2.5	219	518	536	754	1,337	2,150	3,107	3,016	2,957	2,915
Alternative 3	219	518	536	754	1,568	2,761	3,617	3,476	3,398	3,314

Table A-9-43 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Honda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	21	366	758	1,080	1,567	1,522	1,481	1,442	1,404
Alternative 1	0	21	366	758	935	1,306	1,270	1,236	1,206	1,175
Alternative 2	0	21	366	838	1,341	1,839	1,815	1,730	1,680	1,646
Alternative 2.5	0	21	366	838	1,583	2,071	2,057	1,948	1,890	1,849
Alternative 3	0	21	366	1,021	2,134	2,642	2,637	2,472	2,394	2,335

Table A-9-44 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Hyundai Kia-H)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	289	161	96	444	454	540	1,322	1,292	1,266	1,239
Alternative 1	289	161	96	444	540	646	2,119	2,076	2,038	1,998
Alternative 2	289	161	96	444	509	643	2,800	2,730	2,664	2,598
Alternative 2.5	289	161	96	444	509	643	2,977	2,900	2,829	2,757
Alternative 3	289	161	96	444	540	688	3,449	3,354	3,264	3,175

Table A-9-45 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Hyundai Kia-K)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	183	450	470	541	896	865	914	962	939	914
Alternative 1	183	450	470	541	1,520	1,479	1,519	1,610	1,579	1,548
Alternative 2	183	450	470	541	2,165	2,097	2,113	2,182	2,131	2,080
Alternative 2.5	183	450	470	541	2,385	2,307	2,315	2,363	2,305	2,247
Alternative 3	183	450	470	541	2,749	2,657	2,653	2,670	2,600	2,532

Table A-9-46 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (JLR)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	94	79	418	830	1,079	1,140	1,200	1,204	1,176	1,184
Alternative 1	94	79	418	860	1,516	1,847	2,375	2,455	2,385	2,337
Alternative 2	94	79	418	1,118	1,439	1,989	2,782	2,659	2,575	2,517
Alternative 2.5	94	79	418	1,118	1,439	1,989	2,922	2,712	2,771	2,675
Alternative 3	94	79	418	1,118	1,553	2,223	3,205	2,988	3,055	2,996

Table A-9-47 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Mazda)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	122	31	72	394	484	561	673	685	687	689
Alternative 1	122	31	72	394	549	755	891	900	899	898
Alternative 2	122	31	72	394	501	1,133	1,604	1,598	1,583	1,568
Alternative 2.5	122	31	72	394	501	1,274	1,915	1,898	1,872	1,848
Alternative 3	122	31	72	394	518	1,280	1,875	1,860	1,836	1,814

Table A-9-48 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Mitsubishi)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	62	0	35	240	326	289	284	280	275	272
Alternative 1	62	0	35	240	987	1,005	995	986	978	971
Alternative 2	62	0	35	240	761	1,296	1,281	1,268	1,256	1,252
Alternative 2.5	62	0	35	240	760	1,486	1,467	1,449	1,433	1,418
Alternative 3	62	0	35	240	906	1,889	1,851	1,821	1,794	1,770

Table A-9-49 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Nissan)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	83	469	623	692	889	1,018	1,096	1,094	1,116	1,096
Alternative 1	83	469	623	974	1,208	1,335	1,508	1,490	1,492	1,478
Alternative 2	83	469	623	1,121	2,237	2,316	2,819	2,770	2,720	2,682
Alternative 2.5	83	469	623	1,121	2,237	2,316	2,881	2,779	2,752	2,713
Alternative 3	83	469	623	1,121	2,265	2,380	3,040	2,779	2,926	2,868

Table A-9-50 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Subaru)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	12	18	115	494	652	787	850	901	878	858
Alternative 1	12	18	115	737	890	1,044	1,076	1,123	1,096	1,073
Alternative 2	12	18	115	737	890	1,089	1,076	1,123	1,096	1,073
Alternative 2.5	12	18	115	737	890	1,089	1,076	1,123	1,096	1,073
Alternative 3	12	18	115	878	1,025	1,243	1,199	1,240	1,207	1,180

Table A-9-51 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Tesla)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	0	20	111	207	293	368	362	357	351	346
Alternative 1	0	20	111	207	293	368	362	357	351	346
Alternative 2	0	20	111	207	293	368	362	357	351	346
Alternative 2.5	0	20	111	207	293	368	362	357	351	346
Alternative 3	0	20	111	207	293	368	362	357	351	346

Table A-9-52 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Toyota)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	67	169	514	569	889	948	1,292	1,271	1,275	1,254
Alternative 1	67	169	514	1,041	1,781	1,811	2,193	2,142	2,175	2,114
Alternative 2	67	169	514	1,300	1,826	1,841	2,191	2,125	2,113	2,040
Alternative 2.5	67	169	514	1,300	1,826	1,841	2,253	2,187	2,192	2,118
Alternative 3	67	169	514	1,486	2,336	2,329	2,920	2,838	2,896	2,805

Table A-9-53 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (Volvo)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	117	179	235	1,953	1,901	2,075	2,046	2,109	2,015	1,918
Alternative 1	117	179	235	1,837	1,929	2,131	2,086	2,047	1,960	1,870
Alternative 2	117	179	235	2,108	2,128	2,392	2,426	2,221	2,116	2,007
Alternative 2.5	117	179	235	2,316	2,314	2,559	2,620	2,358	2,240	2,116
Alternative 3	117	179	235	2,855	2,841	3,076	3,113	2,734	2,583	2,425

Table A-9-54 - Estimated Average Per Vehicle Regulatory Costs (\$), Light Truck Fleet for Manufacturer (VWA)

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Alternative 0 (Baseline)	301	358	731	967	1,971	2,166	2,200	2,174	2,122	2,072
Alternative 1	301	358	731	967	2,583	2,755	2,792	2,744	2,625	2,557
Alternative 2	301	358	731	967	1,961	2,345	2,650	2,664	2,505	2,437
Alternative 2.5	301	358	731	967	1,962	2,345	2,739	2,742	2,577	2,507
Alternative 3	301	358	731	967	2,284	2,809	3,279	3,310	3,086	2,991

10. Incremental Societal Impacts

Table A-10-1 - Incremental Total Societal Costs (\$b) by Year and Alternative for Total Fleet, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	6.9	0.3	0.4	2.0	5.7	7.0	8.5	9.2	9.4	9.1	58.6
Alternative 2	16.2	0.9	0.9	4.6	9.3	12.6	16.8	17.8	17.9	17.0	113.9
Alternative 2.5	18.6	1.0	1.1	5.1	10.4	13.9	18.9	20.1	20.1	19.2	128.4
Alternative 3	25.0	1.3	1.5	6.4	14.5	18.7	23.7	25.2	25.3	24.2	165.8

Table A-10-2 - Incremental Total Societal Costs (\$b) by Year and Alternative for Passenger Car Fleet, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	4.1	0.2	0.2	1.0	2.0	1.0	0.8	0.2	0.1	-0.4	9.2
Alternative 2	9.5	0.4	0.4	3.1	4.8	4.0	3.4	2.3	2.2	1.5	31.5
Alternative 2.5	10.9	0.5	0.5	3.6	5.4	4.3	3.9	2.7	2.7	1.9	36.3
Alternative 3	14.6	0.6	0.7	4.1	6.6	4.6	3.9	2.8	2.9	1.9	42.7

Table A-10-3 - Incremental Total Societal Costs (\$b) by Year and Alternative for Light Truck Fleet, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	2.8	0.2	0.2	1.0	3.7	5.9	7.7	9.0	9.3	9.5	49.4
Alternative 2	6.7	0.5	0.5	1.4	4.5	8.6	13.4	15.5	15.7	15.5	82.4
Alternative 2.5	7.7	0.5	0.6	1.5	5.1	9.6	15.1	17.4	17.4	17.2	92.1
Alternative 3	10.4	0.7	0.8	2.3	8.0	14.1	19.8	22.4	22.4	22.3	123.1

Table A-10-4 - Incremental Total Societal Costs (\$b) by Year and Alternative for Total Fleet, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	5.0	0.2	0.2	1.7	4.7	5.5	6.4	6.6	6.5	6.0	43.0
Alternative 2	11.6	0.6	0.6	4.0	7.7	10.1	13.0	13.2	12.6	11.5	84.9
Alternative 2.5	13.3	0.7	0.7	4.4	8.7	11.1	14.7	14.9	14.2	13.1	95.8
Alternative 3	17.9	0.9	1.0	5.5	12.1	15.1	18.5	18.7	18.0	16.5	124.3

Table A-10-5 - Incremental Total Societal Costs (\$b) by Year and Alternative for Passenger Car Fleet, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	3.0	0.1	0.1	0.8	1.7	1.1	1.0	0.6	0.5	0.2	9.1
Alternative 2	6.9	0.3	0.3	2.7	4.1	3.7	3.4	2.6	2.4	1.8	28.2
Alternative 2.5	8.0	0.3	0.3	3.1	4.7	4.1	3.9	3.0	2.8	2.2	32.3
Alternative 3	10.7	0.4	0.4	3.6	5.7	4.5	4.2	3.3	3.2	2.4	38.5

Table A-10-6 - Incremental Total Societal Costs (\$b) by Year and Alternative for Light Truck Fleet, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	2.0	0.1	0.1	0.9	3.0	4.4	5.5	6.1	6.0	5.9	33.9
Alternative 2	4.7	0.3	0.3	1.2	3.6	6.4	9.6	10.6	10.2	9.7	56.7
Alternative 2.5	5.4	0.4	0.4	1.3	4.0	7.1	10.9	11.9	11.4	10.8	63.5
Alternative 3	7.2	0.5	0.5	1.9	6.4	10.6	14.4	15.4	14.8	14.1	85.8

Table A-10-7 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Total Fleet, Average SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-3.3	-0.2	-0.2	2.3	9.7	11.9	14.2	14.7	15.3	14.6	79.2
Alternative 2	-7.7	-0.5	-0.5	4.0	12.4	18.3	25.6	26.2	26.6	25.1	129.4
Alternative 2.5	-8.9	-0.6	-0.6	4.5	13.8	19.9	28.9	29.4	29.9	28.4	144.6
Alternative 3	-11.9	-0.8	-0.8	5.8	19.5	26.5	35.7	36.2	36.9	35.1	182.2

Table A-10-8 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Passenger Car Fleet, Average SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-1.8	-0.1	-0.1	1.2	4.2	6.2	7.5	7.8	8.2	8.1	41.2
Alternative 2	-4.2	-0.2	-0.2	2.4	7.5	11.8	14.7	15.4	15.8	15.1	78.1
Alternative 2.5	-4.8	-0.2	-0.2	2.9	8.8	13.4	16.8	17.6	18.0	17.3	89.5
Alternative 3	-6.4	-0.3	-0.3	3.4	11.1	16.6	20.3	21.4	21.9	21.2	109.0

Table A-10-9 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Light Truck Fleet, SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-1.5	-0.1	-0.1	1.1	5.6	5.7	6.8	6.9	7.1	6.6	38.0
Alternative 2	-3.6	-0.3	-0.3	1.6	4.9	6.6	10.9	10.7	10.7	10.0	51.3
Alternative 2.5	-4.1	-0.4	-0.4	1.6	5.0	6.5	12.1	11.8	11.8	11.1	55.1
Alternative 3	-5.5	-0.5	-0.5	2.4	8.4	9.9	15.4	14.9	14.9	13.9	73.2

Table A-10-10 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Total Fleet, Average SCC Level, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-2.5	-0.1	-0.1	1.8	7.2	8.6	10.0	10.0	10.1	9.5	54.5
Alternative 2	-5.8	-0.4	-0.4	3.1	9.3	13.3	18.0	18.0	17.7	16.3	89.3
Alternative 2.5	-6.7	-0.4	-0.4	3.5	10.3	14.4	20.4	20.2	20.0	18.5	99.7
Alternative 3	-9.0	-0.5	-0.6	4.5	14.5	19.2	25.2	24.9	24.7	22.8	125.8

Table A-10-11 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Passenger Car, Average SCC Level, Fleet, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-1.4	-0.1	-0.1	0.9	3.1	4.5	5.3	5.4	5.5	5.3	28.5
Alternative 2	-3.2	-0.1	-0.1	1.9	5.6	8.6	10.4	10.7	10.7	9.9	54.2
Alternative 2.5	-3.7	-0.1	-0.2	2.3	6.6	9.7	11.9	12.2	12.1	11.3	62.1
Alternative 3	-4.9	-0.2	-0.2	2.6	8.3	12.1	14.4	14.8	14.8	13.9	75.6

Table A-10-12 - Incremental Total Societal Benefits (\$b) by Year and Alternative for Light Truck Fleet, Average SCC Level, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-1.1	-0.1	-0.1	0.9	4.1	4.1	4.7	4.7	4.7	4.2	26.0
Alternative 2	-2.6	-0.2	-0.2	1.3	3.7	4.7	7.6	7.3	7.1	6.5	35.0
Alternative 2.5	-3.0	-0.3	-0.3	1.3	3.7	4.7	8.5	8.1	7.8	7.2	37.6
Alternative 3	-4.1	-0.3	-0.4	1.9	6.2	7.1	10.8	10.1	9.9	8.9	50.2

Table A-10-13 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Total Fleet, Average SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-10.1	-0.5	-0.6	0.3	4.0	4.9	5.7	5.5	5.8	5.5	20.6
Alternative 2	-24.0	-1.4	-1.5	-0.6	3.1	5.7	8.8	8.3	8.7	8.1	15.5
Alternative 2.5	-27.5	-1.6	-1.7	-0.6	3.3	6.0	10.0	9.3	9.8	9.2	16.3
Alternative 3	-36.9	-2.1	-2.2	-0.7	4.9	7.8	12.0	11.1	11.6	10.9	16.4

Table A-10-14 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Passenger Car Fleet, Average SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-5.9	-0.2	-0.2	0.2	2.2	5.1	6.7	7.6	8.1	8.4	32.0
Alternative 2	-13.7	-0.6	-0.6	-0.7	2.7	7.8	11.3	13.1	13.6	13.6	46.6
Alternative 2.5	-15.7	-0.7	-0.7	-0.7	3.4	9.1	12.9	14.9	15.4	15.3	53.2
Alternative 3	-21.0	-0.9	-0.9	-0.8	4.5	12.0	16.4	18.6	19.1	19.3	66.3

Table A-10-15 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Light Truck Fleet, Average SCC Level, Discounted at 3%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-4.3	-0.3	-0.3	0.1	1.8	-0.2	-1.0	-2.1	-2.3	-2.9	-11.4
Alternative 2	-10.3	-0.8	-0.9	0.2	0.4	-2.1	-2.5	-4.8	-4.9	-5.5	-31.1
Alternative 2.5	-11.8	-0.9	-1.0	0.1	-0.1	-3.1	-3.0	-5.6	-5.6	-6.1	-37.0
Alternative 3	-15.9	-1.2	-1.3	0.1	0.4	-4.2	-4.4	-7.5	-7.4	-8.4	-49.9

Table A-10-16 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Total Fleet, Average SCC Level, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-7.5	-0.4	-0.4	0.1	2.5	3.1	3.5	3.4	3.6	3.4	11.5
Alternative 2	-17.4	-0.9	-1.0	-0.8	1.5	3.2	5.0	4.8	5.1	4.8	4.3
Alternative 2.5	-20.0	-1.1	-1.1	-0.9	1.6	3.3	5.6	5.3	5.7	5.4	3.9
Alternative 3	-26.8	-1.4	-1.5	-1.0	2.4	4.1	6.7	6.2	6.7	6.3	1.5

Table A-10-17 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Passenger Car Fleet, Average SCC Level, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-4.4	-0.2	-0.2	0.1	1.4	3.4	4.3	4.8	5.0	5.1	19.4
Alternative 2	-10.1	-0.4	-0.4	-0.9	1.5	4.9	7.0	8.1	8.3	8.1	26.0
Alternative 2.5	-11.6	-0.5	-0.5	-0.9	1.9	5.7	8.0	9.2	9.3	9.1	29.8
Alternative 3	-15.6	-0.6	-0.6	-1.0	2.6	7.6	10.2	11.5	11.5	11.5	37.1

Table A-10-18 - Incremental Total Societal Net Benefits (\$b) by Year and Alternative for Light Truck Fleet, Average SCC Level, Discounted at 7%

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	-3.1	-0.2	-0.2	0.0	1.1	-0.3	-0.8	-1.4	-1.4	-1.7	-7.9
Alternative 2	-7.3	-0.5	-0.6	0.0	0.1	-1.7	-2.0	-3.3	-3.1	-3.3	-21.6
Alternative 2.5	-8.4	-0.6	-0.6	0.0	-0.3	-2.4	-2.4	-3.9	-3.6	-3.7	-25.8
Alternative 3	-11.3	-0.8	-0.9	0.0	-0.2	-3.5	-3.6	-5.3	-4.9	-5.1	-35.5

11. Labor Impacts

Table A-11-1 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	942,950	942,950	942,950	942,950	942,950
2021	1,127,977	1,127,977	1,127,977	1,127,977	1,127,977
2022	1,213,281	1,213,281	1,213,281	1,213,281	1,213,281
2023	1,197,493	1,197,611	1,198,759	1,199,246	1,200,063
2024	1,177,404	1,181,260	1,183,179	1,184,587	1,188,599
2025	1,159,628	1,165,096	1,168,973	1,170,415	1,175,880
2026	1,155,150	1,161,872	1,168,957	1,171,354	1,176,462
2027	1,151,451	1,159,509	1,167,128	1,169,705	1,175,121
2028	1,144,014	1,152,535	1,160,031	1,162,531	1,168,122
2029	1,135,707	1,144,355	1,151,503	1,153,949	1,159,452

Table A-11-2 - Estimated Labor Utilization (1000s of Person-Years), Passenger Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	356,143	356,143	356,143	356,143	356,143
2021	439,551	439,551	439,551	439,551	439,551
2022	488,856	488,856	488,856	488,856	488,856
2023	491,308	491,901	493,790	494,376	494,993
2024	490,831	491,807	493,347	493,765	494,437
2025	489,929	488,396	488,689	488,426	486,995
2026	494,810	491,455	490,383	490,049	487,678
2027	497,401	492,500	489,867	489,169	486,403
2028	500,448	494,813	492,133	491,541	488,814
2029	501,866	495,211	492,409	491,786	488,458

Table A-11-3 - Estimated Labor Utilization (1000s of Person-Years), Light Truck Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	586,807	586,807	586,807	586,807	586,807
2021	688,427	688,427	688,427	688,427	688,427
2022	724,425	724,425	724,425	724,425	724,425
2023	706,185	705,710	704,969	704,870	705,070
2024	686,573	689,452	689,832	690,822	694,161
2025	669,699	676,700	680,284	681,990	688,885
2026	660,340	670,417	678,574	681,305	688,784
2027	654,050	667,009	677,261	680,536	688,718
2028	643,566	657,722	667,898	670,991	679,308
2029	633,841	649,144	659,094	662,163	670,994

Table A-11-4 - Estimated Labor Utilization (1000s of Person-Years), Domestic Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	230,372	230,372	230,372	230,372	230,372
2021	284,684	284,684	284,684	284,684	284,684
2022	316,976	316,976	316,976	316,976	316,976
2023	318,623	319,311	321,426	322,036	322,723
2024	318,218	319,312	320,885	321,548	321,996
2025	317,853	317,279	317,637	318,040	316,793
2026	321,308	319,204	318,567	318,725	316,879
2027	322,881	319,762	318,052	317,928	315,755
2028	324,865	321,220	319,488	319,352	317,209
2029	325,675	321,371	319,586	319,422	316,887

Table A-11-5 - Estimated Labor Utilization (1000s of Person-Years), Imported Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	125,770	125,770	125,770	125,770	125,770
2021	154,867	154,867	154,867	154,867	154,867
2022	171,880	171,880	171,880	171,880	171,880
2023	172,685	172,590	172,364	172,340	172,269
2024	172,613	172,495	172,462	172,217	172,441
2025	172,076	171,117	171,052	170,386	170,202
2026	173,502	172,252	171,816	171,324	170,799
2027	174,520	172,738	171,814	171,242	170,648
2028	175,583	173,594	172,645	172,189	171,605
2029	176,191	173,840	172,823	172,364	171,571

Table A-11-6 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (BMW)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	14,023	14,023	14,023	14,023	14,023
2021	16,647	16,647	16,647	16,647	16,647
2022	17,694	17,694	17,694	17,694	17,694
2023	17,374	17,386	17,376	17,375	17,366
2024	16,978	16,973	16,973	16,975	16,960
2025	16,638	16,666	16,682	16,701	16,707
2026	16,483	16,524	16,547	16,550	16,564
2027	16,385	16,454	16,565	16,596	16,686
2028	16,211	16,290	16,403	16,429	16,519
2029	16,039	16,133	16,244	16,269	16,366

Table A-11-7 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Daimler)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	18,404	18,404	18,404	18,404	18,404
2021	21,947	21,947	21,947	21,947	21,947
2022	23,551	23,551	23,551	23,551	23,551
2023	23,218	23,212	23,182	23,178	23,168
2024	22,814	22,763	22,733	22,723	22,679
2025	22,691	22,650	22,587	22,576	22,507
2026	22,682	22,642	22,534	22,502	22,431
2027	22,679	22,648	22,550	22,522	22,457
2028	22,551	22,560	22,468	22,491	22,439
2029	22,414	22,427	22,342	22,360	22,312

Table A-11-8 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (FCA)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	117,262	117,262	117,262	117,262	117,262
2021	138,348	138,348	138,348	138,348	138,348
2022	147,187	147,187	147,187	147,187	147,187
2023	144,727	144,752	144,561	144,540	144,481
2024	140,475	140,308	140,372	140,445	140,335
2025	136,720	137,216	137,459	137,665	137,881
2026	134,870	135,966	136,706	136,833	137,228
2027	133,772	135,949	137,068	137,304	137,858
2028	131,993	134,569	135,775	135,931	136,627
2029	130,053	132,955	134,156	134,321	135,158

Table A-11-9 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Ford)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	159,873	159,873	159,873	159,873	159,873
2021	189,267	189,267	189,267	189,267	189,267
2022	201,910	201,910	201,910	201,910	201,910
2023	197,715	197,859	199,022	198,995	199,043
2024	192,813	192,593	194,017	194,078	194,871
2025	188,148	188,833	190,236	190,438	191,876
2026	186,118	187,272	190,353	191,190	192,522
2027	184,560	186,167	189,529	190,458	191,937
2028	182,087	183,856	187,119	187,986	189,463
2029	179,669	181,695	184,786	185,637	187,235

Table A-11-10 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (GM)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	200,151	200,151	200,151	200,151	200,151
2021	237,844	237,844	237,844	237,844	237,844
2022	252,177	252,177	252,177	252,177	252,177
2023	247,127	247,233	246,806	246,770	246,936
2024	241,435	245,041	243,729	243,741	244,437
2025	237,148	242,291	243,344	243,743	246,118
2026	234,722	240,754	243,938	244,895	246,983
2027	233,279	239,672	243,289	244,340	246,523
2028	230,734	237,132	240,714	241,693	243,805
2029	228,453	234,825	238,282	239,237	241,315

Table A-11-11 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Honda)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	116,010	116,010	116,010	116,010	116,010
2021	139,523	139,523	139,523	139,523	139,523
2022	151,588	151,588	151,588	151,588	151,588
2023	150,639	150,614	151,765	152,401	153,234
2024	149,097	148,475	149,958	151,196	152,397
2025	148,716	147,725	148,983	150,080	150,937
2026	149,253	148,035	148,995	149,894	150,578
2027	149,079	147,797	148,579	149,419	150,050
2028	148,605	147,276	148,002	148,836	149,456
2029	147,916	146,547	147,223	148,030	148,573

Table A-11-12 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	44,182	44,182	44,182	44,182	44,182
2021	53,688	53,688	53,688	53,688	53,688
2022	58,702	58,702	58,702	58,702	58,702
2023	58,436	58,401	58,324	58,316	58,292
2024	58,001	58,015	57,977	57,907	57,997
2025	57,449	57,493	57,452	57,328	57,402
2026	57,621	57,714	57,917	57,986	57,912
2027	57,829	57,817	57,901	57,938	57,827
2028	57,943	57,863	57,941	57,984	57,855
2029	57,936	57,765	57,847	57,887	57,713

Table A-11-13 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	30,441	30,441	30,441	30,441	30,441
2021	36,641	36,641	36,641	36,641	36,641
2022	39,548	39,548	39,548	39,548	39,548
2023	39,110	39,085	39,035	39,029	39,013
2024	38,727	38,951	39,234	39,329	39,453
2025	38,222	38,465	39,188	39,071	39,427
2026	38,172	38,351	38,926	38,777	39,089
2027	38,194	38,353	38,886	38,729	39,005
2028	38,096	38,232	38,753	38,598	38,860
2029	37,941	38,057	38,566	38,415	38,654

Table A-11-14 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (JLR)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	2,498	2,498	2,498	2,498	2,498
2021	2,924	2,924	2,924	2,924	2,924
2022	3,084	3,084	3,084	3,084	3,084
2023	3,002	3,002	3,007	3,007	3,005
2024	2,923	2,926	2,936	2,937	2,935
2025	2,850	2,881	2,893	2,897	2,901
2026	2,811	2,882	2,895	2,896	2,904
2027	2,786	2,870	2,891	2,894	2,905
2028	2,744	2,828	2,850	2,852	2,864
2029	2,706	2,793	2,815	2,821	2,851

Table A-11-15 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Mazda)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	3,620	3,620	3,620	3,620	3,620
2021	4,299	4,299	4,299	4,299	4,299
2022	4,585	4,585	4,585	4,585	4,585
2023	4,500	4,498	4,492	4,492	4,490
2024	4,407	4,397	4,393	4,392	4,384
2025	4,333	4,328	4,321	4,321	4,312
2026	4,303	4,300	4,288	4,284	4,275
2027	4,288	4,288	4,280	4,277	4,270
2028	4,257	4,259	4,252	4,249	4,242
2029	4,224	4,228	4,222	4,219	4,214

Table A-11-16 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Mitsubishi)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,567	1,567	1,567	1,567	1,567
2021	1,849	1,849	1,849	1,849	1,849
2022	1,958	1,958	1,958	1,958	1,958
2023	1,911	1,910	1,908	1,908	1,906
2024	1,864	1,861	1,860	1,860	1,858
2025	1,825	1,826	1,825	1,826	1,825
2026	1,807	1,810	1,808	1,807	1,807
2027	1,797	1,804	1,804	1,804	1,805
2028	1,779	1,787	1,788	1,788	1,789
2029	1,762	1,771	1,773	1,773	1,775

Table A-11-17 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Nissan)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	60,047	60,047	60,047	60,047	60,047
2021	72,709	72,709	72,709	72,709	72,709
2022	79,065	79,065	79,065	79,065	79,065
2023	78,455	78,487	78,410	78,398	78,367
2024	77,806	77,806	78,436	78,618	78,963
2025	77,027	76,795	77,275	77,394	77,483
2026	77,109	76,794	77,231	77,274	77,277
2027	77,181	76,794	77,165	77,219	77,265
2028	77,150	76,776	77,168	77,228	77,270
2029	76,965	76,554	76,951	77,008	77,017

Table A-11-18 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Subaru)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	42,013	42,013	42,013	42,013	42,013
2021	50,089	50,089	50,089	50,089	50,089
2022	53,893	53,893	53,893	53,893	53,893
2023	53,197	53,201	53,132	53,124	53,121
2024	52,247	52,378	52,308	52,285	52,390
2025	51,516	51,615	51,460	51,435	51,476
2026	51,335	51,427	51,211	51,168	51,193
2027	51,245	51,356	51,161	51,123	51,157
2028	50,955	51,065	50,884	50,846	50,879
2029	50,625	50,744	50,577	50,542	50,578

Table A-11-19 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Tesla)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	22,828	22,828	22,828	22,828	22,828
2021	28,517	28,517	28,517	28,517	28,517
2022	32,052	32,052	32,052	32,052	32,052
2023	32,471	32,451	32,408	32,404	32,390
2024	32,630	32,446	32,287	32,212	32,076
2025	32,630	32,100	31,705	31,564	31,190
2026	33,063	32,314	31,697	31,536	31,079
2027	33,374	32,475	31,722	31,524	31,022
2028	33,776	32,803	32,053	31,866	31,357
2029	34,031	32,968	32,240	32,053	31,493

Table A-11-20 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Toyota)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	97,099	97,099	97,099	97,099	97,099
2021	118,061	118,061	118,061	118,061	118,061
2022	129,339	129,339	129,339	129,339	129,339
2023	128,732	128,652	128,485	128,465	128,410
2024	128,327	129,418	129,187	129,124	130,065
2025	127,053	127,566	127,080	126,917	127,380
2026	128,082	128,385	127,417	127,309	128,117
2027	128,276	128,365	127,245	127,104	127,852
2028	128,424	128,550	127,340	127,267	128,158
2029	128,313	128,269	127,020	126,949	127,734

Table A-11-21 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (Volvo)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	2,460	2,460	2,460	2,460	2,460
2021	2,992	2,992	2,992	2,992	2,992
2022	3,273	3,273	3,273	3,273	3,273
2023	3,276	3,274	3,270	3,271	3,272
2024	3,251	3,237	3,228	3,225	3,217
2025	3,226	3,196	3,174	3,167	3,147
2026	3,239	3,202	3,166	3,156	3,132
2027	3,253	3,221	3,188	3,180	3,157
2028	3,262	3,226	3,193	3,185	3,161
2029	3,263	3,222	3,189	3,182	3,155

Table A-11-22 - Estimated Labor Utilization (1000s of Person-Years), Total Fleet for Manufacturer (VWA)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	10,472	10,472	10,472	10,472	10,472
2021	12,632	12,632	12,632	12,632	12,632
2022	13,674	13,674	13,674	13,674	13,674
2023	13,603	13,594	13,576	13,574	13,569
2024	13,609	13,670	13,551	13,539	13,581
2025	13,434	13,453	13,310	13,292	13,312
2026	13,480	13,499	13,328	13,298	13,373
2027	13,473	13,480	13,306	13,273	13,343
2028	13,447	13,464	13,329	13,302	13,375
2029	13,396	13,402	13,273	13,246	13,309

Table A-11-23 - Changes in Work Loss Days (thousand instances), Total Fleet through MY 2029

Category	Regulatory Alternative			
	1	2	2.5	3
Work Loss Days from Upstream Emissions	-24.7	-33.5	-36.0	-42.2
Work Loss Days from Tailpipe Emissions	-0.9	-1.7	-1.8	-2.3
Total Work Loss Days	-25.6	-35.3	-37.7	-44.5

Table A-11-24 - Changes in Work Loss Days (thousand instances), Passenger Car Fleet through MY 2029

Category	Regulatory Alternative			
	1	2	2.5	3
Work Loss Days from Upstream Emissions	-13.5	-21.7	-26.1	-31.7
Work Loss Days from Tailpipe Emissions	-2.0	-4.4	-4.4	-5.0
Total Work Loss Days	-15.5	-26.1	-30.5	-36.7

Table A-11-25 - Changes in Work Loss Days (thousand instances), Light Truck Fleet through MY 2029

Category	Regulatory Alternative			
	1	2	2.5	3
Work Loss Days from Upstream Emissions	-11.2	-11.8	-9.9	-10.4
Work Loss Days from Tailpipe Emissions	1.1	2.7	2.7	2.7
Total Work Loss Days	-10.1	-9.1	-7.2	-7.7

12. Compliance Impacts

Table A-12-1 - Compliance Impacts and Cumulative Industry Costs by Model Year for Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	35.4	36.0	36.7	37.4	40.6	44.2	49.1	49.1	49.2	49.3	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	14%	25%	25%	25%	25%	N/A
Average Achieved (mpg)	34.4	36.0	38.2	40.8	43.5	45.4	48.4	49.1	49.7	50.0	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	0.0	0.0	4.1	8.3	11.4	16.6	17.0	16.8	16.1	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	4.1	8.3	11.4	16.6	17.0	16.8	16.1	90.2
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.6	1.7	3.0	1.4	1.4	1.2	9.2
Total Regulatory Costs (\$b)	0.0	0.0	0.0	4.1	8.9	13.2	19.5	18.4	18.2	17.3	99.4
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.04	-0.07	-0.11	-0.16	-0.15	-0.14	-0.13	-0.8

Table A-12-2 - Compliance Impacts and Cumulative Industry Costs by Model Year for Passenger Car Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	43.3	43.9	44.6	45.2	49.2	53.4	59.4	59.4	59.3	59.3	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	15%	25%	25%	25%	25%	N/A
Average Achieved (mpg)	41.8	43.7	46.9	50.0	54.7	57.9	60.9	61.8	62.5	62.6	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	0.0	0.0	2.9	5.3	7.0	8.6	8.7	8.7	8.2	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	2.9	5.3	7.0	8.5	8.6	8.6	8.2	49.1
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.2	0.6	0.9	0.2	0.0	0.0	1.9
Total Regulatory Costs (\$b)	0.0	0.0	0.0	2.9	5.5	7.5	9.5	9.0	8.9	8.4	51.7
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.02	-0.08	-0.18	-0.26	-0.31	-0.32	-0.33	-1.5

Table A-12-3 - Compliance Impacts and Cumulative Industry Costs by Model Year for Light Truck Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	31.0	31.5	31.9	32.4	35.1	38.2	42.4	42.4	42.4	42.4	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	14%	25%	25%	25%	25%	N/A
Average Achieved (mpg)	30.2	31.5	33.0	35.0	36.8	38.0	40.7	41.4	41.8	42.1	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	0.0	0.0	1.2	3.0	4.4	8.0	8.3	8.2	7.8	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	1.2	3.0	4.4	8.0	8.4	8.2	7.9	41.2
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.4	1.1	2.1	1.2	1.3	1.2	7.3
Total Regulatory Costs (\$b)	0.0	0.0	0.0	1.1	3.4	5.6	10.0	9.4	9.3	8.8	47.7
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.02	0.00	0.07	0.10	0.16	0.18	0.19	0.7

Table A-12-4 - Compliance Impacts and Cumulative Industry Costs by Model Year for Domestic Car Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	42.5	43.1	43.7	44.4	48.2	52.5	58.3	58.3	58.3	58.3	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	15%	26%	26%	26%	26%	N/A
Average Achieved (mpg)	43.3	45.0	48.0	52.9	56.5	60.5	63.2	63.5	64.2	64.2	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	0.0	0.0	2.0	2.9	3.9	4.1	3.9	3.9	3.7	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	2.0	2.9	3.8	4.1	3.9	3.8	3.7	24.3
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.4
Total Regulatory Costs (\$b)	0.0	0.0	0.0	2.0	3.0	4.1	4.5	4.0	4.0	3.8	25.4

Table A-12-5 - Compliance Impacts and Cumulative Industry Costs by Model Year for Imported Car Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	44.0	44.6	45.3	46.0	50.0	54.4	60.4	60.4	60.4	60.4	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	15%	25%	25%	25%	25%	N/A
Average Achieved (mpg)	40.6	42.7	45.9	47.7	53.1	55.8	59.0	60.4	61.0	61.1	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	0.0	0.0	0.9	2.3	3.2	4.5	4.8	4.8	4.5	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	0.9	2.3	3.1	4.5	4.7	4.8	4.5	24.8
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.1	0.4	0.8	0.1	0.0	0.0	1.4
Total Regulatory Costs (\$b)	0.0	0.0	0.0	0.9	2.5	3.5	5.0	4.9	4.9	4.7	26.3

Table A-12-6 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Total)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	39.5	44.9	48.2	49.3	51.4
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	44.1	46.8	49.3	50.0	51.7
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	97.9	135.2	177.4	188.2	216.2
Off-Cycle Technology Costs (\$b)	32.0	32.0	32.0	31.9	31.9
A/C Efficiency Technology Costs (\$b)	0.4	0.4	0.4	0.4	0.4
Subtotal Technology Costs (\$b)	130.3	167.7	209.8	220.5	248.5
Total Civil Penalties (\$b)	4.3	9.0	12.2	13.5	17.0
Total Regulatory Costs (\$b)	137.1	179.1	224.4	236.5	267.9
Sales Impacts					
Sales Change from Baseline (m)	N/A	-0.31	-0.70	-0.80	-1.08

Table A-12-7 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Passenger Car Fleet by Alternative for Manufacturer (Total)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	47.3	53.2	58.1	59.3	62.0
Percent Change from Baseline	N/A	12%	23%	25%	31%
Average Achieved (mpg)	53.3	56.8	61.2	62.6	65.2
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	43.8	60.6	87.5	93.2	103.8
Off-Cycle Technology Costs (\$b)	12.0	11.8	11.7	11.7	11.6
A/C Efficiency Technology Costs (\$b)	0.2	0.2	0.2	0.2	0.2
Subtotal Technology Costs (\$b)	56.0	72.7	99.3	105.0	115.5
Total Civil Penalties (\$b)	3.1	3.9	4.8	5.0	5.9
Total Regulatory Costs (\$b)	60.0	78.0	105.7	111.7	123.1
Sales Impacts					
Sales Change from Baseline (m)	N/A	-0.74	-1.33	-1.50	-1.94

Table A-12-8 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Light Truck Fleet by Alternative for Manufacturer (Total)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	33.9	39.0	41.5	42.4	44.3
Percent Change from Baseline	N/A	15%	22%	25%	31%
Average Achieved (mpg)	37.5	40.0	41.6	42.1	43.4
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	54.1	74.6	89.9	95.0	112.4
Off-Cycle Technology Costs (\$b)	20.0	20.2	20.3	20.3	20.3
A/C Efficiency Technology Costs (\$b)	0.2	0.2	0.2	0.2	0.2
Subtotal Technology Costs (\$b)	74.4	95.0	110.4	115.5	133.0
Total Civil Penalties (\$b)	1.2	5.1	7.4	8.5	11.1
Total Regulatory Costs (\$b)	77.0	101.1	118.7	124.8	144.8
Sales Impacts					
Sales Change from Baseline (m)	N/A	0.42	0.63	0.70	0.86

Table A-12-9 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Domestic Car Fleet by Alternative for Manufacturer (Total)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	46.4	52.2	57.0	58.3	60.9
Percent Change from Baseline	N/A	12%	23%	26%	31%
Average Achieved (mpg)	53.9	57.9	62.7	64.2	66.6
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	17.2	25.9	37.8	41.6	45.8
Off-Cycle Technology Costs (\$b)	6.2	6.1	6.0	6.0	5.9
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	23.5	32.1	43.9	47.7	51.8
Total Civil Penalties (\$b)	1.2	1.5	1.6	1.6	1.8
Total Regulatory Costs (\$b)	24.8	34.0	46.3	50.2	54.7

Table A-12-10 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Imported Car Fleet by Alternative for Manufacturer (Total)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	48.1	54.1	59.1	60.4	63.1
Percent Change from Baseline	N/A	12%	23%	25%	31%
Average Achieved (mpg)	52.7	55.8	60.0	61.1	64.1
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	26.6	34.7	49.6	51.5	58.0
Off-Cycle Technology Costs (\$b)	5.8	5.7	5.7	5.7	5.6
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	32.5	40.6	55.4	57.3	63.7
Total Civil Penalties (\$b)	2.0	2.4	3.2	3.4	4.1
Total Regulatory Costs (\$b)	35.2	44.0	59.4	61.6	68.5

Table A-12-11 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (BMW)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	42.2	47.6	51.5	52.6	54.9
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	48.8	48.9	51.8	52.9	55.5
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	4.4	4.5	5.3	5.5	6.1
Off-Cycle Technology Costs (\$b)	0.6	0.6	0.6	0.6	0.6
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	5.0	5.1	5.9	6.2	6.7
Total Civil Penalties (\$b)	0.1	0.1	0.1	0.1	0.2
Total Regulatory Costs (\$b)	5.1	5.2	6.0	6.3	6.9

Table A-12-12 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Daimler)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	39.8	45.1	48.6	49.6	51.8
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	42.4	44.0	45.4	45.8	46.6
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	3.8	4.8	4.9	4.9	5.2
Off-Cycle Technology Costs (\$b)	0.8	0.8	0.8	0.8	0.8
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	4.6	5.6	5.6	5.7	6.0
Total Civil Penalties (\$b)	0.5	1.0	1.6	1.8	2.2
Total Regulatory Costs (\$b)	5.3	6.7	7.4	7.7	8.4

Table A-12-13 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (FCA)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	34.4	39.5	42.2	43.1	45.0
Percent Change from Baseline	N/A	15%	23%	25%	31%
Average Achieved (mpg)	36.1	38.1	38.6	38.6	38.7
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	15.7	17.0	17.8	18.0	18.1
Off-Cycle Technology Costs (\$b)	4.1	4.1	4.1	4.1	4.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	19.8	21.1	21.9	22.1	22.3
Total Civil Penalties (\$b)	0.7	4.1	6.0	6.8	9.0
Total Regulatory Costs (\$b)	20.5	25.2	27.9	28.9	31.3

Table A-12-14 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Ford)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	35.4	40.3	43.1	44.1	46.0
Percent Change from Baseline	N/A	14%	22%	25%	30%
Average Achieved (mpg)	41.0	41.1	43.8	44.5	46.4
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	19.2	20.1	28.0	29.5	34.0
Off-Cycle Technology Costs (\$b)	4.4	4.4	4.4	4.4	4.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	23.5	24.5	32.4	33.9	38.4
Total Civil Penalties (\$b)	0.6	0.6	0.6	0.6	0.6
Total Regulatory Costs (\$b)	24.2	25.2	33.0	34.5	39.1

Table A-12-15 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (GM)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	36.3	41.1	44.1	45.0	47.0
Percent Change from Baseline	N/A	13%	22%	24%	30%
Average Achieved (mpg)	37.5	42.6	45.3	46.2	47.7
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	13.1	28.0	34.6	36.9	42.3
Off-Cycle Technology Costs (\$b)	5.6	5.7	5.7	5.7	5.7
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	18.8	33.7	40.3	42.6	48.0
Total Civil Penalties (\$b)	0.7	1.0	1.3	1.3	1.6
Total Regulatory Costs (\$b)	19.7	35.0	41.8	44.1	49.8

Table A-12-16 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Honda)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	43.0	48.7	52.6	53.7	56.1
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	49.8	49.4	52.9	54.8	56.8
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	7.8	7.4	12.3	15.2	18.4
Off-Cycle Technology Costs (\$b)	4.1	4.1	4.0	4.0	4.0
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	11.9	11.5	16.4	19.2	22.5
Total Civil Penalties (\$b)	0.0	0.0	0.1	0.1	0.2
Total Regulatory Costs (\$b)	12.0	11.6	16.6	19.4	22.8

Table A-12-17 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Hyundai Kia-H)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	46.0	51.7	56.3	57.5	60.1
Percent Change from Baseline	N/A	12%	22%	25%	31%
Average Achieved (mpg)	47.8	52.5	57.1	58.3	61.0
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	3.7	6.6	9.5	10.1	12.0
Off-Cycle Technology Costs (\$b)	0.7	0.7	0.7	0.7	0.7
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	4.5	7.4	10.2	10.9	12.8
Total Civil Penalties (\$b)	0.7	0.8	0.8	0.8	0.8
Total Regulatory Costs (\$b)	5.4	8.5	11.3	11.9	13.9

Table A-12-18 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Hyundai Kia-K)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	43.7	49.4	53.2	54.4	56.8
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	46.2	50.3	54.4	55.6	58.1
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	3.1	5.1	7.7	8.3	9.7
Off-Cycle Technology Costs (\$b)	0.3	0.3	0.3	0.3	0.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	3.5	5.5	8.1	8.7	10.0
Total Civil Penalties (\$b)	0.1	0.1	0.1	0.1	0.1
Total Regulatory Costs (\$b)	3.7	5.6	8.3	8.9	10.2

Table A-12-19 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (JLR)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	35.9	41.2	44.0	45.0	47.0
Percent Change from Baseline	N/A	15%	22%	25%	31%
Average Achieved (mpg)	36.8	42.5	43.9	44.8	46.7
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	1.0	1.7	1.9	2.0	2.0
Off-Cycle Technology Costs (\$b)	0.3	0.3	0.3	0.3	0.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.3	2.1	2.3	2.3	2.4
Total Civil Penalties (\$b)	0.0	0.1	0.1	0.2	0.4
Total Regulatory Costs (\$b)	1.3	2.2	2.4	2.5	2.7

Table A-12-20 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Mazda)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	42.8	48.7	52.4	53.6	55.9
Percent Change from Baseline	N/A	14%	22%	25%	31%
Average Achieved (mpg)	46.1	49.3	54.0	55.6	56.5
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	3.1	3.6	4.4	4.6	4.9
Off-Cycle Technology Costs (\$b)	0.5	0.5	0.5	0.5	0.5
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	3.7	4.1	4.9	5.2	5.4
Total Civil Penalties (\$b)	0.1	0.2	0.1	0.1	0.2
Total Regulatory Costs (\$b)	4.0	4.5	5.3	5.5	5.8

Table A-12-21 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Mitsubishi)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	45.0	51.2	55.1	56.3	58.8
Percent Change from Baseline	N/A	14%	23%	25%	31%
Average Achieved (mpg)	46.3	52.2	55.2	56.4	58.9
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	0.3	0.6	0.9	1.0	1.2
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.3	0.6	0.9	1.0	1.2
Total Civil Penalties (\$b)	0.1	0.2	0.2	0.2	0.2
Total Regulatory Costs (\$b)	0.4	0.9	1.1	1.2	1.5

Table A-12-22 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Nissan)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	43.5	49.2	53.3	54.4	56.8
Percent Change from Baseline	N/A	13%	22%	25%	31%
Average Achieved (mpg)	46.1	50.3	55.1	56.0	58.4
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	4.0	7.1	18.6	19.3	21.1
Off-Cycle Technology Costs (\$b)	2.2	2.2	2.2	2.2	2.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	6.2	9.3	20.8	21.5	23.3
Total Civil Penalties (\$b)	0.1	0.1	0.2	0.3	0.5
Total Regulatory Costs (\$b)	6.7	9.9	21.4	22.2	24.2

Table A-12-23 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Subaru)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	41.1	47.0	50.3	51.5	53.6
Percent Change from Baseline	N/A	14%	22%	25%	30%
Average Achieved (mpg)	50.8	52.3	53.4	53.7	54.4
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	4.3	6.1	6.5	6.7	7.8
Off-Cycle Technology Costs (\$b)	1.4	1.4	1.4	1.4	1.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	5.7	7.5	8.0	8.1	9.3
Total Civil Penalties (\$b)	0.0	0.1	0.1	0.1	0.2
Total Regulatory Costs (\$b)	6.0	7.8	8.3	8.4	9.6

Table A-12-24 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Tesla)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	43.8	49.2	53.6	54.8	57.3
Percent Change from Baseline	N/A	12%	22%	25%	31%
Average Achieved (mpg)	759.2	758.1	757.4	757.2	756.6
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Off-Cycle Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.1	0.1	0.1	0.1	0.1

Table A-12-25 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Toyota)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	41.6	47.2	50.8	51.9	54.2
Percent Change from Baseline	N/A	13%	22%	25%	30%
Average Achieved (mpg)	47.1	51.1	52.6	53.3	56.4
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	6.4	13.5	16.1	17.1	23.0
Off-Cycle Technology Costs (\$b)	5.7	5.7	5.7	5.7	5.6
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	12.1	19.3	21.9	22.8	28.7
Total Civil Penalties (\$b)	0.1	0.1	0.1	0.1	0.1
Total Regulatory Costs (\$b)	13.0	20.1	22.7	23.6	29.5

Table A-12-26 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (Volvo)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	37.9	43.3	46.4	47.4	49.5
Percent Change from Baseline	N/A	14%	22%	25%	31%
Average Achieved (mpg)	45.3	46.0	47.9	49.0	51.3
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	1.4	1.7	1.9	2.0	2.2
Off-Cycle Technology Costs (\$b)	0.2	0.2	0.2	0.2	0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.6	1.9	2.1	2.2	2.5
Total Civil Penalties (\$b)	0.1	0.2	0.2	0.2	0.2
Total Regulatory Costs (\$b)	1.7	2.1	2.3	2.4	2.7

Table A-12-27 - Compliance Impacts and Cumulative Industry Costs for MY 2029 Total Fleet by Alternative for Manufacturer (VWA)

Alternative	0 (Baseline)	1	2	2.5	3
Fuel Economy					
Average Required (mpg), MY 2029	41.7	47.4	50.9	52.0	54.3
Percent Change from Baseline	N/A	14%	22%	25%	30%
Average Achieved (mpg)	48.7	49.4	51.1	51.4	54.6
Total Regulatory Costs through MY 2029 Vehicles					
Technology Application Costs (\$b)	6.8	7.4	7.1	7.1	8.0
Off-Cycle Technology Costs (\$b)	0.9	0.9	0.9	0.9	0.9
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	7.7	8.3	8.0	8.1	9.0
Total Civil Penalties (\$b)	0.3	0.4	0.6	0.7	0.6
Total Regulatory Costs (\$b)	8.0	8.7	8.6	8.8	9.6

13. Powertrain Technology Penetration Rate, by Model Year

Table A-13-1 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total) Total Fleet, Alternative 0 (Baseline)

Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total) Total Fleet, Alternative 0 (Baseline)										
Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	10	13	15	16	20	22	23	23	23	23
Cylinder Deactivation	8	8	7	8	7	7	9	9	9	10
Dynamic Cylinder Deactivation	3	3	3	3	3	2	2	2	2	2
Non-Hybrid Turbocharged Engines	34	35	39	40	40	40	42	42	43	45
Variable Geometry Turbo	2	2	2	2	1	1	1	1	1	1
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	50	50	51	50	47	46	45	45	45	45
Mild Hybrid Powertrains	1.9	1.9	1.8	1.8	2.3	2.5	2.5	2.5	2.5	2.5
Strong Hybrid Powertrains Total	2.8	3.9	4.6	5.0	7.0	7.2	7.2	7.2	7.2	7.2
Plug-In Hybrid Powertrains	0.5	0.5	0.5	0.4	0.6	0.6	1.0	0.8	0.8	0.7
Battery Electric Vehicles (BEVs)	1.9	2.5	3.1	3.5	3.9	4.4	4.5	4.8	4.8	5.2
BEV 200 Mile Range	0.5	0.9	1.3	1.5	1.8	1.8	1.8	2.1	2.1	2.4
BEV 300 Mile Range	1.1	1.3	1.5	1.8	1.9	2.3	2.4	2.4	2.5	2.5
BEV 400 Mile Range	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	1	1	1	0	0	0	0	0	0	0
6-Speed Automatic	16	13	6	3	1	1	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	27	24	21	20	18	17	16	15	15	15
9-Speed Automatic	11	11	6	3	2	1	0	0	0	0
10-Speed Automatic	10	16	29	36	38	39	42	42	42	41
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	25	26	26	26	27	27	27	27	27	28

**Table A-13-2 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	10	13	15	16	20	22	21	21	22	22
Cylinder Deactivation	8	8	7	7	6	6	6	6	6	6
Dynamic Cylinder Deactivation	3	3	3	3	3	3	3	3	2	2
Non-Hybrid Turbocharged Engines	34	35	39	39	39	37	39	39	41	41
Variable Geometry Turbo	2	2	2	2	3	3	3	2	2	2
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	50	50	51	49	46	43	36	36	36	36
Mild Hybrid Powertrains	1.9	1.9	1.8	2.4	2.9	3.2	4.3	4.3	4.3	4.3
Strong Hybrid Powertrains Total	2.8	3.9	4.6	5.7	10.8	15.3	20.9	21.0	21.2	21.2
Plug-In Hybrid Powertrains	0.5	0.5	0.5	0.4	1.1	1.5	3.2	3.2	3.2	3.2
Battery Electric Vehicles (BEVs)	1.9	2.5	3.1	4.8	5.2	5.6	5.7	6.2	6.3	6.7
BEV 200 Mile Range	0.5	0.9	1.3	2.3	2.6	2.6	2.6	3.0	3.0	3.3
BEV 300 Mile Range	1.1	1.3	1.5	2.2	2.3	2.7	2.8	2.9	3.0	3.1
BEV 400 Mile Range	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	1	1	1	0	0	0	0	0	0	0
6-Speed Automatic	16	13	6	3	1	1	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	27	24	21	20	11	7	6	5	5	5
9-Speed Automatic	11	11	6	3	2	1	0	0	0	0
10-Speed Automatic	10	16	29	35	41	41	39	39	39	39
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	25	26	26	26	25	24	23	23	23	23

**Table A-13-3 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Passenger Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	17	20	23	24	29	29	27	27	28	28
Cylinder Deactivation	2	2	2	2	1	1	2	2	2	2
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	36	36	39	37	39	36	35	35	35	35
Variable Geometry Turbo	1	1	1	1	2	2	2	2	1	1
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	31	31	32	30	27	26	23	24	24	23
Mild Hybrid Powertrains	0.2	0.2	0.2	0.2	0.8	1.3	1.8	2.0	2.0	2.0
Strong Hybrid Powertrains Total	3.4	3.6	4.1	5.9	11.0	15.7	20.4	20.5	21.1	21.1
Plug-In Hybrid Powertrains	0.8	0.7	0.7	0.6	1.7	2.3	3.5	3.5	3.5	3.4
Battery Electric Vehicles (BEVs)	4.1	4.9	5.8	8.1	8.4	9.1	9.1	9.7	9.8	10.0
BEV 200 Mile Range	1.2	1.9	2.4	3.7	3.9	4.0	4.0	4.4	4.4	4.5
BEV 300 Mile Range	2.5	2.6	2.9	4.0	4.0	4.7	4.7	4.9	5.0	5.1
BEV 400 Mile Range	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	2	2	2	2	2	2	1	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	18	15	7	3	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	20	20	16	17	9	7	5	5	4	4
9-Speed Automatic	5	4	2	1	0	0	0	0	0	0
10-Speed Automatic	3	6	18	20	27	26	25	25	25	25
DCT Transmissions	4	4	4	4	3	3	3	3	3	3
CVT Transmissions	40	40	40	40	38	36	33	33	32	33

**Table A-13-5 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Domestic Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	8	10	10	13	19	19	18	18	20	20
Cylinder Deactivation	3	3	4	4	3	3	3	3	3	3
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	42	41	46	43	43	39	38	39	39	39
Variable Geometry Turbo	1	1	1	1	1	1	1	1	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	28	29	30	28	28	24	21	20	19	19
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	2.1	2.3	2.4	5.1	8.5	14.8	17.6	17.8	18.7	18.6
Plug-In Hybrid Powertrains	0.3	0.3	0.3	0.3	1.2	2.1	3.5	3.5	3.5	3.5
Battery Electric Vehicles (BEVs)	8.3	8.9	10.3	13.6	13.7	14.5	14.5	14.6	14.6	14.6
BEV 200 Mile Range	2.1	2.7	3.8	5.3	5.4	5.5	5.5	5.5	5.5	5.6
BEV 300 Mile Range	5.1	5.2	5.5	7.3	7.3	8.1	8.1	8.1	8.1	8.1
BEV 400 Mile Range	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	2	2	1	1	1	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	16	14	8	2	1	1	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	19	16	16	17	9	8	8	8	8	8
9-Speed Automatic	5	5	2	0	0	0	0	0	0	0
10-Speed Automatic	6	9	17	20	27	23	20	20	19	19
DCT Transmissions	1	2	1	1	1	1	1	1	1	1
CVT Transmissions	40	41	41	40	38	34	34	34	35	35

**Table A-13-6 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Imported Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	24	29	34	35	38	39	35	35	35	35
Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	31	32	33	32	35	33	32	32	31	31
Variable Geometry Turbo	1	1	1	1	2	2	2	2	2	2
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	34	33	34	33	26	28	26	28	28	27
Mild Hybrid Powertrains	0.4	0.4	0.4	0.4	1.5	2.4	3.5	3.7	3.8	3.8
Strong Hybrid Powertrains Total	4.5	4.8	5.7	6.6	13.3	16.4	23.0	22.9	23.3	23.3
Plug-In Hybrid Powertrains	1.1	1.0	1.0	0.9	2.0	2.5	3.6	3.6	3.6	3.4
Battery Electric Vehicles (BEVs)	0.4	1.4	1.8	3.1	3.6	4.2	4.2	5.3	5.5	5.8
BEV 200 Mile Range	0.3	1.1	1.2	2.1	2.6	2.6	2.6	3.3	3.3	3.4
BEV 300 Mile Range	0.1	0.3	0.6	0.9	1.0	1.6	1.6	2.0	2.2	2.3
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	3	3	2	2	2	2	2	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	19	15	7	3	0	0	0	0	0	0
7-Speed Automatic	1	1	1	0	0	0	0	0	0	0
8-Speed Automatic	21	23	15	16	10	6	3	3	1	1
9-Speed Automatic	5	4	2	2	1	0	0	0	0	0
10-Speed Automatic	0	3	19	20	27	28	30	29	30	30
DCT Transmissions	6	6	6	5	5	4	4	4	4	4
CVT Transmissions	39	40	40	40	37	36	31	31	31	31

**Table A-13-11 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (GM)
Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	0	2	2	2	2	2	2	2	2
Cylinder Deactivation	19	18	18	18	17	13	8	8	7	7
Dynamic Cylinder Deactivation	16	16	16	15	15	15	15	15	15	15
Non-Hybrid Turbocharged Engines	41	43	44	44	46	36	44	46	47	47
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	2	2	2	2	2	2	2	2	2	1
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	63	65	64	64	64	46	31	31	31	30
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.2	6.2	6.2
Strong Hybrid Powertrains Total	0.0	4.6	4.6	4.9	10.3	26.7	29.1	29.1	29.0	28.9
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0	1.2	1.5	7.9	7.9	7.9	7.9
Battery Electric Vehicles (BEVs)	1.2	1.8	1.9	2.4	2.4	3.4	3.4	4.3	4.3	5.5
BEV 200 Mile Range	0.0	0.5	0.5	0.9	0.9	0.9	0.9	1.8	1.8	3.0
BEV 300 Mile Range	1.2	1.3	1.4	1.5	1.5	2.5	2.5	2.5	2.5	2.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0	0	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	34	28	5	3	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	14	11	22	22	8	1	1	0	0	0
9-Speed Automatic	29	28	8	7	4	0	0	0	0	0
10-Speed Automatic	14	17	49	51	64	57	49	49	49	47
DCT Transmissions	1	1	1	1	1	1	1	1	1	1
CVT Transmissions	7	8	8	9	9	9	9	9	9	9

**Table A-13-12 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Honda)
Total Fleet, Alternative 2,5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	4	10	10	10	10	8	8	8	8
Cylinder Deactivation	24	23	11	4	2	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	50	50	75	75	71	71	71	70	70	70
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	43	42	42	36	29	27	27	27	26	26
Mild Hybrid Powertrains	0.0	0.0	0.0	5.3	5.2	5.2	5.2	5.1	5.1	5.0
Strong Hybrid Powertrains Total	5.1	5.2	5.2	8.7	14.2	12.9	12.8	12.8	13.3	12.7
Plug-In Hybrid Powertrains	0.2	0.2	0.2	0.2	1.2	2.6	5.1	5.1	5.2	5.2
Battery Electric Vehicles (BEVs)	0.0	0.0	0.0	2.7	2.8	4.6	4.6	4.7	4.9	5.5
BEV 200 Mile Range	0.0	0.0	0.0	2.7	2.8	2.7	2.8	2.8	2.8	3.4
BEV 300 Mile Range	0.0	0.0	0.0	0.0	0.0	1.8	1.8	2.0	2.1	2.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	2	2	2	2	2	2	2	2	2	2
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	6	6	0	0	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	0	0	6	5	5	2	2	2	2	2
9-Speed Automatic	12	11	3	2	0	0	0	0	0	0
10-Speed Automatic	13	13	21	18	14	16	15	14	14	14
DCT Transmissions	2	2	3	3	3	3	1	1	1	1
CVT Transmissions	60	60	61	58	58	58	58	58	58	58

Table A-13-13 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Hyundai Kia-H) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	46	47	55	62	83	75	55	55	54	54
Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	13	14	14	14	11	7	7	7	7	7
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	27	26	26	26	28	28	23	23	22	22
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	2.2	2.3	2.4	1.5	3.8	15.2	40.9	40.9	41.2	41.5
Plug-In Hybrid Powertrains	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	0.8	0.8	0.9	2.3	2.4	2.4	2.8	2.8	2.8	2.8
BEV 200 Mile Range	0.3	0.3	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9
BEV 300 Mile Range	0.5	0.5	0.5	1.5	1.5	1.5	1.9	1.9	1.9	1.9
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	23	23	7	7	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	41	40	23	13	0	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0	0	0	0	0	0
10-Speed Automatic	0	0	31	40	58	48	43	43	42	42
DCT Transmissions	3	3	3	3	3	3	3	3	3	3
CVT Transmissions	29	30	31	32	32	30	10	10	10	10

Table A-13-14 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Hyundai Kia-K) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	46	64	64	64	55	65	65	69	69	69
Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	5	5	5	5	5	5	5	5	5	5
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	45	45	45	45	31	40	40	40	40	40
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3
Strong Hybrid Powertrains Total	0.9	0.9	0.9	0.9	22.9	26.2	30.5	30.5	30.6	30.6
Plug-In Hybrid Powertrains	0.3	0.3	0.3	0.3	0.3	0.3	0.7	0.7	0.7	0.6
Battery Electric Vehicles (BEVs)	0.2	0.2	0.1	0.1	2.4	2.4	2.4	2.4	2.4	2.5
BEV 200 Mile Range	0.2	0.2	0.1	0.1	1.9	1.9	1.9	1.9	1.9	2.0
BEV 300 Mile Range	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	37	0	0	0	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	24	46	45	44	23	10	10	8	0	0
9-Speed Automatic	0	0	0	0	0	0	0	0	0	0
10-Speed Automatic	0	13	13	13	22	33	32	34	42	42
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	35	36	38	39	26	26	22	22	22	22

Table A-13-17 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Mitsubishi) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	0	0	0	0	77	77	77	77	77
Cylinder Deactivation	0	0	0	0	0	2	2	2	2	2
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	20	19	19	19	19	0	0	0	0	0
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	0	0	0	0	0	22	21	21	21	21
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0	0.0	19.6	19.5	19.5	19.4	19.3
Plug-In Hybrid Powertrains	1.7	1.7	1.7	1.7	1.7	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	0.0	0.0	0.0	0.0	0.0	1.7	1.7	1.7	1.7	1.6
BEV 200 Mile Range	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.5
BEV 300 Mile Range	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	2	2	2	2	2	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0	0	0	0	0	0
10-Speed Automatic	0	0	0	0	0	2	2	2	2	2
DCT Transmissions	0	0	0	0	0	0	0	0	0	0
CVT Transmissions	95	95	95	95	95	76	76	76	76	76

**Table A-13-18 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Nissan)
Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	19	24	30	47	50	50	50	56	56
Cylinder Deactivation	0	0	3	3	3	3	3	3	3	3
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	2	4	11	9	9	9	9	9	11	11
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	7	7	7	6	6	6	6	14	15	14
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0	5.6	15.2	15.3	15.3	15.5	15.7
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0	1.4	1.4	2.4	2.4	2.4	1.3
Battery Electric Vehicles (BEVs)	1.1	1.2	1.2	4.2	4.7	4.7	4.7	4.7	4.8	5.9
BEV 200 Mile Range	1.1	1.2	1.2	3.8	3.9	3.9	3.9	3.9	3.9	4.2
BEV 300 Mile Range	0.0	0.0	0.0	0.4	0.9	0.9	0.9	0.9	0.9	1.7
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0	0	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0	0	0	0	0	0
7-Speed Automatic	6	3	3	0	0	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0	0	0	0	0	0
9-Speed Automatic	3	1	1	1	1	1	0	0	0	0
10-Speed Automatic	0	5	5	4	4	4	4	4	4	4
DCT Transmissions	0	0	0	0	0	0	0	0	0	0
CVT Transmissions	89	90	90	90	82	73	73	73	73	72

**Table A-13-19 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Subaru)
Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	0	0	0	24	43	48	48	48	48
Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	23	23	23	23	23	23	19	19	19	19
Variable Geometry Turbo	0	0	0	14	24	24	24	24	24	24
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	73	72	72	70	69	69	66	66	65	65
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.2	5.2
Strong Hybrid Powertrains Total	0.0	0.0	2.3	2.4	2.5	2.5	6.4	6.4	6.5	6.6
Plug-In Hybrid Powertrains	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	0.0	0.0	0.6	2.3	2.3	2.3	2.3	2.3	2.3	2.3
BEV 200 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
BEV 300 Mile Range	0.0	0.0	0.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	6	7	6	5	5	5	2	2	2	3
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0	0	0	0	0	0
10-Speed Automatic	0	0	0	0	0	0	0	0	0	0
DCT Transmissions	0	0	0	0	0	0	0	0	0	0
CVT Transmissions	93	93	91	90	90	90	89	89	89	89

**Table A-13-21 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Toyota)
Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	30	31	31	34	33	32	32	32	33	33
Cylinder Deactivation	0	0	6	6	6	6	6	6	6	6
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	4	4	3	3	17	17	31	34	37	37
Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0	0	0	0	0	0
Diesel Engines	0	0	0	0	0	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0	0	0	0	0	0
12V Stop-Start (non-hybrid)	17	17	22	25	25	25	24	24	24	24
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	13.3	13.3	13.2	14.9	17.5	17.5	17.9	17.9	17.9	17.9
Plug-In Hybrid Powertrains	1.2	1.2	1.3	1.3	1.3	1.9	1.9	2.0	2.0	2.0
Battery Electric Vehicles (BEVs)	0.0	0.0	0.5	2.8	3.8	4.1	4.0	4.0	4.0	3.9
BEV 200 Mile Range	0.0	0.0	0.0	2.3	3.4	3.4	3.4	3.4	3.3	3.3
BEV 300 Mile Range	0.0	0.0	0.5	0.5	0.5	0.7	0.7	0.7	0.7	0.6
BEV 400 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1	1	1	1	1	1	1
5-Speed Automatic	6	6	5	0	0	0	0	0	0	0
6-Speed Automatic	20	14	9	9	9	9	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	40	37	39	32	7	6	12	11	11	11
9-Speed Automatic	0	0	0	0	0	0	0	0	0	0
10-Speed Automatic	0	9	11	18	39	40	43	43	43	42
DCT Transmissions	0	0	0	0	0	0	0	0	0	0
CVT Transmissions	19	20	20	21	21	21	21	21	21	22

**Table A-14-2 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer
(Total) Total Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	31	28	23	20	14	11	7	5	5	4
Mass Reduction Level 1 (%)	14	15	16	17	21	20	21	20	20	20
Mass Reduction Level 2 (%)	21	21	19	19	10	10	8	8	6	6
Mass Reduction Level 3 (%)	25	27	31	30	36	35	35	36	37	37
Mass Reduction Level 4 (%)	8	9	11	14	19	24	29	30	32	32
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,938	3,914	3,882	3,863	3,834	3,816	3,797	3,789	3,777	3,772
Diff. from Baseline - Fleet (pounds)	0	0	0	4	17	25	30	31	35	33

**Table A-14-3 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer
(Total) Passenger Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	33	30	25	23	13	9	8	5	5	5
Mass Reduction Level 1 (%)	13	13	15	15	22	21	20	21	21	21
Mass Reduction Level 2 (%)	20	20	18	19	6	6	5	4	3	3
Mass Reduction Level 3 (%)	29	31	32	28	34	32	29	30	30	30
Mass Reduction Level 4 (%)	5	6	9	15	24	31	37	38	40	41
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	1	1	1	1	1	1
Avg Curb Weight - Fleet (pounds)	3,938	3,914	3,882	3,863	3,834	3,816	3,797	3,789	3,777	3,772
Diff. from Baseline - Fleet (pounds)	0	0	0	4	17	25	30	31	35	33

**Table A-14-4 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer
(Total) Light Truck Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	30	26	20	18	16	12	6	5	4	4
Mass Reduction Level 1 (%)	14	16	17	18	19	19	22	19	18	18
Mass Reduction Level 2 (%)	22	22	20	18	13	13	11	11	9	9
Mass Reduction Level 3 (%)	23	25	31	32	37	38	39	42	45	45
Mass Reduction Level 4 (%)	11	11	12	13	14	18	22	23	23	24
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,938	3,914	3,882	3,863	3,834	3,816	3,797	3,789	3,777	3,772
Diff. from Baseline - Fleet (pounds)	0	0	0	4	17	25	30	31	35	33

**Table A-14-5 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer
(Total) Domestic Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	19	19	19	16	16	12	10	9	8	8
Mass Reduction Level 1 (%)	17	13	10	11	10	6	6	6	6	6
Mass Reduction Level 2 (%)	21	21	22	23	6	6	5	3	1	1
Mass Reduction Level 3 (%)	36	36	36	27	35	35	37	38	38	38
Mass Reduction Level 4 (%)	7	10	13	24	33	41	43	44	46	46
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,938	3,914	3,882	3,863	3,834	3,816	3,797	3,789	3,777	3,772
Diff. from Baseline - Fleet (pounds)	0	0	0	4	17	25	30	31	35	33

**Table A-14-6 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer
(Total) Imported Car Fleet, Alternative 2.5**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	45	39	31	29	11	7	6	2	2	2
Mass Reduction Level 1 (%)	9	13	20	20	33	34	32	35	35	35
Mass Reduction Level 2 (%)	20	19	15	15	7	6	6	6	5	5
Mass Reduction Level 3 (%)	23	25	29	29	32	29	22	22	22	22
Mass Reduction Level 4 (%)	3	3	5	6	16	22	32	33	35	35
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	1	1	1	1	1	1	1
Avg Curb Weight - Fleet (pounds)	3,938	3,914	3,882	3,863	3,834	3,816	3,797	3,789	3,777	3,772
Diff. from Baseline - Fleet (pounds)	0	0	0	4	17	25	30	31	35	33

Table A-14-7 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (BMW) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	60	55	39	28	20	8	4	3	3	0
Mass Reduction Level 1 (%)	16	15	32	37	37	37	37	24	23	23
Mass Reduction Level 2 (%)	3	3	3	3	3	0	0	0	0	0
Mass Reduction Level 3 (%)	21	26	25	32	31	31	31	44	45	44
Mass Reduction Level 4 (%)	0	0	0	0	8	24	28	28	29	32
Mass Reduction Level 5 (%)	1	1	1	1	1	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,212	4,183	4,147	4,109	4,071	4,017	4,000	3,973	3,966	3,953
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-2	-8	-11	9	10	10

Table A-14-8 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Daimler) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	39	34	34	33	28	21	2	2	2	2
Mass Reduction Level 1 (%)	8	8	8	8	4	11	30	26	26	26
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	49	54	54	35	25	25	25	25	11	11
Mass Reduction Level 4 (%)	1	2	2	21	41	41	41	44	60	60
Mass Reduction Level 5 (%)	2	2	2	2	2	2	2	2	2	2
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,177	4,148	4,134	4,096	4,049	4,035	4,000	3,990	3,964	3,960
Diff. from Baseline - Fleet (pounds)	0	0	0	30	26	20	17	14	34	34

Table A-14-9 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (FCA) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	45	44	30	23	23	23	8	8	4	4
Mass Reduction Level 1 (%)	46	40	40	47	47	47	47	35	27	27
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	1	2	15	15	15	15	30	42	52	52
Mass Reduction Level 4 (%)	7	13	14	14	14	14	15	15	16	16
Mass Reduction Level 5 (%)	1	1	1	1	1	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,497	4,475	4,424	4,408	4,407	4,407	4,366	4,347	4,317	4,316
Diff. from Baseline - Fleet (pounds)	0	0	0	-9	-10	-12	7	25	37	36

Table A-14-10 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Ford) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	35	35	31	27	22	22	22	22	22	22
Mass Reduction Level 1 (%)	7	7	3	3	9	9	9	9	9	9
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	16	16	15	15	15	15	15	15	15	15
Mass Reduction Level 4 (%)	42	42	51	55	54	54	54	54	54	54
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,258	4,251	4,207	4,189	4,174	4,174	4,173	4,173	4,170	4,168
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-2	-5	-22	-26	-27	-40

Table A-14-11 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (GM) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	20	14	7	4	4	4	4	0	0	0
Mass Reduction Level 1 (%)	22	22	27	27	27	8	6	10	10	10
Mass Reduction Level 2 (%)	5	5	5	5	1	1	0	0	0	0
Mass Reduction Level 3 (%)	52	59	59	60	62	62	52	49	48	48
Mass Reduction Level 4 (%)	1	1	3	4	6	25	38	41	43	43
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,162	4,125	4,104	4,088	4,079	4,030	4,002	3,992	3,986	3,983
Diff. from Baseline - Fleet (pounds)	0	0	0	1	4	50	72	74	76	75

Table A-14-12 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Honda) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 1 (%)	7	7	7	7	7	7	7	7	7	7
Mass Reduction Level 2 (%)	28	27	14	9	2	0	0	0	0	0
Mass Reduction Level 3 (%)	65	66	79	66	73	75	72	72	72	72
Mass Reduction Level 4 (%)	0	0	0	18	18	18	21	21	21	21
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,481	3,467	3,442	3,405	3,395	3,392	3,386	3,385	3,380	3,376
Diff. from Baseline - Fleet (pounds)	0	0	0	22	20	15	16	12	12	12

Table A-14-13 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Hyundai Kia-H) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	2	2	2	2	1	1	1	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 2 (%)	52	51	35	34	15	15	6	6	6	6
Mass Reduction Level 3 (%)	35	36	52	52	43	43	25	25	23	23
Mass Reduction Level 4 (%)	11	12	12	12	41	41	68	69	71	71
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,366	3,354	3,331	3,323	3,265	3,265	3,225	3,222	3,215	3,212
Diff. from Baseline - Fleet (pounds)	0	0	0	0	50	45	73	71	73	73

Table A-14-14 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Hyundai Kia-K) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	37	33	34	34	2	2	2	0	0	0
Mass Reduction Level 1 (%)	19	23	22	22	43	43	39	39	39	39
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	42	42	43	43	54	41	40	41	40	40
Mass Reduction Level 4 (%)	1	1	1	1	1	15	19	21	21	21
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,658	3,644	3,634	3,627	3,563	3,546	3,535	3,527	3,523	3,521
Diff. from Baseline - Fleet (pounds)	0	0	0	0	44	57	65	68	68	68

Table A-14-15 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (JLR) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	25	25	25	25	25	12	12	12	12	12
Mass Reduction Level 1 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 2 (%)	46	46	46	28	20	20	13	13	13	0
Mass Reduction Level 3 (%)	0	0	0	17	24	24	24	24	24	36
Mass Reduction Level 4 (%)	29	29	29	30	31	44	52	52	52	52
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,432	4,429	4,425	4,407	4,396	4,339	4,318	4,318	4,316	4,303
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	36	55	54	54	54

Table A-14-16 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Mazda) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	64	64	63	63	63	19	9	9	9	9
Mass Reduction Level 1 (%)	0	0	0	0	0	0	10	10	10	10
Mass Reduction Level 2 (%)	2	2	2	2	2	0	0	0	0	0
Mass Reduction Level 3 (%)	30	31	31	32	32	32	32	32	32	32
Mass Reduction Level 4 (%)	3	0	0	0	0	46	46	46	45	45
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	3	3	3	3	3	3	3	3	4
Avg Curb Weight - Fleet (pounds)	3,548	3,533	3,525	3,520	3,517	3,339	3,322	3,322	3,321	3,320
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-2	173	171	169	167	166

Table A-14-17 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Mitsubishi) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	85	84	83	82	81	0	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0	81	81	81	81	81
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	15	16	17	18	19	0	0	0	0	0
Mass Reduction Level 4 (%)	0	0	0	0	0	19	19	19	19	19
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,153	3,141	3,128	3,119	3,114	3,002	2,999	2,999	2,994	2,990
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-3	8	5	2	1	0

Table A-14-18 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Nissan) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	47	25	19	17	15	4	4	4	2	2
Mass Reduction Level 1 (%)	0	21	27	26	26	37	37	37	39	39
Mass Reduction Level 2 (%)	39	39	40	40	18	18	18	15	9	6
Mass Reduction Level 3 (%)	14	15	15	8	9	9	9	9	9	9
Mass Reduction Level 4 (%)	0	0	0	6	29	29	29	32	37	41
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	2	4	4	4	4	4	4
Avg Curb Weight - Fleet (pounds)	3,604	3,563	3,543	3,515	3,455	3,443	3,441	3,435	3,413	3,400
Diff. from Baseline - Fleet (pounds)	0	0	0	19	70	65	62	65	78	87

Table A-14-19 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Subaru) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	5	0	0	0	0	0	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 2 (%)	95	95	94	94	94	94	94	94	94	94
Mass Reduction Level 3 (%)	1	5	5	5	5	5	0	0	0	0
Mass Reduction Level 4 (%)	0	0	1	1	1	1	6	6	6	6
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,591	3,574	3,567	3,563	3,561	3,561	3,553	3,553	3,550	3,548
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-4	1	-1	-1	-1

Table A-14-20 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Tesla) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	17	17	16	16	16	16	15	15	15	15
Mass Reduction Level 4 (%)	83	83	84	84	84	84	85	85	85	85
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,344	4,335	4,326	4,321	4,318	4,318	4,317	4,317	4,314	4,312
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-5	-6	-8	-8	-8

Table A-14-21 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Toyota) Total Fleet, Alternative 2.5

Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Toyota) Total Fleet, Alternative 2.5										
Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	53	53	45	44	21	20	11	7	7	7
Mass Reduction Level 1 (%)	0	0	3	3	26	27	36	40	40	40
Mass Reduction Level 2 (%)	46	46	46	47	16	15	9	7	0	0
Mass Reduction Level 3 (%)	1	1	6	6	37	38	44	46	53	52
Mass Reduction Level 4 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,808	3,790	3,746	3,731	3,678	3,677	3,654	3,648	3,635	3,630
Diff. from Baseline - Fleet (pounds)	0	0	0	0	43	37	38	38	44	43

Table A-14-22 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Volvo) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	19	20	21	22	23	23	23	0	0	0
Mass Reduction Level 1 (%)	20	20	19	19	19	19	19	19	19	18
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	61	60	59	59	58	58	56	79	79	79
Mass Reduction Level 4 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 5 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0	0	2	2	3	3
Avg Curb Weight - Fleet (pounds)	4,181	4,175	4,171	4,168	4,166	4,166	4,153	4,088	4,085	4,082
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-3	5	34	35	35

Table A-14-23 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (VWA) Total Fleet, Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	38	38	37	37	37	11	7	7	1	1
Mass Reduction Level 1 (%)	56	56	57	57	25	42	37	33	36	32
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	5	5	5	5	24	24	33	34	37	40
Mass Reduction Level 4 (%)	0	0	0	0	13	22	21	25	25	25
Mass Reduction Level 5 (%)	0	0	1	1	1	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,848	3,834	3,819	3,810	3,744	3,679	3,659	3,645	3,629	3,621
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-3	-8	-7	-10	-11	-12

15. Powertrain Technology Penetration Rate, by Alternative

Table A-15-1 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	23	25	22	22	21
Cylinder Deactivation	10	7	7	6	6
Dynamic Cylinder Deactivation	2	2	2	2	3
Non-Hybrid Turbocharged Engines	45	47	43	41	38
Variable Geometry Turbo	1	3	2	2	1
Electric Variable Geometry Turbo	0	0	0	0	1
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	45	45	36	36	32
Mild Hybrid	2.5	2.9	5.1	4.3	4.1
Strong Hybrid	7.2	10.6	18.8	21.2	24.8
Plug-In Hybrid	0.7	1.5	2.4	3.2	4.5
Battery Electric Vehicles (BEVs)	5.21	5.53	6.63	6.70	6.90
BEV 200 Mile Range	2.45	2.80	3.29	3.30	3.32
BEV 300 Mile Range	2.48	2.45	3.06	3.11	3.29
BEV 400 Mile Range	0.28	0.28	0.28	0.28	0.28
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.01	0.01	0.01	0.01	0.01
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	15	6	5	5	2
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	41	46	41	39	38
DCT Transmissions	0	0	0	0	0
CVT Transmissions	28	27	24	23	22

**Table A-15-2 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029
Passenger Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	31	35	29	28	29
Cylinder Deactivation	2	2	2	2	1
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	44	41	37	35	29
Variable Geometry Turbo	1	2	1	1	0
Electric Variable Geometry Turbo	0	0	0	0	1
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	25	28	24	23	21
Mild Hybrid	1.6	1.8	1.9	2.0	1.6
Strong Hybrid	6.6	9.0	17.1	21.0	24.4
Plug-In Hybrid	1.2	2.5	3.4	3.4	4.4
Battery Electric Vehicles (BEVs)	8.03	8.12	9.87	9.98	10.50
BEV 200 Mile Range	3.70	3.78	4.40	4.45	4.72
BEV 300 Mile Range	3.88	3.89	5.02	5.08	5.33
BEV 400 Mile Range	0.45	0.45	0.45	0.45	0.45
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.01	0.01	0.01	0.01	0.01
Manual Transmissions	2	2	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	14	7	4	4	2
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	25	29	26	25	25
DCT Transmissions	0	0	0	0	0
CVT Transmissions	41	40	35	33	30

Table A-15-3 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029 Light Truck Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	15	16	16	16	14
Cylinder Deactivation	18	11	11	10	10
Dynamic Cylinder Deactivation	5	5	5	5	5
Non-Hybrid Turbocharged Engines	47	53	49	47	45
Variable Geometry Turbo	2	4	3	3	2
Electric Variable Geometry Turbo	0	0	0	0	1
Diesel Engines	0	0	0	0	1
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	64	62	48	48	42
Mild Hybrid	3.4	4.0	8.2	6.5	6.4
Strong Hybrid	7.8	12.4	20.4	21.3	25.1
Plug-In Hybrid	0.3	0.6	1.6	2.9	4.8
Battery Electric Vehicles (BEVs)	2.36	3.02	3.56	3.60	3.56
BEV 200 Mile Range	1.19	1.85	2.24	2.22	2.03
BEV 300 Mile Range	1.06	1.05	1.20	1.26	1.41
BEV 400 Mile Range	0.12	0.12	0.12	0.12	0.12
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	17	6	5	5	3
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	58	63	55	53	49
DCT Transmissions	0	0	0	0	0
CVT Transmissions	14	14	14	14	14

**Table A-15-4 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029
Domestic Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	19	26	21	20	18
Cylinder Deactivation	4	5	4	3	3
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	48	47	43	39	37
Variable Geometry Turbo	1	1	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	27	25	21	19	18
Mild Hybrid	0.0	0.6	0.0	0.0	0.0
Strong Hybrid	3.0	5.4	12.9	18.6	22.3
Plug-In Hybrid	1.4	2.9	3.5	3.5	3.5
Battery Electric Vehicles (BEVs)	11.71	11.91	14.60	14.60	15.14
BEV 200 Mile Range	4.29	4.53	5.58	5.57	5.97
BEV 300 Mile Range	6.48	6.45	8.08	8.09	8.22
BEV 400 Mile Range	0.93	0.94	0.95	0.95	0.95
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	15	9	8	8	4
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	25	28	22	19	22
DCT Transmissions	0	0	0	0	0
CVT Transmissions	42	42	37	35	31

**Table A-15-5 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029
Imported Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	43	44	37	35	39
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	40	35	32	31	22
Variable Geometry Turbo	1	3	2	2	0
Electric Variable Geometry Turbo	0	0	0	0	2
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	25	30	26	27	24
Mild Hybrid	3.1	2.9	3.5	3.8	3.1
Strong Hybrid	9.9	12.3	20.9	23.3	26.2
Plug-In Hybrid	1.0	2.2	3.2	3.4	5.4
Battery Electric Vehicles (BEVs)	4.65	4.65	5.56	5.77	6.28
BEV 200 Mile Range	3.16	3.10	3.32	3.44	3.58
BEV 300 Mile Range	1.49	1.55	2.24	2.33	2.70
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02
Manual Transmissions	2	2	2	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	13	5	1	1	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	24	30	29	30	27
DCT Transmissions	0	0	0	0	0
CVT Transmissions	40	39	34	31	30

Table A-15-6 - Powertrain Technology Penetration Rate (%) for Manufacturer (BMW), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	0	0	0	0	0
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	89	90	86	84	79
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	67	62	57	57	45
Mild Hybrid	20.6	26.5	22.5	21.1	30.6
Strong Hybrid	1.3	1.4	6.4	5.0	3.2
Plug-In Hybrid	5.1	3.5	7.2	9.1	12.8
Battery Electric Vehicles (BEVs)	6.15	6.39	6.85	7.38	8.30
BEV 200 Mile Range	4.26	4.17	4.12	4.10	4.06
BEV 300 Mile Range	1.89	2.22	2.74	3.28	4.24
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	79	81	72	71	69
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

**Table A-15-7 - Powertrain Technology Penetration Rate (%) for Manufacturer (Daimler), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	0	0	0	0	0
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	92	88	86	85	82
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	61	60	58	57	57
Mild Hybrid	17.4	14.3	14.7	14.5	14.5
Strong Hybrid	11.0	11.0	10.8	10.7	8.9
Plug-In Hybrid	3.4	7.8	6.7	6.6	8.2
Battery Electric Vehicles (BEVs)	4.98	4.33	7.71	8.54	9.58
BEV 200 Mile Range	4.30	3.23	3.24	3.24	3.24
BEV 300 Mile Range	0.00	0.41	3.77	4.59	5.63
BEV 400 Mile Range	0.68	0.69	0.70	0.71	0.71
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	68	64	62	62	61
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

Table A-15-8 - Powertrain Technology Penetration Rate (%) for Manufacturer (FCA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	2	2	2	2	2
Cylinder Deactivation	40	40	37	35	35
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	34	48	48	48	47
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	1	1	1	1	1
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	67	66	64	61	61
Mild Hybrid	10.1	9.5	9.5	9.6	9.8
Strong Hybrid	1.2	1.3	4.1	5.6	5.8
Plug-In Hybrid	0.4	0.4	0.4	0.4	0.4
Battery Electric Vehicles (BEVs)	2.86	4.24	4.38	4.40	4.63
BEV 200 Mile Range	1.78	3.16	3.30	3.31	3.34
BEV 300 Mile Range	1.09	1.08	1.08	1.08	1.28
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	2	1	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	93	93	90	89	88
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

Table A-15-9 - Powertrain Technology Penetration Rate (%) for Manufacturer (Ford), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	5	5	5	5	2
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	78	78	71	67	66
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	69	68	44	44	42
Mild Hybrid	0.9	1.0	4.6	0.0	0.0
Strong Hybrid	18.1	18.1	35.4	38.7	41.2
Plug-In Hybrid	0.7	1.3	1.4	2.6	4.5
Battery Electric Vehicles (BEVs)	3.94	3.84	6.94	6.93	6.90
BEV 200 Mile Range	2.73	2.65	2.60	2.58	2.54
BEV 300 Mile Range	1.20	1.19	4.35	4.35	4.36
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	15	10	25	25	8
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	62	67	32	27	39
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

Table A-15-10 - Powertrain Technology Penetration Rate (%) for Manufacturer (GM), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	2	2	2	2	2
Cylinder Deactivation	31	12	9	7	8
Dynamic Cylinder Deactivation	15	15	15	15	15
Non-Hybrid Turbocharged Engines	47	61	49	47	42
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	1	1	2
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	62	55	32	30	26
Mild Hybrid	0.0	0.2	7.0	6.2	6.0
Strong Hybrid	4.4	19.1	29.3	28.9	31.4
Plug-In Hybrid	0.0	2.4	5.5	7.9	11.4
Battery Electric Vehicles (BEVs)	5.13	5.46	5.45	5.52	5.44
BEV 200 Mile Range	2.49	2.88	2.91	2.98	2.93
BEV 300 Mile Range	2.64	2.58	2.55	2.54	2.51
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	22	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	57	62	49	47	41
DCT Transmissions	0	0	0	0	0
CVT Transmissions	10	10	9	9	9

Table A-15-11 - Powertrain Technology Penetration Rate (%) for Manufacturer (Honda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	8	8	8	8	8
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	83	83	78	70	64
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	34	38	27	26	26
Mild Hybrid	0.0	2.0	6.5	5.0	1.6
Strong Hybrid	6.6	5.0	6.6	12.7	19.4
Plug-In Hybrid	3.4	3.0	4.2	5.2	6.2
Battery Electric Vehicles (BEVs)	1.86	1.86	5.49	5.50	5.56
BEV 200 Mile Range	0.00	0.02	3.37	3.36	3.35
BEV 300 Mile Range	1.86	1.85	2.12	2.14	2.21
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02
Manual Transmissions	2	2	2	2	2
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	2	2	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	22	25	17	14	12
DCT Transmissions	0	0	0	0	0
CVT Transmissions	63	62	62	58	53

Table A-15-12 - Powertrain Technology Penetration Rate (%) for Manufacturer (Hyundai Kia-H), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	82	80	60	54	51
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	14	8	7	7	5
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	24	46	25	22	24
Mild Hybrid	0.0	0.0	2.2	0.0	0.0
Strong Hybrid	1.6	10.6	34.3	41.5	43.6
Plug-In Hybrid	0.0	0.0	0.0	0.0	4.0
Battery Electric Vehicles (BEVs)	2.85	2.81	2.79	2.79	2.77
BEV 200 Mile Range	0.96	0.94	0.92	0.92	0.91
BEV 300 Mile Range	1.88	1.87	1.87	1.87	1.86
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.03	0.03	0.03	0.03	0.03
Manual Transmissions	1	1	1	1	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	10	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	47	51	43	42	35
DCT Transmissions	0	0	0	0	0
CVT Transmissions	34	32	17	10	12

Table A-15-13 - Powertrain Technology Penetration Rate (%) for Manufacturer (Hyundai Kia-K), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	86	88	73	69	62
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	6	6	5	5	4
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	42	51	46	40	30
Mild Hybrid	0.0	0.0	0.3	0.3	0.0
Strong Hybrid	0.8	3.5	24.4	30.6	42.2
Plug-In Hybrid	0.2	0.3	0.9	0.6	1.0
Battery Electric Vehicles (BEVs)	2.50	2.47	2.47	2.47	2.79
BEV 200 Mile Range	2.06	2.02	2.01	2.01	2.33
BEV 300 Mile Range	0.43	0.45	0.46	0.46	0.47
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	32	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	21	54	40	42	32
DCT Transmissions	0	0	0	0	0
CVT Transmissions	40	37	29	22	20

Table A-15-14 - Powertrain Technology Penetration Rate (%) for Manufacturer (JLR), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	0	0	0	0	0
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	95	87	85	84	81
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	1	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	70	47	43	38	30
Mild Hybrid	25.1	39.9	41.9	46.0	50.6
Strong Hybrid	0.0	0.0	0.3	0.0	0.0
Plug-In Hybrid	0.7	7.9	8.4	8.4	8.5
Battery Electric Vehicles (BEVs)	3.90	4.64	6.35	7.84	10.69
BEV 200 Mile Range	2.49	3.22	4.32	4.32	4.32
BEV 300 Mile Range	1.42	1.42	2.03	3.52	6.37
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	95	87	85	84	81
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

Table A-15-15 - Powertrain Technology Penetration Rate (%) for Manufacturer (Mazda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	68	68	68	68	62
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	0	0	0	0	0
Variable Geometry Turbo	27	25	17	13	14
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	0	2	22	25	18
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	1.7	10.0	14.0	19.3
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.14	5.03	4.96	4.95	4.89
BEV 200 Mile Range	4.07	4.00	3.96	3.94	3.91
BEV 300 Mile Range	1.07	1.03	1.01	1.00	0.99
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	84	49	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	11	43	85	81	76
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

**Table A-15-16 - Powertrain Technology Penetration Rate (%) for Manufacturer (Mitsubishi), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	2	78	78	77	77
Cylinder Deactivation	0	2	2	2	2
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	18	19	0	0	0
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	0	2	7	21	8
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	0.0	10.2	19.3	13.1
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.61	1.63	1.64	1.65	1.65
BEV 200 Mile Range	0.54	0.54	0.55	0.55	0.55
BEV 300 Mile Range	1.08	1.09	1.10	1.10	1.10
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	2	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	0	2	2	2	2
DCT Transmissions	0	0	0	0	0
CVT Transmissions	95	95	85	76	82

Table A-15-17 - Powertrain Technology Penetration Rate (%) for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	49	72	59	56	48
Cylinder Deactivation	3	3	3	3	3
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	13	11	11	11	10
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	6	7	6	14	9
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	2.8	12.9	15.7	23.7
Plug-In Hybrid	0.0	0.0	1.3	1.3	1.3
Battery Electric Vehicles (BEVs)	1.84	3.84	5.89	5.88	6.64
BEV 200 Mile Range	1.39	3.37	4.24	4.23	4.44
BEV 300 Mile Range	0.45	0.46	1.65	1.65	2.20
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	8	5	4	4	4
DCT Transmissions	0	0	0	0	0
CVT Transmissions	89	88	75	72	64

**Table A-15-18 - Powertrain Technology Penetration Rate (%) for Manufacturer (Subaru), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	47	48	48	48	48
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	48	22	20	19	18
Variable Geometry Turbo	0	25	25	24	0
Electric Variable Geometry Turbo	0	0	0	0	24
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	68	68	68	65	52
Mild Hybrid	0.0	0.0	3.3	5.2	4.1
Strong Hybrid	2.8	3.0	5.6	6.6	7.6
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.29	2.29	2.28	2.28	2.28
BEV 200 Mile Range	0.05	0.05	0.05	0.05	0.05
BEV 300 Mile Range	2.23	2.23	2.23	2.23	2.23
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	6	5	4	3	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	0	0	0	0	0
DCT Transmissions	0	0	0	0	0
CVT Transmissions	89	89	89	89	89

Table A-15-19 - Powertrain Technology Penetration Rate (%) for Manufacturer (Tesla), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	0	0	0	0	0
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	0	0	0	0	0
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	0	0	0	0	0
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	0.0	0.0	0.0	0.0
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	100.00	100.00	100.00	100.00	100.00
BEV 200 Mile Range	25.31	25.22	25.16	25.14	25.09
BEV 300 Mile Range	60.12	59.90	59.75	59.71	59.59
BEV 400 Mile Range	14.57	14.89	15.09	15.14	15.32
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	0	0	0	0	0
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

**Table A-15-20 - Powertrain Technology Penetration Rate (%) for Manufacturer (Toyota), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	33	33	33	33	41
Cylinder Deactivation	6	6	7	6	6
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	38	38	37	37	24
Variable Geometry Turbo	0	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	19	20	22	24	17
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	13.2	16.3	16.8	17.9	23.4
Plug-In Hybrid	0.0	0.7	2.0	2.0	2.4
Battery Electric Vehicles (BEVs)	3.10	3.49	3.92	3.93	3.98
BEV 200 Mile Range	2.48	2.85	3.27	3.29	3.33
BEV 300 Mile Range	0.62	0.64	0.65	0.65	0.66
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02
Manual Transmissions	1	1	1	1	1
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	44	30	11	11	9
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	16	26	43	42	39
DCT Transmissions	0	0	0	0	0
CVT Transmissions	22	22	22	22	21

Table A-15-21 - Powertrain Technology Penetration Rate (%) for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	0	0	0	0	0
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	51	51	49	48	46
Variable Geometry Turbo	12	6	6	6	6
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	63	56	53	51	51
Mild Hybrid	0.0	0.0	0.0	0.6	0.3
Strong Hybrid	24.9	33.2	32.0	32.9	28.4
Plug-In Hybrid	5.5	5.4	5.4	5.3	5.3
Battery Electric Vehicles (BEVs)	6.42	5.87	9.19	10.57	14.66
BEV 200 Mile Range	2.74	2.73	3.49	4.01	3.51
BEV 300 Mile Range	3.68	3.14	5.70	6.56	11.15
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	0	0	0	0	0
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	0	0	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	63	56	53	51	52
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

Table A-15-22 - Powertrain Technology Penetration Rate (%) for Manufacturer (VWA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Non-Hybrid High Compression Engines	4	3	4	4	4
Cylinder Deactivation	0	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0	0
Non-Hybrid Turbocharged Engines	33	36	32	32	29
Variable Geometry Turbo	26	24	22	20	16
Electric Variable Geometry Turbo	0	0	0	0	0
Diesel Engines	0	0	0	0	0
Compressed Natural Gas	0	0	0	0	0
12V Stop-Start (non-hybrid)	55	55	51	48	39
Mild Hybrid	5.3	5.3	5.5	6.4	4.2
Strong Hybrid	31.2	25.9	34.4	36.2	41.9
Plug-In Hybrid	1.0	4.9	2.0	2.0	5.1
Battery Electric Vehicles (BEVs)	5.68	5.41	6.17	6.16	6.87
BEV 200 Mile Range	4.35	4.06	4.44	4.43	4.66
BEV 300 Mile Range	1.33	1.35	1.72	1.73	2.21
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00
Manual Transmissions	1	3	1	1	3
5-Speed Automatic	0	0	0	0	0
6-Speed Automatic	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0
8-Speed Automatic	4	4	0	0	0
9-Speed Automatic	0	0	0	0	0
10-Speed Automatic	40	39	37	36	29
DCT Transmissions	0	0	0	0	0
CVT Transmissions	0	0	0	0	0

16. Mass Reduction Penetration Rate, by Model Year

**Table A-16-1 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	8	2	5	4	2
Mass Reduction Level 1 (%)	25	23	20	20	17
Mass Reduction Level 2 (%)	17	6	6	6	6
Mass Reduction Level 3 (%)	36	40	38	37	36
Mass Reduction Level 4 (%)	14	28	32	32	40
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,805	3,770	3,771	3,772	3,756
Diff. from Baseline - Fleet (pounds)	0	35	34	33	49
Avg Curb Weight - Passenger Car (pounds)	3,319	3,265	3,258	3,258	3,233
Diff. from Baseline - Passenger Car (pounds)	0	54	60	61	86
Avg Curb Weight - Light Truck (pounds)	4,295	4,261	4,258	4,258	4,241
Diff. from Baseline - Light Trucks (pounds)	0	34	37	37	54

**Table A-16-2 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Passenger Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	11	1	5	5	1
Mass Reduction Level 1 (%)	21	26	21	21	17
Mass Reduction Level 2 (%)	18	3	3	3	2
Mass Reduction Level 3 (%)	35	36	30	30	30
Mass Reduction Level 4 (%)	13	34	40	41	49
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	1	1	1
Avg Curb Weight - Fleet (pounds)	3,805	3,770	3,771	3,772	3,756
Diff. from Baseline - Fleet (pounds)	0	35	34	33	49
Avg Curb Weight - Passenger Car (pounds)	3,319	3,265	3,258	3,258	3,233
Diff. from Baseline - Passenger Car (pounds)	0	54	60	61	86
Avg Curb Weight - Light Truck (pounds)	4,295	4,261	4,258	4,258	4,241
Diff. from Baseline - Light Trucks (pounds)	0	34	37	37	54

**Table A-16-3 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Light Truck Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	4	3	4	4	3
Mass Reduction Level 1 (%)	29	21	18	18	16
Mass Reduction Level 2 (%)	16	9	9	9	9
Mass Reduction Level 3 (%)	37	44	45	45	40
Mass Reduction Level 4 (%)	14	23	24	24	31
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,805	3,770	3,771	3,772	3,756
Diff. from Baseline - Fleet (pounds)	0	35	34	33	49
Avg Curb Weight - Passenger Car (pounds)	3,319	3,265	3,258	3,258	3,233
Diff. from Baseline - Passenger Car (pounds)	0	54	60	61	86
Avg Curb Weight - Light Truck (pounds)	4,295	4,261	4,258	4,258	4,241
Diff. from Baseline - Light Trucks (pounds)	0	34	37	37	54

**Table A-16-4 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Domestic Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	8	8	0
Mass Reduction Level 1 (%)	24	15	6	6	14
Mass Reduction Level 2 (%)	22	2	1	1	0
Mass Reduction Level 3 (%)	39	50	37	38	30
Mass Reduction Level 4 (%)	14	33	47	46	56
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,805	3,770	3,771	3,772	3,756
Diff. from Baseline - Fleet (pounds)	0	35	34	33	49
Avg Curb Weight - Passenger Car (pounds)	3,319	3,265	3,258	3,258	3,233
Diff. from Baseline - Passenger Car (pounds)	0	54	60	61	86
Avg Curb Weight - Light Truck (pounds)	4,295	4,261	4,258	4,258	4,241
Diff. from Baseline - Light Trucks (pounds)	0	34	37	37	54

**Table A-16-5 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Imported Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	22	2	2	2	2
Mass Reduction Level 1 (%)	19	36	35	35	19
Mass Reduction Level 2 (%)	14	5	5	5	4
Mass Reduction Level 3 (%)	32	22	23	22	31
Mass Reduction Level 4 (%)	12	34	34	35	43
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	1	1	1
Avg Curb Weight - Fleet (pounds)	3,805	3,770	3,771	3,772	3,756
Diff. from Baseline - Fleet (pounds)	0	35	34	33	49
Avg Curb Weight - Passenger Car (pounds)	3,319	3,265	3,258	3,258	3,233
Diff. from Baseline - Passenger Car (pounds)	0	54	60	61	86
Avg Curb Weight - Light Truck (pounds)	4,295	4,261	4,258	4,258	4,241
Diff. from Baseline - Light Trucks (pounds)	0	34	37	37	54

**Table A-16-6 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (BMW), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	37	37	24	23	23
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	30	30	44	44	45
Mass Reduction Level 4 (%)	32	32	32	32	31
Mass Reduction Level 5 (%)	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,962	3,971	3,951	3,953	3,956
Diff. from Baseline - Fleet (pounds)	0	-8	11	10	6
Avg Curb Weight - Passenger Car (pounds)	3,666	3,664	3,664	3,664	3,663
Diff. from Baseline - Passenger Car (pounds)	0	1	2	2	3
Avg Curb Weight - Light Truck (pounds)	4,650	4,650	4,573	4,573	4,573
Diff. from Baseline - Light Trucks (pounds)	0	0	77	77	77

Table A-16-7 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Daimler), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	2	2	2	2	2
Mass Reduction Level 1 (%)	25	25	25	26	26
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	45	11	11	11	11
Mass Reduction Level 4 (%)	27	60	60	60	60
Mass Reduction Level 5 (%)	2	2	2	2	2
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,994	3,953	3,959	3,960	3,965
Diff. from Baseline - Fleet (pounds)	0	41	35	34	29
Avg Curb Weight - Passenger Car (pounds)	3,606	3,549	3,549	3,549	3,550
Diff. from Baseline - Passenger Car (pounds)	0	58	57	57	57
Avg Curb Weight - Light Truck (pounds)	4,460	4,420	4,420	4,420	4,420
Diff. from Baseline - Light Trucks (pounds)	0	40	40	40	40

**Table A-16-8 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (FCA), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	4	4	4	4	4
Mass Reduction Level 1 (%)	56	27	27	27	27
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	23	52	46	52	52
Mass Reduction Level 4 (%)	17	16	23	16	16
Mass Reduction Level 5 (%)	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,352	4,314	4,308	4,316	4,317
Diff. from Baseline - Fleet (pounds)	0	38	44	36	35
Avg Curb Weight - Passenger Car (pounds)	3,605	3,566	3,549	3,561	3,557
Diff. from Baseline - Passenger Car (pounds)	0	39	56	44	48
Avg Curb Weight - Light Truck (pounds)	4,502	4,459	4,452	4,459	4,459
Diff. from Baseline - Light Trucks (pounds)	0	43	50	43	43

**Table A-16-9 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Ford), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	2	2	22	22	2
Mass Reduction Level 1 (%)	30	29	9	9	20
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	15	15	15	15	24
Mass Reduction Level 4 (%)	54	54	54	54	54
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,127	4,134	4,167	4,168	4,126
Diff. from Baseline - Fleet (pounds)	0	-6	-39	-40	1
Avg Curb Weight - Passenger Car (pounds)	3,459	3,459	3,531	3,530	3,459
Diff. from Baseline - Passenger Car (pounds)	0	0	-71	-71	0
Avg Curb Weight - Light Truck (pounds)	4,428	4,428	4,439	4,439	4,406
Diff. from Baseline - Light Trucks (pounds)	0	0	-11	-11	22

**Table A-16-10 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (GM), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	30	10	10	10	10
Mass Reduction Level 2 (%)	5	1	0	0	0
Mass Reduction Level 3 (%)	61	62	48	48	48
Mass Reduction Level 4 (%)	3	27	43	43	43
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,058	4,005	3,982	3,983	3,987
Diff. from Baseline - Fleet (pounds)	0	53	76	75	71
Avg Curb Weight - Passenger Car (pounds)	3,231	3,138	3,130	3,130	3,130
Diff. from Baseline - Passenger Car (pounds)	0	92	101	101	101
Avg Curb Weight - Light Truck (pounds)	4,533	4,490	4,452	4,452	4,452
Diff. from Baseline - Light Trucks (pounds)	0	43	81	81	81

**Table A-16-11 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Honda), MY
2029 Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	7	7	7	7	7
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	93	93	71	72	72
Mass Reduction Level 4 (%)	0	0	22	21	21
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,388	3,397	3,374	3,376	3,381
Diff. from Baseline - Fleet (pounds)	0	-9	13	12	6
Avg Curb Weight - Passenger Car (pounds)	3,094	3,096	3,052	3,053	3,054
Diff. from Baseline - Passenger Car (pounds)	0	-2	41	41	40
Avg Curb Weight - Light Truck (pounds)	3,930	3,930	3,930	3,930	3,930
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0	0

Table A-16-12 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Hyundai Kia-H), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	2	0	0	0	0
Mass Reduction Level 2 (%)	23	6	6	6	0
Mass Reduction Level 3 (%)	62	40	23	23	29
Mass Reduction Level 4 (%)	14	54	71	71	71
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,284	3,230	3,211	3,212	3,213
Diff. from Baseline - Fleet (pounds)	0	54	74	73	72
Avg Curb Weight - Passenger Car (pounds)	3,196	3,134	3,110	3,111	3,111
Diff. from Baseline - Passenger Car (pounds)	0	62	86	85	85
Avg Curb Weight - Light Truck (pounds)	4,184	4,184	4,184	4,184	4,184
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0	0

Table A-16-13 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Hyundai Kia-K), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	23	0	0	0	0
Mass Reduction Level 1 (%)	32	39	39	39	39
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	44	56	40	40	28
Mass Reduction Level 4 (%)	1	6	21	21	33
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,589	3,536	3,520	3,521	3,506
Diff. from Baseline - Fleet (pounds)	0	53	69	68	83
Avg Curb Weight - Passenger Car (pounds)	3,408	3,347	3,318	3,318	3,318
Diff. from Baseline - Passenger Car (pounds)	0	61	90	90	89
Avg Curb Weight - Light Truck (pounds)	3,989	3,935	3,935	3,935	3,881
Diff. from Baseline - Light Trucks (pounds)	0	54	54	54	108

**Table A-16-14 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (JLR), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	12	12	12	12	12
Mass Reduction Level 1 (%)	13	0	0	0	0
Mass Reduction Level 2 (%)	7	0	0	0	0
Mass Reduction Level 3 (%)	36	36	36	36	36
Mass Reduction Level 4 (%)	32	52	52	52	52
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,357	4,301	4,303	4,303	4,304
Diff. from Baseline - Fleet (pounds)	0	56	54	54	53
Avg Curb Weight - Passenger Car (pounds)	3,436	3,436	3,436	3,436	3,436
Diff. from Baseline - Passenger Car (pounds)	0	0	0	0	0
Avg Curb Weight - Light Truck (pounds)	4,416	4,354	4,354	4,354	4,354
Diff. from Baseline - Light Trucks (pounds)	0	62	62	62	62

Table A-16-15 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Mazda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	51	9	9	9	9
Mass Reduction Level 1 (%)	10	52	10	10	10
Mass Reduction Level 2 (%)	2	0	0	0	0
Mass Reduction Level 3 (%)	33	35	75	32	32
Mass Reduction Level 4 (%)	0	0	2	45	45
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	4	4	4	4	3
Avg Curb Weight - Fleet (pounds)	3,485	3,433	3,376	3,320	3,321
Diff. from Baseline - Fleet (pounds)	0	52	109	166	164
Avg Curb Weight - Passenger Car (pounds)	3,255	3,218	3,177	3,139	3,139
Diff. from Baseline - Passenger Car (pounds)	0	36	77	115	115
Avg Curb Weight - Light Truck (pounds)	3,749	3,671	3,594	3,516	3,516
Diff. from Baseline - Light Trucks (pounds)	0	78	156	234	234

Table A-16-16 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Mitsubishi), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	79	80	80	81	0
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	21	20	0	0	0
Mass Reduction Level 4 (%)	0	0	20	19	100
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	2,991	3,000	2,989	2,990	2,802
Diff. from Baseline - Fleet (pounds)	0	-9	2	0	189
Avg Curb Weight - Passenger Car (pounds)	2,708	2,720	2,694	2,696	2,563
Diff. from Baseline - Passenger Car (pounds)	0	-12	14	12	145
Avg Curb Weight - Light Truck (pounds)	3,267	3,267	3,267	3,267	3,025
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0	242

Table A-16-17 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	2	2	2	2	2
Mass Reduction Level 1 (%)	42	38	39	39	39
Mass Reduction Level 2 (%)	42	6	6	6	6
Mass Reduction Level 3 (%)	15	54	9	9	9
Mass Reduction Level 4 (%)	0	0	41	41	41
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	4	4	4
Avg Curb Weight - Fleet (pounds)	3,487	3,466	3,399	3,400	3,405
Diff. from Baseline - Fleet (pounds)	0	21	88	87	83
Avg Curb Weight - Passenger Car (pounds)	3,233	3,201	3,118	3,118	3,119
Diff. from Baseline - Passenger Car (pounds)	0	32	115	115	113
Avg Curb Weight - Light Truck (pounds)	4,208	4,192	4,154	4,154	4,154
Diff. from Baseline - Light Trucks (pounds)	0	16	54	54	54

Table A-16-18 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Subaru), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0
Mass Reduction Level 2 (%)	93	94	94	94	94
Mass Reduction Level 3 (%)	6	6	0	0	0
Mass Reduction Level 4 (%)	1	1	6	6	6
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,547	3,552	3,548	3,548	3,551
Diff. from Baseline - Fleet (pounds)	0	-5	-1	-1	-4
Avg Curb Weight - Passenger Car (pounds)	3,218	3,218	3,191	3,191	3,191
Diff. from Baseline - Passenger Car (pounds)	0	0	26	26	26
Avg Curb Weight - Light Truck (pounds)	3,676	3,676	3,676	3,676	3,676
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0	0

**Table A-16-19 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Tesla), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0	0
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	15	15	15	15	15
Mass Reduction Level 4 (%)	85	85	85	85	85
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,304	4,308	4,311	4,312	4,315
Diff. from Baseline - Fleet (pounds)	0	-5	-8	-8	-11
Avg Curb Weight - Passenger Car (pounds)	4,276	4,280	4,282	4,282	4,284
Diff. from Baseline - Passenger Car (pounds)	0	-3	-6	-6	-8
Avg Curb Weight - Light Truck (pounds)	5,553	5,553	5,553	5,553	5,553
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0	0

Table A-16-20 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Toyota), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	34	6	7	7	7
Mass Reduction Level 1 (%)	13	41	40	40	13
Mass Reduction Level 2 (%)	47	0	0	0	0
Mass Reduction Level 3 (%)	5	5	52	52	32
Mass Reduction Level 4 (%)	0	47	0	0	48
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,672	3,554	3,628	3,630	3,539
Diff. from Baseline - Fleet (pounds)	0	118	45	43	133
Avg Curb Weight - Passenger Car (pounds)	3,266	3,126	3,188	3,188	3,077
Diff. from Baseline - Passenger Car (pounds)	0	140	78	78	188
Avg Curb Weight - Light Truck (pounds)	4,295	4,184	4,258	4,258	4,184
Diff. from Baseline - Light Trucks (pounds)	0	111	37	37	111

Table A-16-21 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	0	0	0	0	0
Mass Reduction Level 1 (%)	43	18	18	18	19
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	54	79	79	79	79
Mass Reduction Level 4 (%)	2	0	0	0	0
Mass Reduction Level 5 (%)	0	0	0	0	0
Mass Reduction Level 6 (%)	0	3	3	3	3
Avg Curb Weight - Fleet (pounds)	4,117	4,077	4,081	4,082	4,085
Diff. from Baseline - Fleet (pounds)	0	40	36	35	32
Avg Curb Weight - Passenger Car (pounds)	3,801	3,682	3,684	3,684	3,686
Diff. from Baseline - Passenger Car (pounds)	0	119	117	117	115
Avg Curb Weight - Light Truck (pounds)	4,252	4,241	4,243	4,243	4,244
Diff. from Baseline - Light Trucks (pounds)	0	11	10	9	8

Table A-16-22 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (VWA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mass Reduction Level 0 (%)	1	3	3	1	1
Mass Reduction Level 1 (%)	35	33	33	32	31
Mass Reduction Level 2 (%)	0	0	0	0	0
Mass Reduction Level 3 (%)	38	4	37	40	37
Mass Reduction Level 4 (%)	25	58	25	25	30
Mass Reduction Level 5 (%)	1	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,609	3,580	3,627	3,621	3,616
Diff. from Baseline - Fleet (pounds)	0	29	-18	-12	-7
Avg Curb Weight - Passenger Car (pounds)	3,278	3,222	3,287	3,273	3,253
Diff. from Baseline - Passenger Car (pounds)	0	56	-9	5	26
Avg Curb Weight - Light Truck (pounds)	3,956	3,938	3,956	3,956	3,956
Diff. from Baseline - Light Trucks (pounds)	0	18	0	0	0

17. Electrification Rates

Table A-17-1 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	2.5	2.9	5.1	4.3	4.1
Strong Hybrid	7.2	10.6	18.8	21.2	24.8
Plug-In Hybrid	0.7	1.5	2.4	3.2	4.5
Battery Electric Vehicles (BEVs)	5.21	5.53	6.63	6.70	6.90
BEV 200 Mile Range	2.45	2.80	3.29	3.30	3.32
BEV 300 Mile Range	2.48	2.45	3.06	3.11	3.29
BEV 400 Mile Range	0.28	0.28	0.28	0.28	0.28
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.01	0.01	0.01	0.01	0.01

Table A-17-2 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Passenger Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	1.6	1.8	1.9	2.0	1.6
Strong Hybrid	6.6	9.0	17.1	21.0	24.4
Plug-In Hybrid	1.2	2.5	3.4	3.4	4.4
Battery Electric Vehicles (BEVs)	8.03	8.12	9.87	9.98	10.50
BEV 200 Mile Range	3.70	3.78	4.40	4.45	4.72
BEV 300 Mile Range	3.88	3.89	5.02	5.08	5.33
BEV 400 Mile Range	0.45	0.45	0.45	0.45	0.45
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.01	0.01	0.01	0.01	0.01

Table A-17-3 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Light Truck Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	3.4	4.0	8.2	6.5	6.4
Strong Hybrid	7.8	12.4	20.4	21.3	25.1
Plug-In Hybrid	0.3	0.6	1.6	2.9	4.8
Battery Electric Vehicles (BEVs)	2.36	3.02	3.56	3.60	3.56
BEV 200 Mile Range	1.19	1.85	2.24	2.22	2.03
BEV 300 Mile Range	1.06	1.05	1.20	1.26	1.41
BEV 400 Mile Range	0.12	0.12	0.12	0.12	0.12
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-4 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Domestic Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.6	0.0	0.0	0.0
Strong Hybrid	3.0	5.4	12.9	18.6	22.3
Plug-In Hybrid	1.4	2.9	3.5	3.5	3.5
Battery Electric Vehicles (BEVs)	11.71	11.91	14.60	14.60	15.14
BEV 200 Mile Range	4.29	4.53	5.58	5.57	5.97
BEV 300 Mile Range	6.48	6.45	8.08	8.09	8.22
BEV 400 Mile Range	0.93	0.94	0.95	0.95	0.95
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-5 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Imported Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	3.1	2.9	3.5	3.8	3.1
Strong Hybrid	9.9	12.3	20.9	23.3	26.2
Plug-In Hybrid	1.0	2.2	3.2	3.4	5.4
Battery Electric Vehicles (BEVs)	4.65	4.65	5.56	5.77	6.28
BEV 200 Mile Range	3.16	3.10	3.32	3.44	3.58
BEV 300 Mile Range	1.49	1.55	2.24	2.33	2.70
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02

Table A-17-6 - Electrification Rates (%) for Manufacturer (BMW), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	20.6	26.5	22.5	21.1	30.6
Strong Hybrid	1.3	1.4	6.4	5.0	3.2
Plug-In Hybrid	5.1	3.5	7.2	9.1	12.8
Battery Electric Vehicles (BEVs)	6.15	6.39	6.85	7.38	8.30
BEV 200 Mile Range	4.26	4.17	4.12	4.10	4.06
BEV 300 Mile Range	1.89	2.22	2.74	3.28	4.24
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-7 - Electrification Rates (%) for Manufacturer (Daimler), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	17.4	14.3	14.7	14.5	14.5
Strong Hybrid	11.0	11.0	10.8	10.7	8.9
Plug-In Hybrid	3.4	7.8	6.7	6.6	8.2
Battery Electric Vehicles (BEVs)	4.98	4.33	7.71	8.54	9.58
BEV 200 Mile Range	4.30	3.23	3.24	3.24	3.24
BEV 300 Mile Range	0.00	0.41	3.77	4.59	5.63
BEV 400 Mile Range	0.68	0.69	0.70	0.71	0.71
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-8 - Electrification Rates (%) for Manufacturer (FCA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	10.1	9.5	9.5	9.6	9.8
Strong Hybrid	1.2	1.3	4.1	5.6	5.8
Plug-In Hybrid	0.4	0.4	0.4	0.4	0.4
Battery Electric Vehicles (BEVs)	2.86	4.24	4.38	4.40	4.63
BEV 200 Mile Range	1.78	3.16	3.30	3.31	3.34
BEV 300 Mile Range	1.09	1.08	1.08	1.08	1.28
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-9 - Electrification Rates (%) for Manufacturer (Ford), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.9	1.0	4.6	0.0	0.0
Strong Hybrid	18.1	18.1	35.4	38.7	41.2
Plug-In Hybrid	0.7	1.3	1.4	2.6	4.5
Battery Electric Vehicles (BEVs)	3.94	3.84	6.94	6.93	6.90
BEV 200 Mile Range	2.73	2.65	2.60	2.58	2.54
BEV 300 Mile Range	1.20	1.19	4.35	4.35	4.36
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-10 - Electrification Rates (%) for Manufacturer (GM), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.2	7.0	6.2	6.0
Strong Hybrid	4.4	19.1	29.3	28.9	31.4
Plug-In Hybrid	0.0	2.4	5.5	7.9	11.4
Battery Electric Vehicles (BEVs)	5.13	5.46	5.45	5.52	5.44
BEV 200 Mile Range	2.49	2.88	2.91	2.98	2.93
BEV 300 Mile Range	2.64	2.58	2.55	2.54	2.51
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-11 - Electrification Rates (%) for Manufacturer (Honda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	2.0	6.5	5.0	1.6
Strong Hybrid	6.6	5.0	6.6	12.7	19.4
Plug-In Hybrid	3.4	3.0	4.2	5.2	6.2
Battery Electric Vehicles (BEVs)	1.86	1.86	5.49	5.50	5.56
BEV 200 Mile Range	0.00	0.02	3.37	3.36	3.35
BEV 300 Mile Range	1.86	1.85	2.12	2.14	2.21
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02

Table A-17-12 - Electrification Rates (%) for Manufacturer (Hyundai Kia-H), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	2.2	0.0	0.0
Strong Hybrid	1.6	10.6	34.3	41.5	43.6
Plug-In Hybrid	0.0	0.0	0.0	0.0	4.0
Battery Electric Vehicles (BEVs)	2.85	2.81	2.79	2.79	2.77
BEV 200 Mile Range	0.96	0.94	0.92	0.92	0.91
BEV 300 Mile Range	1.88	1.87	1.87	1.87	1.86
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.03	0.03	0.03	0.03	0.03

Table A-17-13 - Electrification Rates (%) for Manufacturer (Hyundai Kia-K), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.3	0.3	0.0
Strong Hybrid	0.8	3.5	24.4	30.6	42.2
Plug-In Hybrid	0.2	0.3	0.9	0.6	1.0
Battery Electric Vehicles (BEVs)	2.50	2.47	2.47	2.47	2.79
BEV 200 Mile Range	2.06	2.02	2.01	2.01	2.33
BEV 300 Mile Range	0.43	0.45	0.46	0.46	0.47
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-14 - Electrification Rates (%) for Manufacturer (JLR), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	25.1	39.9	41.9	46.0	50.6
Strong Hybrid	0.0	0.0	0.3	0.0	0.0
Plug-In Hybrid	0.7	7.9	8.4	8.4	8.5
Battery Electric Vehicles (BEVs)	3.90	4.64	6.35	7.84	10.69
BEV 200 Mile Range	2.49	3.22	4.32	4.32	4.32
BEV 300 Mile Range	1.42	1.42	2.03	3.52	6.37
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-15 - Electrification Rates (%) for Manufacturer (Mazda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	1.7	10.0	14.0	19.3
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.14	5.03	4.96	4.95	4.89
BEV 200 Mile Range	4.07	4.00	3.96	3.94	3.91
BEV 300 Mile Range	1.07	1.03	1.01	1.00	0.99
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-16 - Electrification Rates (%) for Manufacturer (Mitsubishi), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	0.0	10.2	19.3	13.1
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.61	1.63	1.64	1.65	1.65
BEV 200 Mile Range	0.54	0.54	0.55	0.55	0.55
BEV 300 Mile Range	1.08	1.09	1.10	1.10	1.10
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-17 - Electrification Rates (%) for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	2.8	12.9	15.7	23.7
Plug-In Hybrid	0.0	0.0	1.3	1.3	1.3
Battery Electric Vehicles (BEVs)	1.84	3.84	5.89	5.88	6.64
BEV 200 Mile Range	1.39	3.37	4.24	4.23	4.44
BEV 300 Mile Range	0.45	0.46	1.65	1.65	2.20
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-18 - Electrification Rates (%) for Manufacturer (Subaru), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	3.3	5.2	4.1
Strong Hybrid	2.8	3.0	5.6	6.6	7.6
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.29	2.29	2.28	2.28	2.28
BEV 200 Mile Range	0.05	0.05	0.05	0.05	0.05
BEV 300 Mile Range	2.23	2.23	2.23	2.23	2.23
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-19 - Electrification Rates (%) for Manufacturer (Tesla), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	0.0	0.0	0.0	0.0	0.0
Plug-In Hybrid	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	100.00	100.00	100.00	100.00	100.00
BEV 200 Mile Range	25.31	25.22	25.16	25.14	25.09
BEV 300 Mile Range	60.12	59.90	59.75	59.71	59.59
BEV 400 Mile Range	14.57	14.89	15.09	15.14	15.32
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-20 - Electrification Rates (%) for Manufacturer (Toyota), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.0	0.0
Strong Hybrid	13.2	16.3	16.8	17.9	23.4
Plug-In Hybrid	0.0	0.7	2.0	2.0	2.4
Battery Electric Vehicles (BEVs)	3.10	3.49	3.92	3.93	3.98
BEV 200 Mile Range	2.48	2.85	3.27	3.29	3.33
BEV 300 Mile Range	0.62	0.64	0.65	0.65	0.66
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.02	0.02	0.02	0.02	0.02

Table A-17-21 - Electrification Rates (%) for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	0.0	0.0	0.0	0.6	0.3
Strong Hybrid	24.9	33.2	32.0	32.9	28.4
Plug-In Hybrid	5.5	5.4	5.4	5.3	5.3
Battery Electric Vehicles (BEVs)	6.42	5.87	9.19	10.57	14.66
BEV 200 Mile Range	2.74	2.73	3.49	4.01	3.51
BEV 300 Mile Range	3.68	3.14	5.70	6.56	11.15
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

Table A-17-22 - Electrification Rates (%) for Manufacturer (VWA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	2.5	3
Mild Hybrid	5.3	5.3	5.5	6.4	4.2
Strong Hybrid	31.2	25.9	34.4	36.2	41.9
Plug-In Hybrid	1.0	4.9	2.0	2.0	5.1
Battery Electric Vehicles (BEVs)	5.68	5.41	6.17	6.16	6.87
BEV 200 Mile Range	4.35	4.06	4.44	4.43	4.66
BEV 300 Mile Range	1.33	1.35	1.72	1.73	2.21
BEV 400 Mile Range	0.00	0.00	0.00	0.00	0.00
BEV 500 Mile Range	0.00	0.00	0.00	0.00	0.00
Fuel Cell Vehicles (FCVs)	0.00	0.00	0.00	0.00	0.00

18. Required and Achieved CAFE Levels, Comparison

Table A-18-1 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5

Model Year	Total		
	Required	Achieved	Difference
2020	35.4	34.4	-1.0
2021	36.0	36.0	0.0
2022	36.7	38.2	1.5
2023	37.4	40.8	3.4
2024	40.6	43.5	2.9
2025	44.2	45.4	1.2
2026	49.1	48.4	-0.8
2027	49.1	49.1	0.0
2028	49.2	49.7	0.5
2029	49.3	50.0	0.8

Table A-18-2 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5

Model Year	Total		
	Required	Achieved	Difference
2020	43.3	41.8	-1.4
2021	43.9	43.7	-0.2
2022	44.6	46.9	2.3
2023	45.2	50.0	4.8
2024	49.2	54.7	5.5
2025	53.4	57.9	4.5
2026	59.4	60.9	1.5
2027	59.4	61.8	2.5
2028	59.3	62.5	3.1
2029	59.3	62.6	3.2

Table A-18-3 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5

Model Year	Total		
	Required	Achieved	Difference
2020	31.0	30.2	-0.8
2021	31.5	31.5	0.0
2022	31.9	33.0	1.1
2023	32.4	35.0	2.6
2024	35.1	36.8	1.6
2025	38.2	38.0	-0.2
2026	42.4	40.7	-1.7
2027	42.4	41.4	-1.1
2028	42.4	41.8	-0.7
2029	42.4	42.1	-0.4

Table A-18-4 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	37.7	34.5	-3.2	35.6	31.7	-4.0	31.3	28.3	-3.0	31.8	31.4	-0.4
2021	38.4	37.2	-1.3	36.3	33.8	-2.5	31.7	29.4	-2.4	32.4	33.1	0.7
2022	39.2	40.5	1.3	37.0	34.7	-2.3	32.3	31.9	-0.4	33.0	35.2	2.3
2023	39.9	43.5	3.7	37.6	36.9	-0.7	32.8	34.0	1.2	33.6	38.9	5.4
2024	43.4	45.3	1.9	41.0	39.9	-1.1	35.7	34.3	-1.4	36.4	40.1	3.8
2025	47.2	48.9	1.7	44.6	41.4	-3.2	38.8	34.3	-4.5	39.6	40.5	1.0
2026	52.5	50.8	-1.6	49.5	42.4	-7.1	43.1	35.9	-7.2	44.0	44.3	0.3
2027	52.5	52.5	0.1	49.5	44.4	-5.1	43.1	37.2	-5.9	44.0	44.4	0.4
2028	52.5	52.7	0.1	49.6	45.5	-4.0	43.1	38.2	-4.9	44.0	44.5	0.5
2029	52.6	52.9	0.3	49.6	45.8	-3.9	43.1	38.6	-4.5	44.1	44.5	0.5

Table A-18-5 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	32.7	30.9	-1.8	38.6	40.2	1.7	41.6	38.0	-3.6	38.9	36.7	-2.2
2021	33.2	32.4	-0.8	39.3	41.2	1.8	42.3	39.3	-3.0	39.7	40.7	1.0
2022	33.9	34.0	0.1	40.1	44.5	4.4	43.1	42.3	-0.7	40.5	41.5	1.0
2023	34.4	34.8	0.4	40.7	47.9	7.2	43.8	43.9	0.1	41.3	41.9	0.6
2024	37.1	37.3	0.2	44.4	50.3	5.9	47.6	48.3	0.7	44.9	50.4	5.5
2025	40.4	40.6	0.2	48.2	52.6	4.4	51.7	50.7	-1.1	48.8	52.8	4.0
2026	44.9	44.7	-0.2	53.6	53.9	0.3	57.5	57.5	0.0	54.2	54.2	0.0
2027	44.9	45.5	0.6	53.6	54.0	0.4	57.5	58.0	0.5	54.2	55.1	0.9
2028	44.9	45.6	0.7	53.7	54.4	0.7	57.5	58.2	0.7	54.3	55.6	1.2
2029	45.0	46.2	1.3	53.7	54.8	1.0	57.5	58.3	0.8	54.4	55.6	1.2

Table A-18-6 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	32.6	28.9	-3.7	38.7	36.6	-2.1	40.7	39.3	-1.4	39.2	37.8	-1.4
2021	33.1	30.1	-3.1	39.3	37.8	-1.5	41.3	39.9	-1.4	39.9	40.2	0.3
2022	33.7	31.5	-2.1	40.0	38.7	-1.3	42.1	40.1	-1.9	40.6	42.3	1.7
2023	34.2	35.0	0.8	40.7	43.7	3.0	42.8	40.3	-2.5	41.3	45.2	3.9
2024	37.2	37.2	0.0	44.3	45.1	0.8	46.5	40.4	-6.1	45.0	49.2	4.2
2025	40.5	38.7	-1.8	48.1	51.2	3.1	50.6	56.1	5.6	48.9	52.2	3.3
2026	45.0	42.3	-2.7	53.5	55.5	2.0	56.2	56.2	0.0	54.4	53.4	-0.9
2027	45.0	43.3	-1.7	53.5	55.5	2.0	56.2	56.2	0.0	54.4	54.1	-0.3
2028	45.0	43.3	-1.7	53.5	55.6	2.0	56.3	56.3	0.0	54.4	55.5	1.1
2029	45.0	44.8	-0.2	53.6	55.6	2.0	56.3	56.4	0.0	54.4	56.0	1.5

Table A-18-7 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	37.0	39.3	2.2	40.5	720.0	679.5	37.1	36.6	-0.5	34.3	33.1	-1.2
2021	37.7	40.1	2.4	40.4	740.6	700.2	37.9	38.1	0.2	34.9	33.4	-1.5
2022	38.3	42.9	4.6	41.1	745.1	704.0	38.6	40.3	1.7	35.5	33.6	-1.9
2023	39.0	46.8	7.7	41.8	751.8	710.1	39.3	43.7	4.3	36.0	42.5	6.4
2024	42.5	49.5	7.0	45.3	754.2	708.8	42.8	47.9	5.1	39.2	42.7	3.5
2025	46.2	51.1	4.9	49.3	755.7	706.4	46.6	48.5	1.9	42.6	43.9	1.3
2026	51.3	53.3	2.0	54.8	756.0	701.2	51.8	52.2	0.4	47.3	44.9	-2.4
2027	51.3	53.5	2.1	54.8	756.1	701.3	51.8	52.5	0.8	47.3	48.9	1.5
2028	51.4	53.5	2.1	54.8	756.7	701.9	51.8	53.2	1.3	47.4	48.9	1.5
2029	51.5	53.7	2.2	54.8	757.2	702.4	51.9	53.3	1.4	47.4	49.0	1.6

Table A-18-8 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	37.1	33.4	-3.7	35.4	34.4	-1.0
2021	37.9	34.9	-3.0	36.0	36.0	0.0
2022	38.7	36.8	-1.9	36.7	38.2	1.5
2023	39.4	38.7	-0.7	37.4	40.8	3.4
2024	42.9	44.5	1.6	40.6	43.5	2.9
2025	46.6	47.1	0.5	44.2	45.4	1.2
2026	51.8	48.9	-2.9	49.1	48.4	-0.8
2027	51.8	50.1	-1.8	49.1	49.1	0.0
2028	51.9	51.2	-0.8	49.2	49.7	0.5
2029	52.0	51.4	-0.6	49.3	50.0	0.8

**Table A-18-9 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5,
Part 1 of 5**

Model Year	BMW			Daimler			FCA			Ford		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	42.5	36.7	-5.8	41.4	33.9	-7.5	41.6	30.7	-10.9	42.2	36.9	-5.3
2021	43.1	40.1	-3.0	42.0	37.3	-4.7	42.0	38.9	-3.1	42.8	37.4	-5.4
2022	43.8	43.8	0.0	42.7	38.9	-3.8	42.5	41.1	-1.4	43.5	43.9	0.3
2023	44.4	46.1	1.7	43.3	40.0	-3.3	43.0	44.6	1.6	44.1	56.9	12.8
2024	48.3	48.4	0.1	47.1	47.3	0.2	46.8	46.0	-0.7	47.9	56.9	9.0
2025	52.5	54.8	2.3	51.2	48.9	-2.3	50.9	46.2	-4.6	52.2	58.4	6.2
2026	58.3	58.3	0.0	56.8	49.2	-7.6	56.4	55.3	-1.2	57.9	59.6	1.7
2027	58.3	58.4	0.1	56.8	53.8	-3.0	56.4	56.4	0.0	57.9	59.8	1.9
2028	58.3	58.4	0.1	56.8	56.8	0.0	56.4	56.8	0.3	57.9	59.8	1.9
2029	58.3	58.7	0.4	56.8	56.8	0.0	56.4	56.8	0.4	57.9	59.7	1.8

**Table A-18-10 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5,
Part 2 of 5**

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	43.9	40.3	-3.6	43.6	45.0	1.4	43.3	39.4	-4.0	44.0	41.9	-2.1
2021	44.5	40.8	-3.7	44.3	46.0	1.7	44.0	40.9	-3.2	44.7	45.7	1.0
2022	45.2	44.0	-1.2	45.0	48.9	3.9	44.7	44.5	-0.3	45.4	46.8	1.4
2023	45.8	46.2	0.4	45.6	54.4	8.8	45.5	45.7	0.2	46.1	47.0	0.9
2024	49.8	49.3	-0.5	49.6	55.6	6.0	49.4	51.0	1.6	50.1	53.9	3.8
2025	54.2	55.3	1.1	53.9	58.0	4.1	53.7	53.9	0.2	54.5	58.1	3.6
2026	60.2	58.6	-1.6	59.9	60.5	0.6	59.6	59.6	0.0	60.5	60.5	0.0
2027	60.2	60.8	0.5	59.9	60.7	0.8	59.6	60.2	0.6	60.5	61.0	0.5
2028	60.1	60.8	0.6	59.9	61.3	1.4	59.6	60.4	0.8	60.5	61.6	1.1
2029	60.1	60.7	0.6	59.9	61.4	1.5	59.6	60.5	0.9	60.5	61.6	1.1

**Table A-18-11 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5,
Part 3 of 5**

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	42.1	35.7	-6.4	43.9	38.8	-5.2	46.5	42.8	-3.7	43.2	42.0	-1.2
2021	42.7	36.9	-5.8	44.6	41.3	-3.3	47.2	44.3	-2.9	43.9	43.4	-0.5
2022	43.3	37.0	-6.3	45.2	43.1	-2.1	48.0	44.7	-3.3	44.5	45.5	1.1
2023	44.0	39.5	-4.5	45.9	48.4	2.4	48.8	45.0	-3.8	45.1	48.3	3.2
2024	47.8	47.3	-0.5	50.0	50.9	1.0	53.1	45.2	-7.9	49.1	54.2	5.1
2025	52.0	47.3	-4.7	54.3	57.9	3.6	57.7	63.9	6.2	53.4	58.4	5.1
2026	57.8	47.3	-10.5	60.3	60.5	0.2	64.1	64.1	0.0	59.3	58.8	-0.5
2027	57.8	49.5	-8.3	60.3	60.5	0.2	64.1	64.1	0.0	59.3	59.5	0.2
2028	57.8	49.5	-8.3	60.3	60.5	0.2	64.1	64.2	0.1	59.3	61.0	1.7
2029	57.8	53.5	-4.3	60.3	60.5	0.3	64.2	64.3	0.1	59.3	61.4	2.1

**Table A-18-12 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5,
Part 4 of 5**

Model Year	Subaru			Tesla			Toyota			Volvo		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	44.9	38.1	-6.8	40.9	731.7	690.8	43.6	45.9	2.3	40.9	35.7	-5.2
2021	45.5	40.1	-5.4	40.8	752.4	711.6	44.3	47.1	2.8	41.5	36.4	-5.1
2022	46.2	46.1	-0.1	41.4	754.5	713.1	45.0	49.1	4.2	42.2	36.5	-5.7
2023	46.9	47.9	1.0	42.1	755.8	713.7	45.6	50.4	4.7	42.8	40.7	-2.1
2024	51.0	52.0	1.0	45.7	756.5	710.8	49.7	57.5	7.8	46.5	41.0	-5.5
2025	55.5	52.3	-3.2	49.7	756.4	706.7	53.9	58.5	4.6	50.5	42.5	-8.0
2026	61.6	61.6	0.0	55.2	756.7	701.5	59.9	60.0	0.0	56.1	45.5	-10.7
2027	61.6	61.6	0.0	55.2	756.8	701.6	59.9	60.8	0.8	56.1	56.1	0.0
2028	61.6	61.6	0.0	55.2	757.4	702.2	59.9	61.0	1.0	56.1	56.2	0.1
2029	61.6	61.6	0.0	55.2	757.9	702.7	59.9	61.0	1.1	56.1	56.3	0.2

**Table A-18-13 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2.5,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	43.6	38.0	-5.5	43.3	41.8	-1.4
2021	44.3	38.7	-5.6	43.9	43.7	-0.2
2022	45.0	40.7	-4.3	44.6	46.9	2.3
2023	45.7	43.6	-2.1	45.2	50.0	4.8
2024	49.7	54.3	4.6	49.2	54.7	5.5
2025	54.0	55.6	1.7	53.4	57.9	4.5
2026	60.0	57.4	-2.6	59.4	60.9	1.5
2027	60.0	57.5	-2.5	59.4	61.8	2.5
2028	60.0	60.3	0.3	59.3	62.5	3.1
2029	60.0	60.7	0.7	59.3	62.6	3.2

**Table A-18-14 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5,
Part 1 of 5**

Model Year	BMW			Daimler			FCA			Ford		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	31.7	31.3	-0.4	31.7	29.9	-1.8	30.1	28.0	-2.1	29.2	29.8	0.6
2021	32.2	32.9	0.7	32.2	31.0	-1.2	30.5	28.2	-2.3	29.7	31.7	2.0
2022	32.6	35.3	2.7	32.6	31.3	-1.3	31.0	30.7	-0.3	30.1	32.7	2.6
2023	33.1	39.2	6.1	33.1	34.1	1.0	31.5	32.6	1.1	30.6	34.5	3.9
2024	36.0	40.0	4.0	36.0	34.2	-1.8	34.2	32.8	-1.4	33.1	35.8	2.7
2025	39.2	40.2	1.0	39.2	35.6	-3.6	37.2	32.8	-4.4	36.0	36.0	0.0
2026	43.5	40.2	-3.3	43.5	36.9	-6.6	41.3	33.7	-7.6	40.0	40.0	0.0
2027	43.5	43.5	0.0	43.5	37.4	-6.1	41.3	35.0	-6.3	40.0	40.1	0.1
2028	43.5	43.6	0.1	43.5	37.4	-6.1	41.3	36.0	-5.3	40.0	40.2	0.2
2029	43.5	43.6	0.1	43.5	37.6	-5.9	41.3	36.4	-4.9	40.0	40.2	0.2

**Table A-18-15 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5,
Part 2 of 5**

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	29.1	27.8	-1.3	33.3	35.1	1.8	31.3	29.5	-1.8	32.8	30.6	-2.2
2021	29.5	29.4	-0.1	33.8	35.7	1.9	31.7	29.5	-2.2	33.3	34.3	1.0
2022	30.0	30.4	0.4	34.3	39.1	4.8	32.2	29.5	-2.7	33.9	34.4	0.5
2023	30.4	30.8	0.4	34.8	40.3	5.5	32.7	32.3	-0.4	34.4	34.7	0.3
2024	32.7	33.0	0.3	37.8	43.4	5.6	35.5	32.4	-3.1	37.4	44.8	7.4
2025	35.6	35.6	0.0	41.1	45.7	4.6	38.6	32.5	-6.1	40.6	44.9	4.3
2026	39.5	39.6	0.1	45.7	45.7	0.0	42.9	42.9	0.0	45.1	45.1	0.0
2027	39.5	40.1	0.6	45.7	45.7	0.0	42.9	43.0	0.1	45.1	46.4	1.3
2028	39.5	40.2	0.7	45.7	45.7	0.0	42.9	43.0	0.1	45.1	46.4	1.3
2029	39.5	40.9	1.4	45.7	46.2	0.5	42.9	43.0	0.1	45.1	46.4	1.3

**Table A-18-16 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5,
Part 3 of 5**

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	32.3	28.7	-3.6	34.8	34.7	-0.1	36.8	36.8	0.0	32.5	31.0	-1.5
2021	32.8	29.8	-3.0	35.3	35.0	-0.3	37.3	36.8	-0.5	33.0	34.3	1.3
2022	33.3	31.3	-2.0	35.8	35.1	-0.7	37.9	36.8	-1.1	33.5	36.1	2.6
2023	33.8	34.8	1.0	36.4	39.8	3.4	38.5	36.8	-1.7	34.0	38.8	4.8
2024	36.8	36.8	0.0	39.6	40.2	0.6	41.8	36.8	-5.0	37.0	39.8	2.8
2025	40.0	38.3	-1.7	43.0	45.6	2.6	45.4	50.5	5.1	40.2	40.9	0.7
2026	44.4	42.0	-2.4	47.8	51.1	3.3	50.5	50.5	0.0	44.7	43.2	-1.5
2027	44.4	43.0	-1.4	47.8	51.1	3.3	50.5	50.5	0.0	44.7	43.8	-0.9
2028	44.4	43.0	-1.4	47.8	51.1	3.3	50.5	50.5	0.0	44.7	44.7	0.0
2029	44.4	44.4	0.0	47.8	51.1	3.3	50.5	50.5	0.0	44.7	45.4	0.7

**Table A-18-17 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5,
Part 4 of 5**

Model Year	Subaru			Tesla			Toyota			Volvo		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	35.4	39.6	4.2	30.6	477.8	447.2	31.8	29.8	-2.0	32.5	32.3	-0.2
2021	35.9	40.1	4.2	31.1	483.0	451.9	32.3	31.0	-1.3	33.0	32.4	-0.6
2022	36.4	42.0	5.6	31.6	510.7	479.1	32.7	32.7	0.0	33.5	32.6	-0.9
2023	37.0	46.4	9.4	32.0	625.8	593.8	33.2	37.1	3.9	34.0	43.2	9.2
2024	40.2	48.7	8.5	34.8	673.2	638.4	36.1	39.1	3.0	36.9	43.4	6.5
2025	43.7	50.7	7.0	37.8	728.4	690.6	39.3	39.3	0.0	40.2	44.5	4.3
2026	48.6	51.0	2.4	42.1	728.4	686.3	43.6	44.3	0.7	44.6	44.7	0.1
2027	48.6	51.2	2.6	42.1	728.4	686.3	43.6	44.3	0.7	44.6	46.5	1.9
2028	48.6	51.2	2.6	42.1	728.4	686.3	43.6	45.1	1.5	44.6	46.5	1.9
2029	48.6	51.3	2.7	42.1	728.4	686.3	43.6	45.1	1.5	44.6	46.5	1.9

**Table A-18-18 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2.5,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	33.5	30.7	-2.8	31.0	30.2	-0.8
2021	34.1	32.5	-1.6	31.5	31.5	0.0
2022	34.6	34.1	-0.5	31.9	33.0	1.1
2023	35.1	35.2	0.1	32.4	35.0	2.6
2024	38.2	38.2	0.0	35.1	36.8	1.6
2025	41.5	41.4	-0.1	38.2	38.0	-0.2
2026	46.1	43.1	-3.0	42.4	40.7	-1.7
2027	46.1	44.8	-1.3	42.4	41.4	-1.1
2028	46.1	44.8	-1.3	42.4	41.8	-0.7
2029	46.1	44.8	-1.3	42.4	42.1	-0.4

**Table A-18-19 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2.5,
Part 1 of 5**

Model Year	BMW			Daimler			FCA			Ford		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	40.9	29.9	-11.0	41.9	36.8	-5.1
2021	0.0	0.0	0.0	0.0	0.0	0.0	41.3	39.4	-1.9	42.5	37.3	-5.2
2022	0.0	0.0	0.0	0.0	0.0	0.0	41.8	39.7	-2.1	43.2	44.2	1.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	42.3	43.8	1.5	43.8	56.0	12.2
2024	0.0	0.0	0.0	0.0	0.0	0.0	46.0	44.9	-1.1	47.6	56.0	8.4
2025	0.0	0.0	0.0	0.0	0.0	0.0	50.0	45.1	-4.9	51.8	57.5	5.7
2026	0.0	0.0	0.0	0.0	0.0	0.0	55.5	55.5	0.0	57.5	58.8	1.3
2027	0.0	0.0	0.0	0.0	0.0	0.0	55.5	55.5	0.0	57.5	59.0	1.5
2028	0.0	0.0	0.0	0.0	0.0	0.0	55.5	55.8	0.3	57.5	59.0	1.5
2029	0.0	0.0	0.0	0.0	0.0	0.0	55.4	55.8	0.4	57.5	58.9	1.4

**Table A-18-20 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2.5,
Part 2 of 5**

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	42.9	40.1	-2.8	43.2	44.7	1.5	47.3	52.9	5.6	0.0	0.0	0.0
2021	43.5	40.3	-3.2	43.9	45.8	1.9	48.0	52.9	4.9	0.0	0.0	0.0
2022	44.2	42.8	-1.4	44.6	48.2	3.6	48.7	53.2	4.5	0.0	0.0	0.0
2023	44.8	45.4	0.6	45.2	54.8	9.6	49.5	64.7	15.2	0.0	0.0	0.0
2024	48.7	48.7	0.0	49.2	56.3	7.1	53.8	64.9	11.1	0.0	0.0	0.0
2025	53.0	56.8	3.8	53.5	58.0	4.5	58.4	65.2	6.8	0.0	0.0	0.0
2026	58.9	59.5	0.6	59.4	61.1	1.7	64.9	65.4	0.5	0.0	0.0	0.0
2027	58.9	59.6	0.7	59.4	61.1	1.7	64.9	65.9	1.0	0.0	0.0	0.0
2028	58.8	59.6	0.8	59.4	61.1	1.7	64.9	65.9	1.0	0.0	0.0	0.0
2029	58.8	59.5	0.7	59.4	61.2	1.8	64.9	65.9	1.0	0.0	0.0	0.0

**Table A-18-21 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2.5,
Part 3 of 5**

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	0.0	0.0	0.0	45.0	38.7	-6.3	0.0	0.0	0.0	43.0	43.5	0.5
2021	0.0	0.0	0.0	45.7	38.9	-6.8	0.0	0.0	0.0	43.7	43.8	0.1
2022	0.0	0.0	0.0	46.4	39.2	-7.2	0.0	0.0	0.0	44.3	45.7	1.4
2023	0.0	0.0	0.0	47.1	44.4	-2.7	0.0	0.0	0.0	45.0	46.9	1.9
2024	0.0	0.0	0.0	51.2	44.7	-6.5	0.0	0.0	0.0	48.9	53.3	4.4
2025	0.0	0.0	0.0	55.6	63.3	7.7	0.0	0.0	0.0	53.2	58.8	5.6
2026	0.0	0.0	0.0	61.8	63.6	1.8	0.0	0.0	0.0	59.1	59.1	0.0
2027	0.0	0.0	0.0	61.8	63.6	1.8	0.0	0.0	0.0	59.1	59.4	0.3
2028	0.0	0.0	0.0	61.8	63.6	1.8	0.0	0.0	0.0	59.1	61.4	2.3
2029	0.0	0.0	0.0	61.8	63.6	1.8	0.0	0.0	0.0	59.1	61.5	2.4

**Table A-18-22 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2.5,
Part 4 of 5**

Model Year	Subaru			Tesla			Toyota			Volvo		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	0.0	0.0	0.0	40.9	731.7	690.8	42.1	43.7	1.6	41.0	36.4	-4.6
2021	0.0	0.0	0.0	40.8	752.4	711.6	42.8	45.7	2.9	41.6	36.4	-5.2
2022	0.0	0.0	0.0	41.4	754.5	713.1	43.4	46.0	2.6	42.3	36.4	-5.9
2023	0.0	0.0	0.0	42.1	755.8	713.7	44.1	48.6	4.5	42.9	40.6	-2.3
2024	0.0	0.0	0.0	45.7	756.5	710.8	47.9	55.6	7.7	46.7	40.9	-5.8
2025	0.0	0.0	0.0	49.7	756.4	706.7	52.1	57.6	5.5	50.7	42.8	-7.9
2026	0.0	0.0	0.0	55.2	756.7	701.5	57.9	58.0	0.1	56.3	42.9	-13.4
2027	0.0	0.0	0.0	55.2	756.8	701.6	57.9	59.0	1.1	56.3	56.3	0.0
2028	0.0	0.0	0.0	55.2	757.4	702.2	57.9	59.0	1.1	56.3	56.3	0.0
2029	0.0	0.0	0.0	55.2	757.9	702.7	57.9	59.0	1.1	56.3	56.3	0.0

**Table A-18-23 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2.5,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	41.2	34.3	-6.9	42.5	43.3	0.8
2021	41.9	34.5	-7.4	43.1	45.0	1.9
2022	42.7	34.8	-7.9	43.7	48.0	4.2
2023	43.4	36.1	-7.3	44.4	52.9	8.5
2024	47.2	42.4	-4.8	48.2	56.5	8.3
2025	51.3	42.5	-8.8	52.5	60.5	8.0
2026	57.0	45.0	-12.0	58.3	63.2	4.9
2027	57.0	45.0	-12.0	58.3	63.5	5.2
2028	57.0	57.1	0.1	58.3	64.2	5.9
2029	57.1	57.2	0.1	58.3	64.2	6.0

**Table A-18-24 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2.5,
Part 1 of 5**

Model Year	BMW			Daimler			FCA			Ford		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	42.5	36.7	-5.8	41.4	33.9	-7.5	44.8	34.4	-10.4	48.0	38.8	-9.2
2021	43.1	40.1	-3.0	42.0	37.3	-4.7	45.5	37.0	-8.5	48.7	38.9	-9.8
2022	43.8	43.8	0.0	42.7	38.9	-3.8	46.1	48.7	2.6	49.5	39.1	-10.4
2023	44.4	46.1	1.7	43.3	40.0	-3.3	46.7	48.9	2.2	50.2	79.1	28.9
2024	48.3	48.4	0.1	47.1	47.3	0.2	50.8	52.2	1.4	54.6	79.1	24.5
2025	52.5	54.8	2.3	51.2	48.9	-2.3	55.2	52.3	-2.9	59.3	79.1	19.8
2026	58.3	58.3	0.0	56.8	49.2	-7.6	61.3	54.3	-7.0	65.9	79.1	13.2
2027	58.3	58.4	0.1	56.8	53.8	-3.0	61.3	61.3	0.0	65.9	79.1	13.2
2028	58.3	58.4	0.1	56.8	56.8	0.0	61.3	61.8	0.5	65.9	79.1	13.2
2029	58.3	58.7	0.4	56.8	56.8	0.0	61.3	61.9	0.6	65.9	79.1	13.2

**Table A-18-25 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2.5,
Part 2 of 5**

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	46.8	40.8	-6.0	45.4	46.5	1.1	43.2	39.0	-4.2	44.0	41.9	-2.1
2021	47.5	42.1	-5.4	46.1	47.0	0.9	43.9	40.5	-3.4	44.7	45.7	1.0
2022	48.3	47.9	-0.4	46.8	52.2	5.4	44.6	44.2	-0.4	45.4	46.8	1.4
2023	49.1	48.7	-0.4	47.5	52.6	5.1	45.3	45.1	-0.2	46.1	47.0	0.9
2024	53.3	51.1	-2.2	51.6	52.9	1.3	49.2	50.5	1.3	50.1	53.9	3.8
2025	58.0	51.5	-6.5	56.0	58.0	2.0	53.5	53.5	0.0	54.5	58.1	3.6
2026	64.4	56.1	-8.3	62.3	58.1	-4.2	59.4	59.4	0.0	60.5	60.5	0.0
2027	64.4	64.4	0.0	62.3	58.9	-3.4	59.4	60.0	0.6	60.5	61.0	0.5
2028	64.4	64.5	0.1	62.3	62.3	0.0	59.4	60.2	0.8	60.5	61.6	1.1
2029	64.4	64.5	0.1	62.2	62.4	0.2	59.4	60.3	0.9	60.5	61.6	1.1

**Table A-18-26 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2.5,
Part 3 of 5**

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	42.1	35.7	-6.4	43.8	38.8	-5.0	46.5	42.8	-3.7	43.6	38.4	-5.2
2021	42.7	36.9	-5.8	44.4	41.6	-2.8	47.2	44.3	-2.9	44.3	42.3	-2.0
2022	43.3	37.0	-6.3	45.1	43.7	-1.4	48.0	44.7	-3.3	45.0	45.1	0.1
2023	44.0	39.5	-4.5	45.8	48.9	3.1	48.8	45.0	-3.8	45.6	53.1	7.5
2024	47.8	47.3	-0.5	49.8	51.8	2.0	53.1	45.2	-7.9	49.6	57.1	7.5
2025	52.0	47.3	-4.7	54.1	57.3	3.2	57.7	63.9	6.2	53.9	57.4	3.5
2026	57.8	47.3	-10.5	60.1	60.1	0.0	64.1	64.1	0.0	59.9	57.9	-2.0
2027	57.8	49.5	-8.3	60.1	60.1	0.0	64.1	64.1	0.0	59.9	59.7	-0.2
2028	57.8	49.5	-8.3	60.1	60.1	0.0	64.1	64.2	0.1	59.9	59.9	0.0
2029	57.8	53.5	-4.3	60.1	60.2	0.1	64.2	64.3	0.1	59.9	60.9	1.0

**Table A-18-27 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2.5,
Part 4 of 5**

Model Year	Subaru			Tesla			Toyota			Volvo		
	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference	Required	Achieved	Difference
2020	44.9	38.1	-6.8	0.0	0.0	0.0	44.2	46.8	2.6	40.8	35.1	-5.7
2021	45.5	40.1	-5.4	0.0	0.0	0.0	44.9	47.6	2.7	41.4	36.4	-5.0
2022	46.2	46.1	-0.1	0.0	0.0	0.0	45.6	50.5	4.9	42.0	36.6	-5.4
2023	46.9	47.9	1.0	0.0	0.0	0.0	46.3	51.1	4.8	42.6	40.8	-1.8
2024	51.0	52.0	1.0	0.0	0.0	0.0	50.4	58.3	7.9	46.3	41.1	-5.2
2025	55.5	52.3	-3.2	0.0	0.0	0.0	54.7	58.9	4.2	50.3	42.1	-8.2
2026	61.6	61.6	0.0	0.0	0.0	0.0	60.8	60.8	0.0	55.9	48.7	-7.2
2027	61.6	61.6	0.0	0.0	0.0	0.0	60.8	61.5	0.7	55.9	55.9	0.0
2028	61.6	61.6	0.0	0.0	0.0	0.0	60.8	61.8	1.0	55.9	56.1	0.2
2029	61.6	61.6	0.0	0.0	0.0	0.0	60.8	61.9	1.1	55.9	56.3	0.4

**Table A-18-28 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2.5,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	44.1	38.9	-5.2	44.0	40.6	-3.4
2021	44.8	39.6	-5.2	44.6	42.7	-2.0
2022	45.5	42.1	-3.4	45.3	45.9	0.6
2023	46.2	45.4	-0.8	46.0	47.7	1.7
2024	50.2	57.4	7.2	50.0	53.1	3.1
2025	54.5	59.1	4.6	54.4	55.8	1.4
2026	60.6	60.6	0.0	60.4	59.0	-1.4
2027	60.6	60.7	0.1	60.4	60.4	0.0
2028	60.6	60.9	0.3	60.4	61.0	0.6
2029	60.6	61.4	0.8	60.4	61.1	0.8

19. Regulatory Costs, Comparison

Table A-19-1 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	2.6	2.6	0.0
2021	5.0	5.0	0.0
2022	9.4	9.4	0.0
2023	13.2	17.3	4.1
2024	16.0	24.9	8.9
2025	17.5	30.7	13.2
2026	18.7	38.3	19.5
2027	18.5	36.9	18.4
2028	18.1	36.3	18.2
2029	17.8	35.0	17.3

Table A-19-2 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	1.5	1.5	0.0
2021	2.4	2.4	0.0
2022	4.5	4.5	0.0
2023	5.4	8.3	2.9
2024	6.6	12.1	5.5
2025	7.6	15.1	7.5
2026	8.2	17.7	9.5
2027	8.1	17.1	9.0
2028	7.9	16.8	8.9
2029	7.8	16.2	8.4

Table A-19-3 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	1.2	1.2	0.0
2021	2.7	2.7	0.0
2022	5.0	5.0	0.0
2023	7.9	9.0	1.1
2024	9.4	12.8	3.4
2025	9.9	15.5	5.6
2026	10.5	20.5	10.0
2027	10.4	19.8	9.4
2028	10.2	19.5	9.3
2029	10.0	18.8	8.8

Table A-19-4 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.2	0.2	0.0	0.6	0.6	0.0	0.2	0.2	0.0
2021	0.3	0.3	0.0	0.2	0.2	0.0	0.6	0.6	0.0	1.1	1.1	0.0
2022	0.3	0.3	0.0	0.4	0.4	0.0	1.6	1.6	0.0	1.9	1.9	0.0
2023	0.5	0.5	0.0	0.4	0.4	0.0	2.5	2.5	0.0	2.8	3.8	1.0
2024	0.6	0.6	0.0	0.6	0.7	0.2	2.6	2.8	0.3	3.1	3.9	0.8
2025	0.6	0.8	0.2	0.7	1.0	0.3	2.5	3.5	1.0	3.0	3.8	0.9
2026	0.7	1.0	0.3	0.7	1.3	0.6	2.5	4.5	2.0	3.2	5.2	2.1
2027	0.7	1.0	0.2	0.7	1.2	0.5	2.5	4.2	1.6	3.1	5.1	2.0
2028	0.7	0.9	0.2	0.7	1.2	0.4	2.6	4.4	1.8	2.9	4.8	1.9
2029	0.7	0.9	0.2	0.7	1.1	0.4	2.5	4.2	1.7	2.8	4.6	1.8

Table A-19-5 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.6	0.6	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.1	0.1	0.0
2021	1.1	1.1	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.2	0.2	0.0
2022	1.4	1.4	0.0	0.5	0.5	0.0	0.4	0.4	0.0	0.3	0.3	0.0
2023	2.0	2.0	0.1	0.8	1.6	0.7	0.5	0.5	0.0	0.3	0.3	0.0
2024	2.2	3.5	1.3	1.1	2.1	1.1	0.6	0.9	0.3	0.5	1.1	0.7
2025	2.6	5.8	3.2	1.7	2.9	1.1	0.6	1.3	0.7	0.4	1.3	0.8
2026	2.6	7.8	5.2	2.0	3.3	1.3	0.7	2.1	1.4	0.5	1.4	0.9
2027	2.5	7.6	5.1	2.0	3.1	1.1	0.7	2.1	1.4	0.5	1.4	0.9
2028	2.4	7.3	4.9	1.9	3.0	1.1	0.7	2.0	1.4	0.5	1.4	0.9
2029	2.4	7.1	4.6	1.8	2.9	1.0	0.7	2.0	1.3	0.5	1.4	0.9

Table A-19-6 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2021	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0
2022	0.1	0.1	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.5	0.5	0.0
2023	0.1	0.2	0.0	0.4	0.4	0.0	0.1	0.1	0.0	0.5	1.6	1.1
2024	0.2	0.2	0.1	0.4	0.5	0.0	0.1	0.1	0.1	0.8	2.9	2.1
2025	0.2	0.3	0.1	0.5	0.7	0.2	0.1	0.2	0.2	0.9	3.3	2.4
2026	0.2	0.4	0.3	0.5	0.8	0.3	0.1	0.2	0.2	0.9	3.5	2.6
2027	0.2	0.4	0.2	0.5	0.8	0.3	0.1	0.2	0.1	0.9	3.4	2.4
2028	0.2	0.4	0.2	0.5	0.8	0.3	0.1	0.2	0.1	0.9	3.4	2.4
2029	0.2	0.4	0.2	0.4	0.7	0.3	0.0	0.2	0.1	0.9	3.3	2.4

Table A-19-7 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
2021	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0
2022	0.3	0.3	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.1	0.1	0.0
2023	0.6	0.8	0.2	0.0	0.0	0.0	1.0	1.8	0.8	0.2	0.3	0.0
2024	0.7	1.0	0.3	0.0	0.0	0.0	1.5	3.1	1.6	0.2	0.3	0.0
2025	0.8	1.2	0.4	0.0	0.0	0.0	1.6	3.2	1.6	0.2	0.3	0.1
2026	0.9	1.3	0.4	0.0	0.0	0.0	2.0	3.7	1.7	0.2	0.4	0.1
2027	0.9	1.3	0.4	0.0	0.0	0.0	1.9	3.6	1.7	0.3	0.4	0.1
2028	0.8	1.3	0.4	0.0	0.0	0.0	1.9	3.6	1.7	0.2	0.4	0.1
2029	0.8	1.2	0.4	0.0	0.0	0.0	1.9	3.5	1.6	0.2	0.3	0.1

Table A-19-8 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.2	0.2	0.0	2.6	2.6	0.0
2021	0.1	0.1	0.0	5.0	5.0	0.0
2022	0.4	0.4	0.0	9.4	9.4	0.0
2023	0.5	0.5	0.0	13.2	17.3	4.1
2024	1.1	1.1	0.0	16.0	24.9	8.9
2025	1.2	1.2	0.1	17.5	30.7	13.2
2026	1.2	1.4	0.2	18.7	38.3	19.5
2027	1.1	1.3	0.2	18.5	36.9	18.4
2028	1.1	1.3	0.2	18.1	36.3	18.2
2029	1.1	1.2	0.2	17.8	35.0	17.3

Table A-19-9 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.0
2021	0.2	0.2	0.0	0.2	0.2	0.0	0.5	0.5	0.0	0.3	0.3	0.0
2022	0.3	0.3	0.0	0.3	0.3	0.0	0.6	0.6	0.0	0.7	0.7	0.0
2023	0.3	0.3	0.0	0.3	0.3	0.0	0.6	0.7	0.1	1.0	2.0	1.0
2024	0.4	0.4	0.0	0.5	0.6	0.1	0.7	0.8	0.1	0.9	1.8	0.9
2025	0.5	0.6	0.1	0.5	0.7	0.2	0.6	0.9	0.2	0.9	1.8	0.9
2026	0.6	0.8	0.2	0.5	0.8	0.3	0.7	1.2	0.5	0.9	1.7	0.8
2027	0.5	0.7	0.2	0.5	0.8	0.3	0.6	1.1	0.4	0.9	1.6	0.7
2028	0.5	0.7	0.1	0.5	0.8	0.3	0.7	1.1	0.4	0.9	1.5	0.7
2029	0.5	0.7	0.1	0.5	0.8	0.3	0.6	1.0	0.4	0.8	1.4	0.6

Table A-19-10 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.3	0.3	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.1	0.1	0.0
2021	0.1	0.1	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.1	0.1	0.0
2022	0.4	0.4	0.0	0.3	0.3	0.0	0.4	0.4	0.0	0.1	0.1	0.0
2023	0.6	0.6	0.1	0.4	1.0	0.7	0.4	0.4	0.0	0.1	0.1	0.0
2024	0.6	1.1	0.5	0.4	1.1	0.7	0.5	0.8	0.3	0.2	0.5	0.3
2025	1.0	2.0	1.0	0.8	1.6	0.8	0.5	1.2	0.7	0.2	0.7	0.5
2026	0.9	2.4	1.5	1.1	2.0	0.9	0.5	1.8	1.3	0.2	0.8	0.6
2027	0.9	2.4	1.5	1.1	1.9	0.8	0.6	1.8	1.2	0.3	0.8	0.6
2028	0.9	2.3	1.4	1.1	1.9	0.8	0.6	1.8	1.2	0.3	0.8	0.6
2029	0.8	2.2	1.3	1.0	1.8	0.8	0.6	1.8	1.2	0.3	0.8	0.6

Table A-19-11 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2021	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.2	0.2	0.0
2022	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.2	0.2	0.0
2023	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.3	1.2	0.9
2024	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.1	0.0	0.4	2.1	1.6
2025	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.5	2.4	1.9
2026	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.6	2.5	2.0
2027	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.5	2.4	1.8
2028	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.5	2.4	1.9
2029	0.0	0.0	0.0	0.3	0.5	0.1	0.0	0.1	0.1	0.5	2.3	1.8

Table A-19-12 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
2022	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
2023	0.3	0.3	0.0	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.0	0.0
2024	0.3	0.4	0.1	0.0	0.0	0.0	0.6	1.4	0.7	0.0	0.0	0.0
2025	0.3	0.4	0.2	0.0	0.0	0.0	0.7	1.5	0.8	0.0	0.1	0.0
2026	0.3	0.6	0.3	0.0	0.0	0.0	0.8	1.6	0.8	0.1	0.2	0.1
2027	0.3	0.6	0.3	0.0	0.0	0.0	0.8	1.6	0.8	0.1	0.2	0.1
2028	0.3	0.6	0.3	0.0	0.0	0.0	0.8	1.6	0.8	0.1	0.2	0.1
2029	0.3	0.5	0.3	0.0	0.0	0.0	0.8	1.6	0.8	0.1	0.2	0.1

Table A-19-13 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.1	0.1	0.0	1.5	1.5	0.0
2021	0.0	0.0	0.0	2.4	2.4	0.0
2022	0.2	0.2	0.0	4.5	4.5	0.0
2023	0.2	0.2	0.0	5.4	8.3	2.9
2024	0.6	0.6	0.0	6.6	12.1	5.5
2025	0.6	0.6	0.0	7.6	15.1	7.5
2026	0.6	0.7	0.1	8.2	17.7	9.5
2027	0.6	0.6	0.0	8.1	17.1	9.0
2028	0.6	0.6	0.0	7.9	16.8	8.9
2029	0.5	0.6	0.0	7.8	16.2	8.4

Table A-19-14 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.1	0.1	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.9	0.9	0.0
2022	0.1	0.1	0.0	0.1	0.1	0.0	1.0	1.0	0.0	1.2	1.2	0.0
2023	0.2	0.2	0.0	0.1	0.1	0.0	1.9	1.9	0.0	1.8	1.8	-0.1
2024	0.2	0.2	0.0	0.1	0.1	0.0	1.9	2.1	0.2	2.2	2.1	-0.1
2025	0.2	0.2	0.0	0.2	0.3	0.1	1.8	2.6	0.8	2.1	2.0	-0.1
2026	0.2	0.2	0.0	0.2	0.4	0.2	1.8	3.3	1.4	2.2	3.5	1.3
2027	0.2	0.3	0.1	0.2	0.4	0.1	1.9	3.1	1.2	2.1	3.4	1.3
2028	0.2	0.2	0.1	0.2	0.4	0.1	1.9	3.3	1.4	2.1	3.3	1.2
2029	0.2	0.2	0.1	0.2	0.4	0.1	1.9	3.2	1.3	2.0	3.2	1.2

Table A-19-15 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2022	1.0	1.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2023	1.4	1.4	0.0	0.5	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.0
2024	1.5	2.4	0.9	0.7	1.0	0.3	0.0	0.0	0.0	0.2	0.6	0.4
2025	1.6	3.8	2.2	1.0	1.3	0.3	0.0	0.1	0.0	0.2	0.6	0.4
2026	1.6	5.4	3.8	0.9	1.2	0.3	0.1	0.3	0.1	0.2	0.6	0.4
2027	1.6	5.2	3.6	0.9	1.2	0.3	0.1	0.3	0.1	0.2	0.6	0.4
2028	1.5	5.0	3.5	0.8	1.1	0.3	0.1	0.2	0.1	0.2	0.6	0.3
2029	1.6	4.9	3.3	0.8	1.1	0.3	0.1	0.2	0.1	0.2	0.6	0.3

Table A-19-16 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0
2022	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0
2023	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.2
2024	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.3	0.8	0.5
2025	0.2	0.3	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.8	0.5
2026	0.2	0.4	0.3	0.1	0.3	0.2	0.0	0.1	0.1	0.4	1.0	0.6
2027	0.2	0.4	0.2	0.1	0.3	0.2	0.0	0.1	0.1	0.4	1.0	0.6
2028	0.2	0.4	0.2	0.1	0.3	0.2	0.0	0.1	0.1	0.4	1.0	0.6
2029	0.2	0.4	0.2	0.1	0.3	0.2	0.0	0.1	0.1	0.4	0.9	0.6

Table A-19-17 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0
2022	0.1	0.1	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
2023	0.3	0.5	0.2	0.0	0.0	0.0	0.6	1.3	0.7	0.2	0.2	0.0
2024	0.4	0.6	0.2	0.0	0.0	0.0	0.8	1.7	0.9	0.2	0.2	0.0
2025	0.5	0.7	0.2	0.0	0.0	0.0	0.9	1.7	0.8	0.2	0.2	0.0
2026	0.6	0.7	0.2	0.0	0.0	0.0	1.2	2.1	0.9	0.2	0.2	0.1
2027	0.6	0.7	0.2	0.0	0.0	0.0	1.1	2.0	0.9	0.2	0.2	0.0
2028	0.6	0.7	0.2	0.0	0.0	0.0	1.1	2.0	0.9	0.2	0.2	0.0
2029	0.5	0.7	0.1	0.0	0.0	0.0	1.1	1.9	0.8	0.2	0.2	0.0

Table A-19-18 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	0.1	0.1	0.0	1.2	1.2	0.0
2021	0.1	0.1	0.0	2.7	2.7	0.0
2022	0.2	0.2	0.0	5.0	5.0	0.0
2023	0.3	0.3	0.0	7.9	9.0	1.1
2024	0.6	0.6	0.0	9.4	12.8	3.4
2025	0.6	0.7	0.1	9.9	15.5	5.6
2026	0.6	0.8	0.2	10.5	20.5	10.0
2027	0.6	0.7	0.2	10.4	19.8	9.4
2028	0.6	0.7	0.1	10.2	19.5	9.3
2029	0.5	0.7	0.1	10.0	18.8	8.8

20. Vehicle Price Increase

Table A-20-1 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	194	194	0
2021	311	311	0
2022	544	544	0
2023	776	1,016	240
2024	957	1,493	536
2025	1,064	1,876	812
2026	1,144	2,360	1,216
2027	1,135	2,281	1,146
2028	1,116	2,254	1,138
2029	1,100	2,187	1,087

Table A-20-2 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	250	250	0
2021	328	328	0
2022	560	560	0
2023	667	1,031	365
2024	827	1,528	701
2025	956	1,952	995
2026	1,029	2,294	1,265
2027	1,012	2,212	1,200
2028	983	2,167	1,183
2029	960	2,084	1,124

Table A-20-3 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	150	150	0
2021	297	297	0
2022	531	531	0
2023	873	1,002	129
2024	1,075	1,461	386
2025	1,165	1,808	644
2026	1,254	2,420	1,167
2027	1,255	2,344	1,090
2028	1,248	2,335	1,087
2029	1,240	2,283	1,043

Table A-20-4 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	75	75	0	422	422	0	392	392	0	137	137	0
2021	742	742	0	494	494	0	345	345	0	574	574	0
2022	878	878	0	808	808	0	882	882	0	925	925	0
2023	1,186	1,307	121	875	943	68	1,400	1,412	13	1,360	1,840	481
2024	1,449	1,553	104	1,218	1,594	376	1,460	1,623	163	1,540	1,952	412
2025	1,701	2,131	430	1,485	2,147	662	1,434	2,017	583	1,529	1,966	437
2026	1,907	2,639	731	1,592	2,882	1,290	1,482	2,629	1,147	1,635	2,709	1,074
2027	1,851	2,572	721	1,671	2,722	1,050	1,501	2,452	952	1,586	2,611	1,025
2028	1,790	2,478	688	1,640	2,684	1,044	1,552	2,609	1,057	1,547	2,521	974
2029	1,745	2,401	656	1,607	2,594	988	1,532	2,543	1,012	1,499	2,415	916

Table A-20-5 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5 Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	276	276	0	0	0	0	521	521	0	211	211	0
2021	397	397	0	64	64	0	317	317	0	305	305	0
2022	502	502	0	313	313	0	403	403	0	331	331	0
2023	695	722	27	501	945	443	492	492	0	361	359	-2
2024	787	1,270	483	656	1,300	643	603	935	333	588	1,459	871
2025	963	2,152	1,189	1,063	1,790	727	637	1,389	751	572	1,676	1,104
2026	962	2,930	1,968	1,226	2,037	811	711	2,282	1,571	599	1,854	1,255
2027	943	2,850	1,907	1,194	1,905	711	759	2,297	1,538	652	1,891	1,239
2028	919	2,776	1,857	1,160	1,869	709	738	2,246	1,508	630	1,877	1,246
2029	937	2,713	1,776	1,127	1,805	678	729	2,190	1,462	607	1,823	1,216

Table A-20-6 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	96	96	0	329	329	0	141	141	0	87	87	0
2021	78	78	0	981	981	0	43	43	0	265	265	0
2022	401	401	0	1,114	1,114	0	104	104	0	349	349	0
2023	812	1,093	282	1,343	1,359	15	417	417	0	409	1,246	838
2024	1,091	1,440	350	1,402	1,552	150	519	972	452	585	2,234	1,648
2025	1,145	1,978	833	1,533	2,281	748	428	1,600	1,173	682	2,575	1,893
2026	1,199	2,875	1,676	1,575	2,655	1,080	421	1,577	1,156	724	2,785	2,061
2027	1,210	2,660	1,450	1,546	2,594	1,047	406	1,548	1,142	717	2,662	1,945
2028	1,182	2,726	1,544	1,513	2,535	1,022	395	1,522	1,127	716	2,669	1,954
2029	1,186	2,637	1,450	1,473	2,472	999	382	1,496	1,113	704	2,590	1,887

Table A-20-7 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	28	28	0	0	0	0	49	49	0	171	171	0
2021	61	61	0	8	8	0	116	116	0	336	336	0
2022	360	360	0	26	26	0	356	356	0	397	397	0
2023	674	857	184	28	28	0	433	793	360	1,688	1,950	262
2024	785	1,093	308	29	29	0	656	1,378	721	1,673	2,036	363
2025	902	1,312	410	33	34	0	715	1,456	741	1,850	2,314	464
2026	968	1,464	495	33	33	0	896	1,687	791	2,032	3,169	1,137
2027	997	1,481	485	32	33	1	872	1,666	794	2,085	3,141	1,055
2028	973	1,451	479	31	32	1	858	1,651	793	2,001	3,020	1,019
2029	950	1,422	473	31	31	1	868	1,601	733	1,916	2,890	974

Table A-20-8 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	363	363	0	194	194	0
2021	253	253	0	311	311	0
2022	673	673	0	544	544	0
2023	906	906	0	776	1,016	240
2024	2,087	2,098	11	957	1,493	536
2025	2,189	2,333	143	1,064	1,876	812
2026	2,197	2,679	482	1,144	2,360	1,216
2027	2,149	2,566	417	1,135	2,281	1,146
2028	2,092	2,438	346	1,116	2,254	1,138
2029	2,032	2,364	332	1,100	2,187	1,087

Table A-20-9 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	99	99	0	644	644	0	970	970	0	284	284	0
2021	945	945	0	868	868	0	1,909	1,909	0	503	503	0
2022	1,008	1,008	0	1,281	1,281	0	2,257	2,257	0	1,246	1,246	0
2023	1,126	1,152	26	1,269	1,290	21	2,291	2,488	197	1,660	3,410	1,750
2024	1,476	1,488	12	1,984	2,517	533	2,419	2,871	452	1,562	3,154	1,591
2025	1,823	2,340	517	2,071	2,906	835	2,345	3,328	984	1,537	3,210	1,674
2026	2,136	3,053	918	2,075	3,610	1,535	2,459	4,496	2,038	1,613	3,055	1,442
2027	2,059	2,782	723	2,090	3,518	1,428	2,363	4,141	1,777	1,549	2,875	1,325
2028	1,978	2,667	689	2,021	3,509	1,488	2,384	4,136	1,753	1,485	2,709	1,223
2029	1,924	2,587	663	1,922	3,320	1,398	2,296	3,958	1,661	1,416	2,522	1,106

Table A-20-10 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	392	392	0	0	0	0	549	549	0	228	228	0
2021	152	152	0	94	94	0	335	335	0	219	219	0
2022	437	437	0	278	278	0	437	437	0	254	254	0
2023	583	660	77	341	1,011	670	497	497	0	266	263	-3
2024	658	1,143	486	400	1,126	726	619	981	362	432	982	550
2025	1,027	2,154	1,127	766	1,619	853	647	1,468	821	427	1,351	924
2026	987	2,601	1,613	1,056	2,025	969	649	2,208	1,560	447	1,618	1,171
2027	952	2,541	1,589	1,032	1,880	848	705	2,233	1,528	504	1,650	1,146
2028	915	2,441	1,527	1,004	1,857	853	685	2,185	1,500	488	1,663	1,176
2029	877	2,345	1,468	977	1,779	802	678	2,131	1,453	469	1,616	1,147

Table A-20-11 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	141	141	0	551	551	0	236	236	0	89	89	0
2021	56	56	0	1,962	1,962	0	92	92	0	178	178	0
2022	62	62	0	2,146	2,146	0	182	182	0	238	238	0
2023	477	629	152	2,259	2,289	30	612	612	0	297	1,296	999
2024	1,293	1,456	163	2,268	2,553	284	730	1,203	473	468	2,232	1,764
2025	1,233	1,773	540	2,436	3,239	803	576	1,725	1,149	555	2,676	2,121
2026	1,180	2,037	856	2,398	3,354	956	565	1,696	1,131	587	2,748	2,162
2027	1,318	1,734	416	2,324	3,251	927	539	1,655	1,116	578	2,616	2,038
2028	1,273	1,946	673	2,246	3,152	907	519	1,617	1,098	572	2,638	2,066
2029	1,228	1,989	761	2,159	3,046	887	496	1,578	1,082	565	2,544	1,979

Table A-20-12 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	88	88	0	0	0	0	34	34	0	327	327	0
2021	210	210	0	8	8	0	72	72	0	780	780	0
2022	1,148	1,148	0	23	23	0	232	232	0	832	832	0
2023	1,224	1,224	0	23	23	0	330	412	82	997	997	0
2024	1,176	1,698	523	23	23	0	487	1,047	560	1,094	1,320	226
2025	1,230	1,977	746	25	25	0	550	1,173	623	1,287	1,683	397
2026	1,296	2,606	1,310	25	25	0	621	1,274	653	1,998	4,571	2,573
2027	1,256	2,535	1,279	24	24	0	600	1,287	687	2,027	5,135	3,108
2028	1,221	2,468	1,247	24	24	0	581	1,266	685	1,967	4,975	3,008
2029	1,185	2,404	1,219	24	24	0	616	1,237	621	1,912	4,808	2,897

Table A-20-13 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	448	448	0	250	250	0
2021	118	118	0	328	328	0
2022	604	604	0	560	560	0
2023	836	835	0	667	1,031	365
2024	2,214	2,248	35	827	1,528	701
2025	2,214	2,319	105	956	1,952	995
2026	2,194	2,614	420	1,029	2,294	1,265
2027	2,124	2,374	250	1,012	2,212	1,200
2028	2,062	2,290	229	983	2,167	1,183
2029	1,994	2,215	221	960	2,084	1,124

Table A-20-14 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	35	35	0	226	226	0	300	300	0	83	83	0
2021	379	379	0	141	141	0	84	84	0	600	600	0
2022	630	630	0	333	333	0	642	642	0	799	799	0
2023	1,306	1,617	311	464	580	116	1,239	1,219	-20	1,238	1,206	-32
2024	1,395	1,686	291	392	610	219	1,283	1,394	112	1,530	1,458	-72
2025	1,444	1,707	264	839	1,339	500	1,263	1,777	514	1,525	1,456	-70
2026	1,411	1,785	374	1,046	2,100	1,053	1,295	2,285	990	1,644	2,566	922
2027	1,390	2,139	749	1,189	1,865	675	1,334	2,141	808	1,601	2,502	901
2028	1,363	2,080	716	1,191	1,776	585	1,388	2,322	935	1,575	2,442	867
2029	1,330	2,001	671	1,227	1,783	556	1,378	2,275	897	1,536	2,369	833

Table A-20-15 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	219	219	0	0	0	0	289	289	0	183	183	0
2021	518	518	0	21	21	0	161	161	0	450	450	0
2022	536	536	0	366	366	0	96	96	0	470	470	0
2023	754	754	0	758	838	80	444	444	0	541	541	0
2024	856	1,337	481	1,080	1,583	503	454	509	54	896	2,385	1,489
2025	928	2,150	1,222	1,567	2,071	504	540	643	103	865	2,307	1,442
2026	948	3,107	2,159	1,522	2,057	535	1,322	2,977	1,655	914	2,315	1,402
2027	938	3,016	2,077	1,481	1,948	467	1,292	2,900	1,608	962	2,363	1,401
2028	921	2,957	2,037	1,442	1,890	448	1,266	2,829	1,562	939	2,305	1,366
2029	972	2,915	1,943	1,404	1,849	445	1,239	2,757	1,518	914	2,247	1,333

Table A-20-16 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	94	94	0	122	122	0	62	62	0	83	83	0
2021	79	79	0	31	31	0	0	0	0	469	469	0
2022	418	418	0	72	72	0	35	35	0	623	623	0
2023	830	1,118	289	394	394	0	240	240	0	692	1,121	429
2024	1,079	1,439	360	484	501	17	326	760	434	889	2,237	1,348
2025	1,140	1,989	849	561	1,274	714	289	1,486	1,197	1,018	2,316	1,298
2026	1,200	2,922	1,722	673	1,915	1,243	284	1,467	1,183	1,096	2,881	1,785
2027	1,204	2,712	1,509	685	1,898	1,213	280	1,449	1,170	1,094	2,779	1,685
2028	1,176	2,771	1,594	687	1,872	1,186	275	1,433	1,158	1,116	2,752	1,636
2029	1,184	2,675	1,491	689	1,848	1,160	272	1,418	1,147	1,096	2,713	1,617

Table A-20-17 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	12	12	0	0	0	0	67	67	0	117	117	0
2021	18	18	0	20	20	0	169	169	0	179	179	0
2022	115	115	0	111	111	0	514	514	0	235	235	0
2023	494	737	244	207	207	0	569	1,300	730	1,953	2,316	363
2024	652	890	238	293	293	0	889	1,826	937	1,901	2,314	414
2025	787	1,089	302	368	368	0	948	1,841	893	2,075	2,559	484
2026	850	1,076	226	362	362	0	1,292	2,253	961	2,046	2,620	573
2027	901	1,123	222	357	357	0	1,271	2,187	916	2,109	2,358	249
2028	878	1,096	218	351	351	0	1,275	2,192	917	2,015	2,240	225
2029	858	1,073	215	346	346	0	1,254	2,118	865	1,918	2,116	197

Table A-20-18 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2.5	Difference	Alternative 0 (Baseline)	Alternative 2.5	Difference
2020	301	301	0	150	150	0
2021	358	358	0	297	297	0
2022	731	731	0	531	531	0
2023	967	967	0	873	1,002	129
2024	1,971	1,962	-9	1,075	1,461	386
2025	2,166	2,345	179	1,165	1,808	644
2026	2,200	2,739	538	1,254	2,420	1,167
2027	2,174	2,742	568	1,255	2,344	1,090
2028	2,122	2,577	455	1,248	2,335	1,087
2029	2,072	2,507	435	1,240	2,283	1,043

21. Technology Costs, Price Increase, Sales, and Labor Utilization

Table A-21-1 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Total) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	194	194	0	0%	13.6	13.6	0.0	0.0%	943	943	0.0	0.0%
2021	4	4	0	0%	311	311	0	0%	16.2	16.2	0.0	0.0%	1,128	1,128	0.0	0.0%
2022	8	8	0	0%	544	544	0	0%	17.4	17.4	0.0	0.0%	1,213	1,213	0.0	0.0%
2023	10	14	4	42%	776	1,016	240	31%	17.1	17.0	0.0	-0.2%	1,197	1,199	1.8	0.1%
2024	12	20	8	70%	957	1,493	536	56%	16.7	16.7	-0.1	-0.4%	1,177	1,185	7.2	0.6%
2025	13	24	11	91%	1,064	1,876	812	76%	16.5	16.3	-0.1	-0.7%	1,160	1,170	10.8	0.9%
2026	13	30	17	124%	1,144	2,360	1,216	106%	16.4	16.2	-0.2	-1.0%	1,155	1,171	16.2	1.4%
2027	13	30	17	130%	1,135	2,281	1,146	101%	16.3	16.2	-0.1	-0.9%	1,151	1,170	18.3	1.6%
2028	13	30	17	131%	1,116	2,254	1,138	102%	16.2	16.1	-0.1	-0.9%	1,144	1,163	18.5	1.6%

2029	13	29	16	128%	1,10 0	2,18 7	1,087	99%	16.1	16.0	-0.1	-0.8%	1,13 6	1,15 4	18.2	1.6%
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Table A-21-2 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Total) Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	250	250	0	0%	5.9	5.9	0.0	0.0%	356	356	0.0	0.0%
2021	1	1	0	0%	328	328	0	0%	7.3	7.3	0.0	0.0%	440	440	0.0	0.0%
2022	4	4	0	0%	560	560	0	0%	8.0	8.0	0.0	0.0%	489	489	0.0	0.0%
2023	4	7	3	70%	667	1,031	365	55%	8.0	8.0	0.0	-0.2%	491	494	3.1	0.6%
2024	5	10	5	102%	827	1,528	701	85%	8.0	7.9	-0.1	-1.0%	491	494	2.9	0.6%
2025	6	13	7	123%	956	1,952	995	104%	7.9	7.8	-0.2	-2.3%	490	488	-1.5	-0.3%
2026	6	15	9	139%	1,029	2,294	1,265	123%	8.0	7.7	-0.3	-3.3%	495	490	-4.8	-1.0%
2027	6	15	9	146%	1,012	2,212	1,200	119%	8.0	7.7	-0.3	-3.9%	497	489	-8.2	-1.7%
2028	6	14	9	150%	983	2,167	1,183	120%	8.1	7.8	-0.3	-3.9%	500	492	-8.9	-1.8%
2029	6	14	8	146%	960	2,084	1,124	117%	8.1	7.8	-0.3	-4.0%	502	492	-10.1	-2.0%

Table A-21-3 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Total) Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	150	150	0	0%	7.7	7.7	0.0	0.0%	587	587	0.0	0.0%
2021	2	2	0	0%	297	297	0	0%	8.9	8.9	0.0	0.0%	688	688	0.0	0.0%
2022	5	5	0	0%	531	531	0	0%	9.3	9.3	0.0	0.0%	724	724	0.0	0.0%
2023	6	7	1	21%	873	1,002	129	15%	9.0	9.0	0.0	-0.2%	706	705	-1.3	-0.2%
2024	7	10	3	45%	1,075	1,461	386	36%	8.7	8.8	0.0	0.0%	687	691	4.2	0.6%
2025	7	11	4	64%	1,165	1,808	644	55%	8.5	8.6	0.1	0.9%	670	682	12.3	1.8%
2026	7	15	8	110%	1,254	2,420	1,167	93%	8.4	8.5	0.1	1.2%	660	681	21.0	3.2%
2027	7	15	8	117%	1,255	2,344	1,090	87%	8.3	8.5	0.2	2.0%	654	681	26.5	4.0%
2028	7	15	8	116%	1,248	2,335	1,087	87%	8.2	8.3	0.2	2.2%	644	671	27.4	4.3%

2029	7	15	8	114%	1,240	2,283	1,043	84%	8.0	8.2	0.2	2.4%	634	662	28.3	4.5%
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Table A-21-4 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (BMW) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	75	75	0	0%	0.3	0.3	0.0	0.0%	14	14	0.0	0.0%
2021	0	0	0	0%	742	742	0	0%	0.4	0.4	0.0	0.0%	17	17	0.0	0.0%
2022	0	0	0	0%	878	878	0	0%	0.4	0.4	0.0	0.0%	18	18	0.0	0.0%
2023	0	0	0	12%	1,186	1,307	121	10%	0.4	0.4	0.0	-0.2%	17	17	0.0	0.0%
2024	0	1	0	8%	1,449	1,553	104	7%	0.4	0.4	0.0	-0.8%	17	17	0.0	0.0%
2025	1	1	0	27%	1,701	2,131	430	25%	0.4	0.4	0.0	-1.7%	17	17	0.1	0.4%
2026	1	1	0	31%	1,907	2,639	731	38%	0.4	0.4	0.0	-2.4%	16	17	0.1	0.4%
2027	1	1	0	41%	1,851	2,572	721	39%	0.4	0.4	0.0	-2.8%	16	17	0.2	1.3%
2028	1	1	0	40%	1,790	2,478	688	38%	0.4	0.4	0.0	-2.8%	16	16	0.2	1.3%
2029	1	1	0	39%	1,745	2,401	656	38%	0.4	0.4	0.0	-2.9%	16	16	0.2	1.4%

Table A-21-5 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Daimler) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	422	422	0	0%	0.4	0.4	0.0	0.0%	18	18	0.0	0.0%
2021	0	0	0	0%	494	494	0	0%	0.4	0.4	0.0	0.0%	22	22	0.0	0.0%
2022	0	0	0	0%	808	808	0	0%	0.5	0.5	0.0	0.0%	24	24	0.0	0.0%
2023	0	0	0	15%	875	943	68	8%	0.5	0.5	0.0	-0.2%	23	23	0.0	-0.2%
2024	0	1	0	23%	1,218	1,594	376	31%	0.5	0.5	0.0	-0.5%	23	23	-0.1	-0.4%
2025	1	1	0	19%	1,485	2,147	662	45%	0.4	0.4	0.0	-1.0%	23	23	-0.1	-0.5%
2026	1	1	0	19%	1,592	2,882	1,290	81%	0.4	0.4	0.0	-1.5%	23	23	-0.2	-0.8%
2027	1	1	0	39%	1,671	2,722	1,050	63%	0.4	0.4	0.0	-1.5%	23	23	-0.2	-0.7%
2028	1	1	0	50%	1,640	2,684	1,044	64%	0.4	0.4	0.0	-1.5%	23	22	-0.1	-0.3%
2029	1	1	0	50%	1,607	2,594	988	61%	0.4	0.4	0.0	-1.5%	22	22	-0.1	-0.2%

Table A-21-6 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (FCA) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	392	392	0	0%	1.5	1.5	0.0	0.0%	117	117	0.0	0.0%
2021	1	1	0	0%	345	345	0	0%	1.8	1.8	0.0	0.0%	138	138	0.0	0.0%
2022	2	2	0	0%	882	882	0	0%	1.9	1.9	0.0	0.0%	147	147	0.0	0.0%
2023	2	2	0	1%	1,400	1,412	13	1%	1.8	1.8	0.0	-0.2%	145	145	-0.2	-0.1%
2024	2	2	0	-2%	1,460	1,623	163	11%	1.8	1.8	0.0	-0.1%	140	140	0.0	0.0%
2025	2	2	0	-3%	1,434	2,017	583	41%	1.7	1.7	0.0	0.4%	137	138	0.9	0.7%
2026	2	2	0	17%	1,482	2,629	1,147	77%	1.7	1.7	0.0	0.6%	135	137	2.0	1.5%
2027	2	3	1	32%	1,501	2,452	952	63%	1.7	1.7	0.0	1.1%	134	137	3.5	2.6%
2028	2	3	1	35%	1,552	2,609	1,057	68%	1.7	1.7	0.0	1.3%	132	136	3.9	3.0%
2029	2	3	1	37%	1,532	2,543	1,012	66%	1.6	1.7	0.0	1.5%	130	134	4.3	3.3%

Table A-21-7 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Ford) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	137	137	0	0%	1.7	1.7	0.0	0.0%	160	160	0.0	0.0%
2021	1	1	0	0%	574	574	0	0%	2.0	2.0	0.0	0.0%	189	189	0.0	0.0%
2022	2	2	0	0%	925	925	0	0%	2.1	2.1	0.0	0.0%	202	202	0.0	0.0%
2023	2	3	1	44%	1,360	1,840	481	35%	2.1	2.0	0.0	-0.2%	198	199	1.3	0.6%
2024	2	3	1	34%	1,540	1,952	412	27%	2.0	2.0	0.0	-0.2%	193	194	1.3	0.7%
2025	2	3	1	37%	1,529	1,966	437	29%	2.0	2.0	0.0	0.1%	188	190	2.3	1.2%
2026	3	5	2	82%	1,635	2,709	1,074	66%	1.9	1.9	0.0	0.1%	186	191	5.1	2.7%
2027	2	4	2	82%	1,586	2,611	1,025	65%	1.9	1.9	0.0	0.5%	185	190	5.9	3.2%
2028	2	4	2	80%	1,547	2,521	974	63%	1.9	1.9	0.0	0.6%	182	188	5.9	3.2%

2029	2	4	2	78%	1,49 9	2,41 5	916	61%	1.9	1.9	0.0	0.7%	18 0	18 6	6.0	3.3%
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Table A-21-8 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (GM) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	276	276	0	0%	2.3	2.3	0.0	0.0%	200	200	0.0	0.0%
2021	1	1	0	0%	397	397	0	0%	2.7	2.7	0.0	0.0%	238	238	0.0	0.0%
2022	1	1	0	0%	502	502	0	0%	2.9	2.9	0.0	0.0%	252	252	0.0	0.0%
2023	1	1	0	5%	695	722	27	4%	2.8	2.8	0.0	-0.2%	247	247	-0.4	-0.1%
2024	1	3	1	89%	787	1,270	483	61%	2.7	2.7	0.0	-0.2%	241	244	2.3	1.0%
2025	2	5	3	178%	963	2,152	1,189	123%	2.7	2.7	0.0	0.1%	237	244	6.6	2.8%
2026	2	7	5	296%	962	2,930	1,968	205%	2.7	2.7	0.0	0.1%	235	245	10.2	4.3%
2027	2	7	5	312%	943	2,850	1,907	202%	2.6	2.7	0.0	0.5%	233	244	11.1	4.7%
2028	2	6	5	314%	919	2,776	1,857	202%	2.6	2.6	0.0	0.6%	231	242	11.0	4.7%

2029	2	7	5	340%	937	3,02 2	2,085	222%	2.6	2.6	0.0	1.0%	22 8	24 1	12.9	5.6%
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Table A-21-9 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Honda) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	0	0	0	0%	1.3	1.3	0.0	0.0%	116	116	0.0	0.0%
2021	0	0	0	0%	64	64	0	0%	1.6	1.6	0.0	0.0%	140	140	0.0	0.0%
2022	0	0	0	0%	313	313	0	0%	1.7	1.7	0.0	0.0%	152	152	0.0	0.0%
2023	0	1	1	154%	501	945	443	88%	1.7	1.7	0.0	-0.2%	151	152	1.8	1.2%
2024	1	2	1	163%	656	1,300	643	98%	1.7	1.6	0.0	-0.7%	149	151	2.1	1.4%
2025	1	2	1	108%	1,063	1,790	727	68%	1.6	1.6	0.0	-1.4%	149	150	1.4	0.9%
2026	1	3	1	86%	1,226	2,037	811	66%	1.6	1.6	0.0	-2.0%	149	150	0.6	0.4%
2027	1	2	1	85%	1,194	1,905	711	60%	1.6	1.6	0.0	-2.3%	149	149	0.3	0.2%
2028	1	2	1	88%	1,160	1,869	709	61%	1.6	1.6	0.0	-2.3%	149	149	0.2	0.2%
2029	1	2	1	87%	1,127	1,805	678	60%	1.6	1.6	0.0	-2.3%	148	148	0.1	0.1%

**Table A-21-10 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Hyundai Kia-H)
Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5**

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	521	521	0	0%	0.7	0.7	0.0	0.0%	44	44	0.0	0.0%
2021	0	0	0	0%	317	317	0	0%	0.9	0.9	0.0	0.0%	54	54	0.0	0.0%
2022	0	0	0	0%	403	403	0	0%	1.0	1.0	0.0	0.0%	59	59	0.0	0.0%
2023	0	0	0	0%	492	492	0	0%	1.0	1.0	0.0	-0.2%	58	58	-0.1	-0.2%
2024	0	1	0	56%	603	935	333	55%	0.9	0.9	0.0	-0.6%	58	58	-0.1	-0.2%
2025	0	1	1	132%	637	1,389	751	118%	0.9	0.9	0.0	-1.3%	57	57	-0.1	-0.2%
2026	1	2	1	276%	711	2,282	1,571	221%	0.9	0.9	0.0	-1.9%	58	58	0.4	0.6%
2027	0	2	1	280%	759	2,297	1,538	203%	0.9	0.9	0.0	-2.1%	58	58	0.1	0.2%
2028	0	2	1	284%	738	2,246	1,508	204%	0.9	0.9	0.0	-2.1%	58	58	0.0	0.1%
2029	0	2	1	280%	729	2,190	1,462	201%	0.9	0.9	0.0	-2.1%	58	58	0.0	-0.1%

Table A-21-11 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Hyundai Kia-K) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	211	211	0	0%	0.6	0.6	0.0	0.0%	30	30	0.0	0.0%
2021	0	0	0	0%	305	305	0	0%	0.7	0.7	0.0	0.0%	37	37	0.0	0.0%
2022	0	0	0	0%	331	331	0	0%	0.8	0.8	0.0	0.0%	40	40	0.0	0.0%
2023	0	0	0	-1%	361	359	-2	0%	0.8	0.8	0.0	-0.2%	39	39	-0.1	-0.2%
2024	0	1	1	158%	588	1,459	871	148%	0.8	0.8	0.0	-0.8%	39	39	0.6	1.6%
2025	0	1	1	194%	572	1,676	1,104	193%	0.8	0.8	0.0	-1.7%	38	39	0.8	2.2%
2026	0	1	1	227%	599	1,854	1,255	210%	0.8	0.8	0.0	-2.5%	38	39	0.6	1.6%
2027	0	1	1	222%	652	1,891	1,239	190%	0.8	0.8	0.0	-2.8%	38	39	0.5	1.4%
2028	0	1	1	232%	630	1,877	1,246	198%	0.8	0.8	0.0	-2.9%	38	39	0.5	1.3%
2029	0	1	1	236%	607	1,823	1,216	200%	0.8	0.8	0.0	-2.9%	38	38	0.5	1.2%

Table A-21-12 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (JLR) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	96	96	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2021	0	0	0	0%	78	78	0	0%	0.2	0.2	0.0	0.0%	3	3	0.0	0.0%
2022	0	0	0	0%	401	401	0	0%	0.2	0.2	0.0	0.0%	3	3	0.0	0.0%
2023	0	0	0	42%	812	1,093	282	35%	0.2	0.2	0.0	-0.2%	3	3	0.0	0.1%
2024	0	0	0	40%	1,091	1,440	350	32%	0.2	0.2	0.0	0.0%	3	3	0.0	0.5%
2025	0	0	0	69%	1,145	1,978	833	73%	0.2	0.2	0.0	0.6%	3	3	0.0	1.6%
2026	0	0	0	154%	1,199	2,875	1,676	140%	0.2	0.2	0.0	0.9%	3	3	0.1	3.0%
2027	0	0	0	163%	1,210	2,660	1,450	120%	0.2	0.2	0.0	1.5%	3	3	0.1	3.9%
2028	0	0	0	161%	1,182	2,726	1,544	131%	0.1	0.2	0.0	1.7%	3	3	0.1	4.0%
2029	0	0	0	176%	1,186	2,637	1,450	122%	0.1	0.2	0.0	1.9%	3	3	0.1	4.2%

Table A-21-13 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Mazda) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 3	Absolute	Percent	Alternative 0 (Baseline)	Alternative 3	Absolute	Percent	Alternative 0 (Baseline)	Alternative 3	Absolute	Percent	Alternative 0 (Baseline)	Alternative 3	Absolute	Percent
2020	0	0	0	0%	329	329	0	0%	0.3	0.3	0.0	0.0%	4	4	0.0	0.0%
2021	0	0	0	0%	981	981	0	0%	0.3	0.3	0.0	0.0%	4	4	0.0	0.0%
2022	0	0	0	0%	1,114	1,114	0	0%	0.3	0.3	0.0	0.0%	5	5	0.0	0.0%
2023	0	0	0	1%	1,343	1,359	15	1%	0.3	0.3	0.0	-0.2%	5	4	0.0	-0.2%
2024	0	0	0	10%	1,402	1,552	150	11%	0.3	0.3	0.0	-0.4%	4	4	0.0	-0.3%
2025	0	1	0	61%	1,533	2,281	748	49%	0.3	0.3	0.0	-0.4%	4	4	0.0	-0.3%
2026	0	1	0	88%	1,575	2,655	1,080	69%	0.3	0.3	0.0	-0.6%	4	4	0.0	-0.5%
2027	0	1	0	89%	1,546	2,594	1,047	68%	0.3	0.3	0.0	-0.4%	4	4	0.0	-0.3%
2028	0	1	0	90%	1,513	2,535	1,022	68%	0.3	0.3	0.0	-0.4%	4	4	0.0	-0.2%
2029	0	1	0	91%	1,473	2,472	999	68%	0.3	0.3	0.0	-0.3%	4	4	0.0	-0.1%

Table A-21-14 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Mitsubishi) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	141	141	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2021	0	0	0	0%	43	43	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2022	0	0	0	0%	104	104	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2023	0	0	0	0%	417	417	0	0%	0.1	0.1	0.0	-0.2%	2	2	0.0	-0.2%
2024	0	0	0	-1%	519	972	452	87%	0.1	0.1	0.0	-0.2%	2	2	0.0	-0.2%
2025	0	0	0	296%	428	1,600	1,173	274%	0.1	0.1	0.0	0.0%	2	2	0.0	0.1%
2026	0	0	0	302%	421	1,577	1,156	275%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2027	0	0	0	311%	406	1,548	1,142	281%	0.1	0.1	0.0	0.3%	2	2	0.0	0.4%
2028	0	0	0	317%	395	1,522	1,127	285%	0.1	0.1	0.0	0.4%	2	2	0.0	0.5%
2029	0	0	0	325%	382	1,496	1,113	291%	0.1	0.1	0.0	0.6%	2	2	0.0	0.6%

Table A-21-15 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Nissan) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	87	87	0	0%	1.0	1.0	0.0	0.0%	60	60	0.0	0.0%
2021	0	0	0	0%	265	265	0	0%	1.2	1.2	0.0	0.0%	73	73	0.0	0.0%
2022	0	0	0	0%	349	349	0	0%	1.3	1.3	0.0	0.0%	79	79	0.0	0.0%
2023	0	1	1	309%	409	1,246	838	205%	1.3	1.3	0.0	-0.2%	78	78	-0.1	-0.1%
2024	1	3	2	414%	585	2,234	1,648	282%	1.3	1.3	0.0	-0.6%	78	79	0.8	1.0%
2025	1	3	2	463%	682	2,575	1,893	278%	1.3	1.3	0.0	-1.2%	77	77	0.4	0.5%
2026	1	3	2	481%	724	2,785	2,061	285%	1.3	1.3	0.0	-1.7%	77	77	0.2	0.2%
2027	1	3	2	488%	717	2,662	1,945	271%	1.3	1.3	0.0	-1.9%	77	77	0.0	0.0%
2028	1	3	2	484%	716	2,669	1,954	273%	1.3	1.3	0.0	-1.9%	77	77	0.1	0.1%
2029	0	3	2	475%	704	2,590	1,887	268%	1.3	1.3	0.0	-1.9%	77	77	0.0	0.1%

Table A-21-16 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Subaru) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	28	28	0	0%	0.8	0.8	0.0	0.0%	42	42	0.0	0.0%
2021	0	0	0	0%	61	61	0	0%	0.9	0.9	0.0	0.0%	50	50	0.0	0.0%
2022	0	0	0	0%	360	360	0	0%	0.9	0.9	0.0	0.0%	54	54	0.0	0.0%
2023	1	1	0	30%	674	857	184	27%	0.9	0.9	0.0	-0.2%	53	53	-0.1	-0.1%
2024	1	1	0	48%	785	1,093	308	39%	0.9	0.9	0.0	-0.3%	52	52	0.0	0.1%
2025	1	1	0	45%	902	1,312	410	45%	0.9	0.9	0.0	-0.3%	52	51	-0.1	-0.2%
2026	1	1	0	75%	968	1,464	495	51%	0.9	0.9	0.0	-0.5%	51	51	-0.2	-0.3%
2027	1	1	0	76%	997	1,481	485	49%	0.9	0.9	0.0	-0.2%	51	51	-0.1	-0.2%
2028	1	1	0	77%	973	1,451	479	49%	0.9	0.9	0.0	-0.2%	51	51	-0.1	-0.2%
2029	1	1	0	79%	950	1,422	473	50%	0.9	0.9	0.0	-0.1%	51	51	-0.1	-0.2%

Table A-21-17 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Tesla) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	0	0	0	0%	0.2	0.2	0.0	0.0%	23	23	0.0	0.0%
2021	0	0	0	0%	8	8	0	0%	0.2	0.2	0.0	0.0%	29	29	0.0	0.0%
2022	0	0	0	0%	26	26	0	0%	0.3	0.3	0.0	0.0%	32	32	0.0	0.0%
2023	0	0	0	0%	28	28	0	0%	0.3	0.3	0.0	-0.2%	32	32	-0.1	-0.2%
2024	0	0	0	0%	29	29	0	0%	0.3	0.3	0.0	-1.3%	33	32	-0.4	-1.3%
2025	0	0	0	0%	33	34	0	1%	0.3	0.3	0.0	-3.3%	33	32	-1.1	-3.3%
2026	0	0	0	0%	33	33	0	1%	0.3	0.3	0.0	-4.6%	33	32	-1.5	-4.6%
2027	0	0	0	0%	32	33	1	2%	0.3	0.3	0.0	-5.5%	33	32	-1.9	-5.5%
2028	0	0	0	0%	31	32	1	2%	0.3	0.3	0.0	-5.7%	34	32	-1.9	-5.7%
2029	0	0	0	0%	31	31	1	2%	0.3	0.3	0.0	-5.8%	34	32	-2.0	-5.8%

Table A-21-18 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Toyota) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	49	49	0	0%	1.8	1.8	0.0	0.0%	97	97	0.0	0.0%
2021	0	0	0	0%	116	116	0	0%	2.1	2.1	0.0	0.0%	118	118	0.0	0.0%
2022	1	1	0	0%	356	356	0	0%	2.3	2.3	0.0	0.0%	129	129	0.0	0.0%
2023	1	1	1	141%	433	793	360	83%	2.3	2.3	0.0	-0.2%	129	128	-0.3	-0.2%
2024	1	2	2	210%	656	1,378	721	110%	2.3	2.2	0.0	-0.6%	128	129	0.8	0.6%
2025	1	2	2	211%	715	1,456	741	104%	2.2	2.2	0.0	-1.2%	127	127	-0.1	-0.1%
2026	1	3	2	183%	896	1,687	791	88%	2.2	2.2	0.0	-1.8%	128	127	-0.8	-0.6%
2027	1	3	2	193%	872	1,666	794	91%	2.2	2.2	0.0	-2.0%	128	127	-1.2	-0.9%
2028	1	3	2	195%	858	1,651	793	92%	2.2	2.2	0.0	-2.0%	128	127	-1.2	-0.9%

2029	1	2	2	172%	868	1,601	733	84%	2.2	2.2	0.0	-2.0%	12 8	12 7	-1.4	-1.1%
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Table A-21-19 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (Volvo) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	171	171	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2021	0	0	0	0%	336	336	0	0%	0.1	0.1	0.0	0.0%	3	3	0.0	0.0%
2022	0	0	0	0%	397	397	0	0%	0.1	0.1	0.0	0.0%	3	3	0.0	0.0%
2023	0	0	0	17%	1,688	1,950	262	16%	0.1	0.1	0.0	-0.2%	3	3	0.0	-0.2%
2024	0	0	0	17%	1,673	2,036	363	22%	0.1	0.1	0.0	-0.3%	3	3	0.0	-0.8%
2025	0	0	0	13%	1,850	2,314	464	25%	0.1	0.1	0.0	-0.4%	3	3	-0.1	-1.8%
2026	0	0	0	44%	2,032	3,169	1,137	56%	0.1	0.1	0.0	-0.6%	3	3	-0.1	-2.6%
2027	0	0	0	59%	2,085	3,141	1,055	51%	0.1	0.1	0.0	-0.3%	3	3	-0.1	-2.3%
2028	0	0	0	59%	2,001	3,020	1,019	51%	0.1	0.1	0.0	-0.3%	3	3	-0.1	-2.4%
2029	0	0	0	59%	1,916	2,890	974	51%	0.1	0.1	0.0	-0.2%	3	3	-0.1	-2.5%

Table A-21-20 - Comparison of Technology Costs, Average Price Increase, Sales, and Labor Utilization for Manufacturer (VWA) Total Fleet Between Alternative 0 (Baseline) and Alternative 2.5

Model Year	Technology Costs Increase (\$b)				Avg. Vehicle Price Increase (\$)				Annual Sales (million vehicles)				Labor (person years)			
	Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative		Standards		Change from Alternative	
	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2.5	Absolute	Percent
2020	0	0	0	0%	363	363	0	0%	0.4	0.4	0.0	0.0%	10	10	0.0	0.0%
2021	0	0	0	0%	253	253	0	0%	0.5	0.5	0.0	0.0%	13	13	0.0	0.0%
2022	0	0	0	0%	673	673	0	0%	0.6	0.6	0.0	0.0%	14	14	0.0	0.0%
2023	0	0	0	0%	906	906	0	0%	0.5	0.5	0.0	-0.2%	14	14	0.0	-0.2%
2024	1	1	0	-2%	2,087	2,098	11	1%	0.5	0.5	0.0	-0.6%	14	14	-0.1	-0.5%
2025	1	1	0	2%	2,189	2,333	143	7%	0.5	0.5	0.0	-1.2%	13	13	-0.1	-1.1%
2026	1	1	0	4%	2,197	2,679	482	22%	0.5	0.5	0.0	-1.8%	13	13	-0.2	-1.3%
2027	1	1	0	9%	2,149	2,566	417	19%	0.5	0.5	0.0	-2.0%	13	13	-0.2	-1.5%
2028	1	1	0	12%	2,092	2,438	346	17%	0.5	0.5	0.0	-2.0%	13	13	-0.1	-1.1%
2029	1	1	0	12%	2,032	2,364	332	16%	0.5	0.5	0.0	-2.0%	13	13	-0.1	-1.1%

22. CAFE Compliance Credits

Table A-22-1 - CAFE Compliance Credits (in millions) Earned by Manufacturers, Total Fleet by Model Year for Alternative 0 (Baseline)

Manufacturer	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BMW	-11	-6	4	11	15	22	25	26	26	26
Daimler	-16	-13	-12	-7	5	8	8	10	10	12
FCA	-50	-43	-8	20	19	10	16	20	30	31
Ford	-16	-1	41	90	100	91	107	108	108	108
GM	-48	-36	-4	6	12	21	16	18	18	31
Honda	20	28	72	76	80	99	106	108	108	108
Hyundai Kia-H	-27	-27	-4	3	19	14	12	15	16	18
Hyundai Kia-K	-13	7	9	5	20	20	15	19	19	19
JLR	-5	-5	-4	-1	2	1	1	1	1	1
Mazda	-7	-5	-5	9	9	10	10	10	10	10
Mitsubishi	-2	-2	-3	-4	-4	2	2	2	2	2
Nissan	-12	1	20	19	33	31	26	27	29	30
Subaru	14	18	40	62	74	81	80	81	80	80
Tesla	1,339	1,724	1,944	1,980	1,995	1,998	2,025	2,045	2,072	2,089
Toyota	5	19	55	64	70	62	87	101	107	129
Volvo	-2	-2	-3	6	6	6	7	9	9	9
VWA	-17	-17	-12	-4	30	35	38	40	41	42
Total	1,153	1,641	2,131	2,336	2,483	2,513	2,580	2,638	2,684	2,745

Table A-22-2 - CAFE Compliance Credits (in millions) Earned by Manufacturers, Total Fleet by Model Year for Alternative 1

Manufacturer	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BMW	-11	-6	4	12	3	6	4	5	5	6
Daimler	-16	-13	-12	-6	-7	-6	-9	-5	-4	-3
FCA	-50	-43	-8	21	-43	-63	-62	-43	-26	-21
Ford	-16	-1	41	98	34	16	21	24	25	25
GM	-48	-36	-4	14	-7	13	11	20	23	36
Honda	20	28	72	78	14	19	11	11	11	11
Hyundai Kia-H	-27	-27	-4	3	0	-2	2	7	8	8
Hyundai Kia-K	-13	7	9	5	6	4	0	5	7	7
JLR	-5	-5	-4	0	-4	-4	0	1	1	2
Mazda	-7	-5	-5	9	-2	3	2	2	2	2
Mitsubishi	-2	-2	-3	-4	-10	3	1	1	1	1
Nissan	-12	1	20	41	18	15	1	2	13	14
Subaru	14	18	40	68	48	48	42	43	42	42
Tesla	1,339	1,724	1,944	1,979	1,973	1,952	1,962	1,973	1,994	2,005
Toyota	5	19	55	84	45	20	35	49	62	83
Volvo	-2	-2	-3	6	1	0	0	3	3	3
VWA	-17	-17	-12	-4	9	10	8	9	12	13
Total	1,153	1,641	2,131	2,405	2,077	2,034	2,030	2,107	2,179	2,236

Table A-22-3 - CAFE Compliance Credits (in millions) Earned by Manufacturers, Total Fleet by Model Year for Alternative 2

Manufacturer	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BMW	-11	-6	4	12	5	5	-3	0	0	1
Daimler	-16	-13	-12	-6	-3	-13	-27	-15	-11	-10
FCA	-50	-43	-8	21	-22	-76	-102	-80	-60	-54
Ford	-16	-1	41	134	92	36	18	20	22	21
GM	-48	-36	-4	11	0	2	-11	13	17	29
Honda	20	28	72	111	71	41	-5	-3	1	5
Hyundai Kia-H	-27	-27	-4	3	12	-3	1	6	7	8
Hyundai Kia-K	-13	7	9	5	27	20	0	6	9	9
JLR	-5	-5	-4	1	0	-3	-3	-1	-1	0
Mazda	-7	-5	-5	9	2	8	4	4	4	4
Mitsubishi	-2	-2	-3	-4	-9	6	0	0	0	0
Nissan	-12	1	20	49	51	42	-3	3	19	24
Subaru	14	18	40	68	60	39	23	24	24	24
Tesla	1,339	1,724	1,944	1,976	1,964	1,922	1,911	1,913	1,934	1,947
Toyota	5	19	55	96	121	49	16	26	35	36
Volvo	-2	-2	-3	7	3	0	-3	2	2	2
VWA	-17	-17	-12	-4	13	5	-9	-4	1	2
Total	1,153	1,641	2,131	2,490	2,388	2,080	1,808	1,913	2,003	2,047

Table A-22-4 - CAFE Compliance Credits (in millions) Earned by Manufacturers, Total Fleet by Model Year for Alternative 2.5

Manufacturer	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BMW	-11	-6	4	12	5	7	-4	0	0	1
Daimler	-16	-13	-12	-6	-3	-13	-31	-20	-13	-12
FCA	-50	-43	-8	21	-23	-76	-112	-90	-74	-67
Ford	-16	-1	41	134	92	37	11	14	15	14
GM	-48	-36	-4	11	0	11	-14	15	18	29
Honda	20	28	72	126	96	69	6	7	14	18
Hyundai Kia-H	-27	-27	-4	3	12	-3	0	5	7	8
Hyundai Kia-K	-13	7	9	5	39	29	0	6	9	9
JLR	-5	-5	-4	1	0	-3	-4	-3	-3	0
Mazda	-7	-5	-5	9	3	10	5	5	5	5
Mitsubishi	-2	-2	-3	-4	-9	7	0	0	0	0
Nissan	-12	1	20	49	58	49	-10	-2	16	21
Subaru	14	18	40	68	60	39	16	17	17	17
Tesla	1,339	1,724	1,944	1,976	1,960	1,913	1,897	1,897	1,919	1,932
Toyota	5	19	55	100	130	58	7	17	27	27
Volvo	-2	-2	-3	8	4	1	-4	2	2	2
VWA	-17	-17	-12	-4	14	6	-13	-8	-3	-2
Total	1,153	1,641	2,131	2,510	2,438	2,140	1,750	1,862	1,955	2,001

Table A-22-5 - CAFE Compliance Credits (in millions) Earned by Manufacturers, Total Fleet by Model Year for Alternative 3

Manufacturer	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BMW	-11	-6	4	13	4	4	-7	0	1	3
Daimler	-16	-13	-12	-6	-5	-20	-39	-27	-17	-16
FCA	-50	-43	-8	21	-36	-106	-145	-121	-101	-94
Ford	-16	-1	41	137	96	26	7	8	9	10
GM	-48	-36	-4	17	-5	3	-27	9	13	14
Honda	20	28	72	142	103	59	-6	-5	7	11
Hyundai Kia-H	-27	-27	-4	4	15	-5	0	5	7	8
Hyundai Kia-K	-13	7	9	5	40	30	0	5	8	10
JLR	-5	-5	-4	1	-1	-6	-8	-6	-6	-1
Mazda	-7	-5	-5	9	-1	7	1	1	1	1
Mitsubishi	-2	-2	-3	-4	-10	8	0	0	0	0
Nissan	-12	1	20	49	61	38	-22	-8	17	22
Subaru	14	18	40	70	56	26	4	6	6	6
Tesla	1,339	1,724	1,944	1,975	1,949	1,883	1,862	1,858	1,880	1,890
Toyota	5	19	55	105	152	58	16	28	42	43
Volvo	-2	-2	-3	10	5	0	-4	2	2	2
VWA	-17	-17	-12	-4	7	-3	-13	-6	0	3

23. Consumer Impacts

Table A-23-1 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Total Fleet, Alternative 2.5 at a 3% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	240	536	812	1,216	1,146	1,138	1,087
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	25	59	94	139	136	135	131
Increase in Insurance Cost	0	0	0	23	53	84	125	122	122	118
Increase in Taxes/Fees	0	0	0	13	31	49	73	71	71	68
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	276	621	947	1,419	1,343	1,334	1,276
Fuel Savings	25	25	26	-193	-562	-826	-1,235	-1,325	-1,399	-1,377
Mobility Benefit	0	0	0	11	46	69	102	111	119	121
Reallocated Benefit	20	22	24	26	28	30	32	36	39	42
Refueling Benefit	1	1	1	43	25	10	-12	1	-1	0
Total Consumer Benefit	-6	-4	-3	187	610	916	1,382	1,471	1,558	1,539
Net Consumer Benefit	-6	-4	-3	-89	-11	-32	-37	128	225	262
Payback	0.0	0.0	0.0	0.9	2.0	2.0	2.5	2.5	2.0	2.0

Table A-23-2 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Passenger Car Fleet, Alternative 2.5 at a 3% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	365	701	995	1,265	1,200	1,183	1,124
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	38	73	103	130	123	121	115
Increase in Insurance Cost	0	0	0	34	66	92	117	111	109	103
Increase in Taxes/Fees	0	0	0	20	38	54	68	64	63	60
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	419	806	1,144	1,455	1,379	1,359	1,291
Fuel Savings	21	20	20	-266	-715	-1,040	-1,305	-1,380	-1,455	-1,413
Mobility Benefit	0	0	0	14	53	77	98	103	110	108
Reallocated Benefit	15	17	18	20	21	23	25	27	30	32
Refueling Benefit	1	1	1	35	12	-6	-19	-12	-14	-9
Total Consumer Benefit	-7	-5	-3	265	777	1,145	1,447	1,522	1,609	1,562
Net Consumer Benefit	-7	-5	-3	-154	-29	2	-8	143	250	272
Payback	0.0	0.0	0.0	2.0	3.0	2.0	3.0	3.0	2.0	2.0

Table A-23-3 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Light Truck Fleet, Alternative 2.5 at a 3% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	129	386	644	1,167	1,090	1,087	1,043
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	14	41	67	122	114	114	109
Increase in Insurance Cost	0	0	0	12	36	61	110	103	102	98
Increase in Taxes/Fees	0	0	0	7	21	35	64	59	59	57
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	149	445	741	1,345	1,256	1,252	1,201
Fuel Savings	28	29	31	-128	-455	-734	-1,314	-1,461	-1,544	-1,554
Mobility Benefit	0	0	0	8	40	62	106	117	127	132
Reallocated Benefit	24	27	29	32	34	37	40	43	48	51
Refueling Benefit	1	1	1	51	37	22	-7	11	9	7
Total Consumer Benefit	-5	-4	-3	118	491	811	1,467	1,611	1,710	1,731
Net Consumer Benefit	-5	-4	-3	-31	47	70	122	355	458	529
Payback	0.0	0.0	0.0	0.0	1.0	2.0	2.0	2.0	2.0	2.0

Table A-23-4 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Total Fleet, Alternative 2.5 at a 7% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	240	536	812	1,216	1,146	1,138	1,087
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	23	54	86	128	124	124	120
Increase in Insurance Cost	0	0	0	19	44	70	104	101	101	98
Increase in Taxes/Fees	0	0	0	13	31	49	73	71	71	68
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	272	612	933	1,398	1,322	1,313	1,256
Fuel Savings	16	17	17	-151	-435	-641	-958	-1,028	-1,086	-1,070
Mobility Benefit	0	0	0	9	35	53	78	85	92	93
Reallocated Benefit	12	13	15	17	19	21	23	26	30	33
Refueling Benefit	1	1	1	34	20	8	-10	1	-1	0
Total Consumer Benefit	-5	-4	-3	142	469	707	1,069	1,139	1,209	1,196
Net Consumer Benefit	-5	-4	-3	-130	-143	-226	-329	-183	-104	-61
Payback	0.0	0.0	0.0	1.9	3.9	6.8	47.0	5.4	3.9	3.0

Table A-23-5 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Passenger Car Fleet, Alternative 2.5 at a 7% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	365	701	995	1,265	1,200	1,183	1,124
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	35	67	94	120	113	111	105
Increase in Insurance Cost	0	0	0	29	55	77	98	92	91	86
Increase in Taxes/Fees	0	0	0	20	38	54	68	64	63	60
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	413	795	1,128	1,435	1,360	1,341	1,273
Fuel Savings	14	14	14	-206	-557	-810	-1,017	-1,076	-1,136	-1,104
Mobility Benefit	0	0	0	11	41	59	75	80	85	84
Reallocated Benefit	9	10	12	13	14	16	18	20	23	25
Refueling Benefit	1	1	1	27	9	-5	-15	-9	-11	-7
Total Consumer Benefit	-6	-4	-3	203	602	889	1,125	1,185	1,255	1,221
Net Consumer Benefit	-6	-4	-3	-210	-192	-239	-310	-175	-86	-52
Payback	0.0	0.0	0.0	4.0	6.0	11.0	93.0	7.0	5.0	4.0

Table A-23-6 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Light Truck Fleet, Alternative 2.5 at a 7% Discount Rate (dollars), per Vehicle Model Year

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price Increase	0	0	0	129	386	644	1,167	1,090	1,087	1,043
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	12	37	62	112	105	105	100
Increase in Insurance Cost	0	0	0	10	30	50	91	85	85	82
Increase in Taxes/Fees	0	0	0	7	21	35	64	59	59	57
Lost Consumer Surplus	0	0	0	0	1	2	5	4	4	3
Total Consumer Cost	0	0	0	147	439	731	1,327	1,239	1,235	1,185
Fuel Savings	17	19	20	-101	-349	-564	-1,009	-1,123	-1,187	-1,196
Mobility Benefit	0	0	0	6	30	47	80	89	97	101
Reallocated Benefit	14	16	18	21	23	26	28	32	37	40
Refueling Benefit	1	1	1	40	29	18	-6	9	7	6
Total Consumer Benefit	-4	-3	-3	88	372	619	1,123	1,236	1,313	1,331
Net Consumer Benefit	-4	-3	-3	-58	-66	-112	-203	-3	78	147
Payback	0.0	0.0	0.0	0.0	2.0	3.0	5.0	4.0	3.0	2.0

24. Environmental Impacts

Table A-24-1 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Total Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.22	-0.30	-0.32	-0.37
VOC Upstream	-1.19	-2.18	-2.48	-3.13
NO _x Upstream	-0.40	-0.56	-0.59	-0.68
SO ₂ Upstream	-0.02	0.11	0.17	0.27
PM Upstream	-0.03	-0.05	-0.05	-0.06
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.34	-1.38	-1.64	-2.31
VOC Tailpipe	-0.01	-0.03	-0.04	-0.05
NO _x Tailpipe	-0.01	-0.03	-0.04	-0.06
SO ₂ Tailpipe	-0.02	-0.05	-0.05	-0.06
PM Tailpipe	0.00	0.00	0.00	-0.01
Fleetwide Change in Total Emissions				
CO Total	-0.56	-1.69	-1.97	-2.67
VOC Total	-1.20	-2.21	-2.52	-3.17
NO _x Total	-0.41	-0.59	-0.63	-0.73

Table A-24-2 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Passenger Car Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.14	-0.21	-0.25	-0.30
VOC Upstream	-0.68	-1.34	-1.52	-1.88
NOx Upstream	-0.25	-0.38	-0.46	-0.55
SO2 Upstream	-0.03	0.04	0.02	0.04
PM Upstream	-0.02	-0.03	-0.04	-0.05
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.77	-1.82	-1.93	-2.50
VOC Tailpipe	-0.02	-0.04	-0.04	-0.06
NOx Tailpipe	-0.02	-0.04	-0.05	-0.06
SO2 Tailpipe	-0.01	-0.03	-0.03	-0.04
PM Tailpipe	0.00	0.00	0.00	-0.01
Fleetwide Change in Total Emissions				
CO Total	-0.91	-2.04	-2.19	-2.81
VOC Total	-0.69	-1.38	-1.56	-1.93
NOx Total	-0.27	-0.43	-0.50	-0.61

Table A-24-3 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Light Truck Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.08	-0.09	-0.07	-0.06
VOC Upstream	-0.51	-0.84	-0.96	-1.25
NOx Upstream	-0.15	-0.17	-0.13	-0.13
SO2 Upstream	0.01	0.08	0.15	0.23
PM Upstream	-0.01	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	0.43	0.44	0.29	0.20
VOC Tailpipe	0.01	0.01	0.01	0.01
NOx Tailpipe	0.01	0.01	0.01	0.00
SO2 Tailpipe	-0.01	-0.02	-0.02	-0.03
PM Tailpipe	0.00	0.00	0.00	0.00
Fleetwide Change in Total Emissions				
CO Total	0.35	0.35	0.22	0.13
VOC Total	-0.50	-0.83	-0.95	-1.24
NOx Total	-0.14	-0.17	-0.13	-0.12

Table A-24-4 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Total Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.18	-0.25	-0.26	-0.30
VOC Upstream	-0.94	-1.73	-1.97	-2.48
NOx Upstream	-0.32	-0.46	-0.49	-0.56
SO2 Upstream	-0.02	0.07	0.11	0.19
PM Upstream	-0.03	-0.04	-0.04	-0.05
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.41	-1.59	-1.88	-2.64
VOC Tailpipe	-0.01	-0.06	-0.07	-0.09
NOx Tailpipe	-0.01	-0.03	-0.04	-0.06
SO2 Tailpipe	-0.02	-0.04	-0.04	-0.05
PM Tailpipe	0.00	0.00	0.00	-0.01
Fleetwide Change in Total Emissions				
CO Total	-0.58	-1.84	-2.14	-2.94
VOC Total	-0.95	-1.79	-2.04	-2.58
NOx Total	-0.33	-0.49	-0.53	-0.62

Table A-24-5 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Passenger Car Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.11	-0.17	-0.20	-0.24
VOC Upstream	-0.54	-1.06	-1.21	-1.49
NOx Upstream	-0.20	-0.31	-0.37	-0.45
SO2 Upstream	-0.03	0.02	0.00	0.02
PM Upstream	-0.02	-0.03	-0.03	-0.04
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.90	-2.13	-2.26	-2.92
VOC Tailpipe	-0.03	-0.08	-0.09	-0.11
NOx Tailpipe	-0.02	-0.05	-0.05	-0.06
SO2 Tailpipe	-0.01	-0.02	-0.03	-0.03
PM Tailpipe	0.00	-0.01	-0.01	-0.01
Fleetwide Change in Total Emissions				
CO Total	-1.02	-2.30	-2.46	-3.16
VOC Total	-0.57	-1.15	-1.29	-1.60
NOx Total	-0.22	-0.36	-0.42	-0.51

Table A-24-6 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Light Truck Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.07	-0.08	-0.06	-0.05
VOC Upstream	-0.40	-0.67	-0.77	-0.99
NOx Upstream	-0.12	-0.15	-0.12	-0.11
SO2 Upstream	0.01	0.05	0.11	0.17
PM Upstream	-0.01	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	0.50	0.54	0.37	0.28
VOC Tailpipe	0.02	0.02	0.02	0.02
NOx Tailpipe	0.01	0.01	0.01	0.01
SO2 Tailpipe	-0.01	-0.01	-0.02	-0.02
PM Tailpipe	0.00	0.00	0.00	0.00
Fleetwide Change in Total Emissions				
CO Total	0.43	0.46	0.31	0.23
VOC Total	-0.38	-0.65	-0.75	-0.98
NOx Total	-0.11	-0.13	-0.11	-0.11

Table A-24-7 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Total Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.12	-0.18	-0.19	-0.21
VOC Upstream	-0.66	-1.21	-1.38	-1.74
NOx Upstream	-0.23	-0.33	-0.35	-0.41
SO2 Upstream	-0.02	0.03	0.06	0.10
PM Upstream	-0.02	-0.03	-0.03	-0.03
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.43	-1.67	-1.98	-2.76
VOC Tailpipe	-0.01	-0.05	-0.06	-0.09
NOx Tailpipe	0.00	-0.03	-0.03	-0.04
SO2 Tailpipe	-0.01	-0.03	-0.03	-0.04
PM Tailpipe	0.00	0.00	0.00	-0.01
Fleetwide Change in Total Emissions				
CO Total	-0.56	-1.84	-2.17	-2.98
VOC Total	-0.67	-1.26	-1.44	-1.83
NOx Total	-0.23	-0.36	-0.38	-0.45

Table A-24-8 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Passenger Car Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.08	-0.12	-0.14	-0.17
VOC Upstream	-0.37	-0.73	-0.83	-1.02
NOx Upstream	-0.14	-0.22	-0.26	-0.31
SO2 Upstream	-0.02	0.00	0.00	0.00
PM Upstream	-0.01	-0.02	-0.02	-0.03
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	-0.92	-2.17	-2.31	-2.99
VOC Tailpipe	-0.03	-0.07	-0.08	-0.10
NOx Tailpipe	-0.01	-0.04	-0.04	-0.05
SO2 Tailpipe	-0.01	-0.02	-0.02	-0.02
PM Tailpipe	0.00	-0.01	-0.01	-0.01
Fleetwide Change in Total Emissions				
CO Total	-0.99	-2.29	-2.45	-3.16
VOC Total	-0.40	-0.80	-0.90	-1.12
NOx Total	-0.15	-0.25	-0.30	-0.36

Table A-24-9 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) from the MY 2029 Light Truck Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-0.05	-0.06	-0.05	-0.04
VOC Upstream	-0.29	-0.48	-0.55	-0.72
NOx Upstream	-0.09	-0.11	-0.09	-0.09
SO2 Upstream	0.00	0.03	0.06	0.10
PM Upstream	-0.01	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	0.48	0.51	0.33	0.23
VOC Tailpipe	0.02	0.02	0.01	0.01
NOx Tailpipe	0.01	0.01	0.01	0.00
SO2 Tailpipe	-0.01	-0.01	-0.01	-0.01
PM Tailpipe	0.00	0.00	0.00	0.00
Fleetwide Change in Total Emissions				
CO Total	0.44	0.45	0.28	0.18
VOC Total	-0.27	-0.46	-0.54	-0.71
NOx Total	-0.08	-0.10	-0.09	-0.09

Table A-24-10 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) Over Lifetimes of Vehicles Through 2029 for the Total Fleet, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-15.09	-18.98	-20.00	-22.69
VOC Upstream	-83.21	-145.45	-163.27	-207.98
NOx Upstream	-27.52	-35.36	-37.45	-42.91
SO2 Upstream	-1.22	8.91	11.92	19.30
PM Upstream	-2.32	-2.98	-3.16	-3.61
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	107.75	199.19	232.49	300.08
VOC Tailpipe	13.08	28.26	32.46	43.05
NOx Tailpipe	9.38	20.92	24.08	32.12
SO2 Tailpipe	-1.75	-3.08	-3.46	-4.41
PM Tailpipe	0.16	0.21	0.25	0.29
Fleetwide Change in Total Emissions				
CO Total	92.66	180.21	212.49	277.38
VOC Total	-70.13	-117.19	-130.81	-164.93
NOx Total	-18.14	-14.44	-13.37	-10.79

Table A-24-11 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) Over Lifetimes of Vehicles Through 2029 for the Light Truck Fleet, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-6.75	-6.40	-4.59	-3.97
VOC Upstream	-39.50	-57.34	-63.64	-86.44
NOx Upstream	-12.36	-12.08	-9.10	-8.45
SO2 Upstream	0.06	5.13	9.43	16.16
PM Upstream	-1.04	-1.02	-0.76	-0.71
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	99.16	194.69	207.12	249.59
VOC Tailpipe	8.17	17.55	19.45	24.99
NOx Tailpipe	6.27	14.06	15.83	20.74
SO2 Tailpipe	-0.84	-1.23	-1.37	-1.86
PM Tailpipe	0.21	0.36	0.37	0.40
Fleetwide Change in Total Emissions				
CO Total	92.41	188.29	202.53	245.63
VOC Total	-31.33	-39.79	-44.19	-61.45
NOx Total	-6.09	1.99	6.73	12.29

Table A-24-12 - Incremental Change in Criteria Emissions Relative to Alternative 0 (Baseline) Over Lifetimes of Vehicles Through 2029 for the Passenger Car Fleet, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	-8.33	-12.59	-15.41	-18.72
VOC Upstream	-43.72	-88.12	-99.63	-121.54
NOx Upstream	-15.16	-23.28	-28.35	-34.46
SO2 Upstream	-1.28	3.78	2.50	3.15
PM Upstream	-1.28	-1.96	-2.39	-2.91
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	8.58	4.50	25.37	50.48
VOC Tailpipe	4.92	10.72	13.01	18.06
NOx Tailpipe	3.12	6.86	8.25	11.38
SO2 Tailpipe	-0.91	-1.85	-2.09	-2.55
PM Tailpipe	-0.04	-0.15	-0.12	-0.11
Fleetwide Change in Total Emissions				
CO Total	0.25	-8.08	9.96	31.76
VOC Total	-38.80	-77.40	-86.62	-103.48
NOx Total	-12.04	-16.42	-20.10	-23.08

Table A-24-13 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	6.4	6.3	6.3	6.2
VOC Upstream	21.8	20.8	20.5	19.9
NOx Upstream	11.4	11.3	11.2	11.1
SO2 Upstream	4.1	4.2	4.2	4.4
PM Upstream	1.0	1.0	1.0	0.9
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	63.8	62.8	62.5	61.9
VOC Tailpipe	1.4	1.3	1.3	1.3
NOx Tailpipe	1.4	1.4	1.4	1.4
SO2 Tailpipe	0.4	0.4	0.4	0.4
PM Tailpipe	0.2	0.2	0.2	0.2
Fleetwide Change in Total Emissions				
CO Total	70.2	69.1	68.8	68.1
VOC Total	23.2	22.1	21.8	21.2
NOx Total	12.8	12.7	12.6	12.5

Table A-24-14 - Total Criteria Emissions from the MY 2029 Passenger Car Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	2.7	2.6	2.6	2.5
VOC Upstream	8.6	7.9	7.7	7.3
NOx Upstream	4.8	4.7	4.6	4.5
SO2 Upstream	1.9	1.9	1.9	1.9
PM Upstream	0.4	0.4	0.4	0.4
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	29.4	28.3	28.2	27.7
VOC Tailpipe	0.6	0.6	0.6	0.6
NOx Tailpipe	0.7	0.7	0.7	0.6
SO2 Tailpipe	0.2	0.2	0.2	0.1
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	32.1	31.0	30.8	30.2
VOC Total	9.2	8.5	8.3	8.0
NOx Total	5.5	5.3	5.2	5.1

Table A-24-15 - Total Criteria Emissions from the MY 2029 Light Truck Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	3.7	3.7	3.7	3.7
VOC Upstream	13.3	12.9	12.8	12.5
NOx Upstream	6.6	6.6	6.6	6.7
SO2 Upstream	2.2	2.3	2.3	2.4
PM Upstream	0.6	0.6	0.6	0.6
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	34.4	34.4	34.3	34.2
VOC Tailpipe	0.7	0.7	0.7	0.7
NOx Tailpipe	0.7	0.7	0.7	0.7
SO2 Tailpipe	0.3	0.3	0.3	0.3
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	38.1	38.1	38.0	37.9
VOC Total	14.0	13.6	13.5	13.2
NOx Total	7.4	7.3	7.4	7.4

Table A-24-16 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	5.0	5.0	4.9	4.9
VOC Upstream	17.3	16.5	16.3	15.8
NOx Upstream	9.0	8.9	8.8	8.8
SO2 Upstream	3.1	3.2	3.3	3.3
PM Upstream	0.8	0.7	0.7	0.7
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	74.9	73.7	73.4	72.6
VOC Tailpipe	3.1	3.0	3.0	3.0
NOx Tailpipe	1.7	1.7	1.7	1.7
SO2 Tailpipe	0.3	0.3	0.3	0.3
PM Tailpipe	0.2	0.2	0.2	0.2
Fleetwide Change in Total Emissions				
CO Total	79.9	78.6	78.3	77.5
VOC Total	20.4	19.6	19.3	18.8
NOx Total	10.7	10.6	10.5	10.4

Table A-24-17 - Total Criteria Emissions from the MY 2029 Passenger Car Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	2.1	2.1	2.0	2.0
VOC Upstream	6.8	6.3	6.2	5.9
NOx Upstream	3.8	3.7	3.6	3.5
SO2 Upstream	1.4	1.5	1.5	1.5
PM Upstream	0.3	0.3	0.3	0.3
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	34.9	33.7	33.6	32.9
VOC Tailpipe	1.4	1.3	1.3	1.3
NOx Tailpipe	0.8	0.7	0.7	0.7
SO2 Tailpipe	0.1	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	37.0	35.7	35.6	34.9
VOC Total	8.2	7.6	7.5	7.2
NOx Total	4.6	4.4	4.4	4.3

Table A-24-18 - Total Criteria Emissions from the MY 2029 Light Truck Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	2.9	2.9	2.9	2.9
VOC Upstream	10.5	10.2	10.1	9.9
NOx Upstream	5.2	5.2	5.2	5.2
SO2 Upstream	1.7	1.7	1.8	1.9
PM Upstream	0.4	0.4	0.4	0.4
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	40.0	40.0	39.8	39.7
VOC Tailpipe	1.7	1.7	1.7	1.7
NOx Tailpipe	1.0	1.0	1.0	1.0
SO2 Tailpipe	0.2	0.2	0.2	0.2
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	42.9	42.9	42.8	42.7
VOC Total	12.2	11.9	11.8	11.6
NOx Total	6.2	6.2	6.2	6.2

Table A-24-19 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	3.5	3.4	3.4	3.4
VOC Upstream	12.1	11.5	11.4	11.0
NOx Upstream	6.2	6.1	6.1	6.0
SO2 Upstream	2.1	2.2	2.2	2.2
PM Upstream	0.5	0.5	0.5	0.5
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	75.1	73.9	73.6	72.8
VOC Tailpipe	2.7	2.6	2.6	2.6
NOx Tailpipe	1.4	1.4	1.4	1.3
SO2 Tailpipe	0.2	0.2	0.2	0.2
PM Tailpipe	0.2	0.2	0.2	0.2
Fleetwide Change in Total Emissions				
CO Total	78.6	77.4	77.0	76.2
VOC Total	14.7	14.1	14.0	13.6
NOx Total	7.6	7.5	7.5	7.4

Table A-24-20 - Total Criteria Emissions from the MY 2029 Passenger Car Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	1.4	1.4	1.4	1.3
VOC Upstream	4.7	4.3	4.2	4.0
NOx Upstream	2.6	2.5	2.4	2.4
SO2 Upstream	0.9	1.0	1.0	1.0
PM Upstream	0.2	0.2	0.2	0.2
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	34.8	33.6	33.4	32.8
VOC Tailpipe	1.2	1.1	1.1	1.1
NOx Tailpipe	0.6	0.6	0.6	0.6
SO2 Tailpipe	0.1	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	36.3	35.0	34.8	34.1
VOC Total	5.8	5.4	5.3	5.1
NOx Total	3.1	3.0	3.0	2.9

Table A-24-21 - Total Criteria Emissions from the MY 2029 Light Truck Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	2.5	3
Fleetwide Change in Upstream Emissions				
CO Upstream	2.1	2.0	2.1	2.1
VOC Upstream	7.4	7.2	7.2	7.0
NOx Upstream	3.7	3.7	3.7	3.7
SO2 Upstream	1.2	1.2	1.2	1.3
PM Upstream	0.3	0.3	0.3	0.3
Fleetwide Change in Tailpipe Emissions				
CO Tailpipe	40.3	40.3	40.2	40.1
VOC Tailpipe	1.5	1.5	1.5	1.5
NOx Tailpipe	0.8	0.8	0.8	0.8
SO2 Tailpipe	0.2	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1	0.1
Fleetwide Change in Total Emissions				
CO Total	42.4	42.4	42.2	42.1
VOC Total	8.9	8.7	8.6	8.5
NOx Total	4.5	4.4	4.5	4.5

25. Electrification Costs

Table A-25-1 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Total Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	-0.4	-0.2	-0.1	-0.1
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	-0.1	0.0	0.0	0.0
Total Electrification Costs (\$b)	-0.3	-0.2	-0.1	0.0

Table A-25-2 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Passenger Car Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	-0.3	-0.2	-0.1	-0.1
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	-0.1	0.0	0.0	0.0
Total Electrification Costs (\$b)	-0.2	-0.2	-0.1	-0.1

Table A-25-3 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Light Truck Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	-0.1	0.0	0.0	0.1
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.0	0.0
Total Electrification Costs (\$b)	-0.1	0.0	0.0	0.1

Table A-25-4 - Total Electrification Costs for Manufacturer (Total), MY 2029 Total Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	0.1	0.3	0.4	0.4
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.1	0.1
Total Electrification Costs (\$b)	0.1	0.2	0.3	0.3

Table A-25-5 - Total Electrification Costs for Manufacturer (Total), MY 2029 Passenger Car Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	0.1	0.2	0.2	0.2
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.0	0.0
Total Electrification Costs (\$b)	0.1	0.1	0.2	0.2

Table A-25-6 - Total Electrification Costs for Manufacturer (Total), MY 2029 Light Truck Fleet

	Alternative			
	1	2	2.5	3
Retrievable Electrification Costs (\$b)	0.0	0.1	0.2	0.2
Electrification Tax Credits (\$b)	0.0	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.0	0.0
Total Electrification Costs (\$b)	0.0	0.1	0.1	0.2

26. Fleet Characteristics

Table A-26-1 - Changes in Fleet Characteristics for Model Years 2020-2029 for Alternative 1

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total	Avg.
Changes in Fleet Size, Usage and Fuel Consumption												
Changes in Fleet Size (m)	0.0	0.0	0.0	-0.2	-0.7	-0.8	-0.8	-0.6	-0.6	-0.5	-4.0	-0.4
Light Truck Share (%)	59%	58%	56%	55%	55%	55%	54%	54%	54%	53%	N/A	55%
Pass. Car Share (%)	41%	42%	44%	45%	45%	45%	46%	46%	46%	47%	N/A	45%
VMT from Rebound (b)	0.0	0.0	0.0	1.8	7.2	9.6	11.9	12.9	13.9	14.0	71.2	7.1
Fuel Volume - Total (b gallons)	0.1	0.1	0.1	-0.9	-3.5	-4.2	-5.1	-5.3	-5.6	-5.4	-29.8	-3.0
Fuel Volume - Lt. Truck (b gallons)	0.0	0.0	0.0	-0.5	-2.0	-2.0	-2.4	-2.5	-2.6	-2.4	-14.2	-1.4
Fuel Volume - Pass. Car (b gallons)	0.0	0.0	0.0	-0.5	-1.5	-2.2	-2.7	-2.9	-3.0	-3.0	-15.6	-1.6
Changes in Fatalities by Source												
Fatalities from Rebound Miles	0	0	0	9	37	48	60	65	70	70	359	36
Fatalities from Curb Weight Change	0	0	0	0	11	7	11	14	14	15	72	7
Total Changes in Fatalities	10	12	12	8	17	27	44	64	73	80	348	35
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.0	0.0	0.7	3.0	4.0	4.9	5.4	5.8	5.8	30	3
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.0	1.0	0.6	1.0	1.2	1.3	1.3	6.3	0.6
Total Change in Injuries (thousands)	0.7	0.9	1.0	0.7	1.3	1.9	3.2	4.8	5.6	6.1	26.3	2.6
Property Damage from Rebound Miles (thousands)	0.0	0.0	0.0	2.8	11.5	15.1	18.8	20.5	22.1	22.1	112.9	11.3
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	0.0	3.6	2.4	3.8	4.6	4.8	4.9	24.2	2.4
Total Property Damaged Vehicles (thousands)	2.7	3.3	3.6	2.7	5.0	7.1	12.3	18.3	21.3	23.4	99.7	10.0

Table A-26-2 - Changes in Fleet Characteristics for Model Years 2020-2029 for Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total	Avg.
Changes in Fleet Size, Usage and Fuel Consumption												
Changes in Fleet Size (m)	0.0	0.0	0.0	-0.6	-1.1	-1.6	-2.1	-1.8	-1.7	-1.5	-10.3	-1.0
Light Truck Share (%)	59%	58%	56%	55%	55%	55%	55%	55%	54%	54%	N/A	56%
Pass. Car Share (%)	41%	42%	44%	45%	45%	45%	45%	45%	46%	46%	N/A	44%
VMT from Rebound (b)	0.0	0.0	0.1	2.3	9.2	14.3	20.1	21.5	22.8	22.5	112.8	11.3
Fuel Volume - Total (b gallons)	0.2	0.2	0.2	-1.9	-4.7	-6.7	-9.4	-9.8	-10.1	-9.7	-51.7	-5.2
Fuel Volume - Lt. Truck (b gallons)	0.1	0.1	0.1	-0.8	-1.9	-2.4	-4.0	-4.0	-4.0	-3.8	-20.4	-2.0
Fuel Volume - Pass. Car (b gallons)	0.1	0.1	0.1	-1.1	-2.8	-4.3	-5.4	-5.8	-6.1	-5.9	-31.2	-3.1
Changes in Fatalities by Source												
Fatalities from Rebound Miles	0	0	0	11	46	71	100	107	113	111	559	56
Fatalities from Curb Weight Change	0	0	0	4	14	11	15	16	17	18	95	9
Total Changes in Fatalities	26	30	32	7	25	28	32	65	82	92	419	42
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.0	0.0	1.0	3.8	5.9	8.4	9.0	9.5	9.3	47	5
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.3	1.2	1.0	1.3	1.4	1.5	1.5	8.2	0.8
Total Change in Injuries (thousands)	1.9	2.3	2.5	0.6	2.0	1.9	2.2	4.7	6.3	7.1	31.4	3.1
Property Damage from Rebound Miles (thousands)	0.0	0.1	0.1	3.7	14.6	22.7	32.0	34.2	36.2	35.6	179.2	17.9
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	1.3	4.7	3.7	4.9	5.5	5.7	5.9	31.5	3.2
Total Property Damaged Vehicles (thousands)	7.0	8.5	9.3	2.1	7.4	7.2	8.1	18.0	23.8	27.2	118.5	11.9

Table A-26-3 - Changes in Fleet Characteristics for Model Years 2020-2029 for Alternative 2.5

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total	Avg.
Changes in Fleet Size, Usage and Fuel Consumption												
Changes in Fleet Size (m)	0.0	0.0	0.0	-0.7	-1.2	-1.7	-2.5	-2.1	-2.0	-1.8	-12.0	-1.2
Light Truck Share (%)	59%	58%	56%	55%	55%	55%	55%	55%	54%	54%	N/A	56%
Pass. Car Share (%)	41%	42%	44%	45%	45%	45%	45%	45%	46%	46%	N/A	44%
VMT from Rebound (b)	0.0	0.0	0.1	2.8	10.4	15.7	22.2	23.7	25.2	24.9	125.0	12.5
Fuel Volume - Total (b gallons)	0.2	0.2	0.2	-2.0	-5.1	-7.3	-10.6	-11.1	-11.4	-10.9	-57.9	-5.8
Fuel Volume - Lt. Truck (b gallons)	0.1	0.1	0.1	-0.8	-1.9	-2.4	-4.5	-4.5	-4.5	-4.2	-22.4	-2.2
Fuel Volume - Pass. Car (b gallons)	0.1	0.1	0.1	-1.2	-3.2	-4.9	-6.2	-6.6	-6.9	-6.7	-35.5	-3.5
Changes in Fatalities by Source												
Fatalities from Rebound Miles	0	0	0	14	52	77	110	117	124	122	618	62
Fatalities from Curb Weight Change	0	0	0	4	14	10	15	16	17	18	95	9
Total Changes in Fatalities	30	35	36	11	29	33	26	61	80	91	431	43
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.0	0.0	1.2	4.3	6.5	9.2	9.9	10.4	10.3	52	5
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.3	1.2	0.9	1.3	1.4	1.5	1.5	8.2	0.8
Total Change in Injuries (thousands)	2.1	2.6	2.8	0.9	2.3	2.3	1.6	4.5	6.1	7.1	32.4	3.2
Property Damage from Rebound Miles (thousands)	0.0	0.1	0.1	4.5	16.5	24.8	35.4	37.7	39.9	39.4	198.4	19.8
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	1.3	4.7	3.5	4.9	5.5	5.7	5.9	31.5	3.2
Total Property Damaged Vehicles (thousands)	8.0	9.7	10.7	3.4	8.6	8.7	6.0	16.9	23.1	27.1	122.2	12.2

Table A-26-4 - Changes in Fleet Characteristics for Model Years 2020-2029 for Alternative 3

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total	Avg.
Changes in Fleet Size, Usage and Fuel Consumption												
Changes in Fleet Size (m)	0.1	0.0	0.0	-0.8	-1.8	-2.5	-3.3	-2.9	-2.7	-2.4	-16.4	-1.6
Light Truck Share (%)	59%	58%	56%	55%	55%	55%	55%	55%	55%	54%	N/A	56%
Pass. Car Share (%)	41%	42%	44%	45%	45%	45%	45%	45%	45%	46%	N/A	44%
VMT from Rebound (b)	0.0	0.0	0.1	3.9	14.2	19.4	26.5	28.2	30.0	30.0	152.3	15.2
Fuel Volume - Total (b gallons)	0.2	0.3	0.3	-2.5	-7.2	-9.8	-13.2	-13.7	-14.2	-13.6	-73.3	-7.3
Fuel Volume - Lt. Truck (b gallons)	0.2	0.2	0.2	-1.1	-3.2	-3.7	-5.7	-5.7	-5.8	-5.3	-29.9	-3.0
Fuel Volume - Pass. Car (b gallons)	0.1	0.1	0.1	-1.4	-4.0	-6.0	-7.5	-8.1	-8.4	-8.3	-43.4	-4.3
Changes in Fatalities by Source												
Fatalities from Rebound Miles	0	0	1	19	71	97	132	140	148	148	755	75
Fatalities from Curb Weight Change	0	0	0	4	20	16	21	24	25	25	134	13
Total Changes in Fatalities	40	46	49	21	34	25	22	66	88	105	495	50
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.0	0.0	1.6	5.9	8.1	11.0	11.7	12.4	12.4	63	6
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.4	1.7	1.4	1.8	2.1	2.1	2.2	11.7	1.2
Total Change in Injuries (thousands)	2.9	3.5	3.8	1.7	2.7	1.5	1.1	4.7	6.7	8.2	36.7	3.7
Property Damage from Rebound Miles (thousands)	0.0	0.1	0.2	6.2	22.6	30.8	42.1	44.9	47.5	47.5	242.0	24.2
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	1.4	6.6	5.4	7.1	8.1	8.2	8.2	44.9	4.5
Total Property Damaged Vehicles (thousands)	10.7	13.0	14.3	6.4	9.9	5.4	3.9	17.8	25.5	31.1	138.1	13.8

27. Liquid Fuel and Electricity Consumption

Table A-27-1 - Change in Liquid Fuel Consumed (b Gallons), Total Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	1200.0	0.1	0.1	-0.9	-3.5	-4.2	-5.1	-5.3	-5.6	-5.4	1170.2
Alternative 2	1201.6	0.2	0.2	-1.9	-4.7	-6.7	-9.4	-9.8	-10.1	-9.7	1149.8
Alternative 2.5	1202.0	0.2	0.2	-2.0	-5.1	-7.3	-10.6	-11.1	-11.4	-10.9	1144.0
Alternative 3	1203.0	0.3	0.3	-2.5	-7.2	-9.8	-13.2	-13.7	-14.2	-13.6	1129.4

Table A-27-2 - Change in Liquid Fuel Consumed (b Gallons), Passenger Car Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	474.2	0.0	0.0	-0.5	-1.5	-2.2	-2.7	-2.9	-3.0	-3.0	458.5
Alternative 2	475.0	0.1	0.1	-1.1	-2.8	-4.3	-5.4	-5.8	-6.1	-5.9	443.7
Alternative 2.5	475.2	0.1	0.1	-1.2	-3.2	-4.9	-6.2	-6.6	-6.9	-6.7	439.7
Alternative 3	475.7	0.1	0.1	-1.4	-4.0	-6.0	-7.5	-8.1	-8.4	-8.3	432.2

Table A-27-3 - Change in Liquid Fuel Consumed (b Gallons), Light Truck Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	725.9	0.0	0.0	-0.5	-2.0	-2.0	-2.4	-2.5	-2.6	-2.4	711.6
Alternative 2	726.6	0.1	0.1	-0.8	-1.9	-2.4	-4.0	-4.0	-4.0	-3.8	706.1
Alternative 2.5	726.8	0.1	0.1	-0.8	-1.9	-2.4	-4.5	-4.5	-4.5	-4.2	704.3
Alternative 3	727.3	0.2	0.2	-1.1	-3.2	-3.7	-5.7	-5.7	-5.8	-5.3	697.2

Table A-27-4 - Change in Electricity (G-Wh) Consumed, Total Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	39.1	0.0	0.0	3.7	6.4	6.5	8.1	9.8	9.6	9.3	92.4
Alternative 2	39.1	0.0	0.0	12.9	14.9	16.9	23.6	27.5	27.6	26.8	189.3
Alternative 2.5	39.1	0.0	0.1	13.1	16.4	18.6	29.5	33.9	34.1	33.2	218.0
Alternative 3	39.2	0.1	0.1	14.2	21.3	31.8	41.6	46.8	48.2	45.3	288.3

Table A-27-5 - Change in Electricity (G-Wh) Consumed, Passenger Car Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	34.0	0.0	0.0	1.3	3.0	3.5	4.3	4.2	4.2	4.0	58.5
Alternative 2	34.0	0.0	0.0	7.7	9.4	10.7	12.3	13.9	14.1	14.0	116.3
Alternative 2.5	34.1	0.0	0.0	7.8	9.3	11.0	12.3	14.1	14.7	14.6	117.9
Alternative 3	34.1	0.0	0.1	8.5	10.4	13.0	15.4	17.7	18.8	18.8	136.9

Table A-27-6 - Change in Electricity (G-Wh) Consumed, Light Truck Fleet, Undiscounted Over the Lifetime of the Model Year

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Alternative 1	5.1	0.0	0.0	2.4	3.4	2.9	3.8	5.5	5.4	5.3	33.9
Alternative 2	5.1	0.0	0.0	5.2	5.5	6.1	11.3	13.6	13.4	12.7	73.0
Alternative 2.5	5.1	0.0	0.0	5.3	7.1	7.7	17.2	19.7	19.4	18.6	100.1
Alternative 3	5.1	0.0	0.0	5.6	10.8	18.8	26.1	29.0	29.4	26.5	151.4

28. Vehicle-Mass-Related Fatality Impacts

Table A-28-1 - Vehicle-Mass-Related Fatality Impacts over the Lifetime of MY 1981-2029 for Total Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	677	1,204	1,335	1,704
Fatality Costs (\$ Billion, 3% Discount Rate)	4.9	9.1	10.2	13.1
Fatality Costs (\$ Billion, 7% Discount Rate)	3.2	6.1	6.8	8.8
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	3.8	6.3	6.9	8.7
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	2.5	4.2	4.6	5.9
Total Crash Costs (\$ Billion, 3% Discount Rate)	8.7	15.4	17.1	21.8
Total Crash Costs (\$ Billion, 7% Discount Rate)	5.6	10.3	11.4	14.7

Table A-28-2 - Vehicle-Mass-Related Fatality Impacts over the Lifetime of MY 1981-2029 for Passenger Car Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	-205	-303	-330	-407
Fatality Costs (\$ Billion, 3% Discount Rate)	-1.0	-1.3	-1.3	-1.5
Fatality Costs (\$ Billion, 7% Discount Rate)	-0.3	-0.1	-0.1	0.0
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	-2.0	-3.4	-3.7	-4.7
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	-1.1	-1.8	-2.0	-2.5
Total Crash Costs (\$ Billion, 3% Discount Rate)	-3.0	-4.6	-5.1	-6.3
Total Crash Costs (\$ Billion, 7% Discount Rate)	-1.4	-1.9	-2.1	-2.5

Table A-28-3 - Vehicle-Mass-Related Fatality Impacts over the Lifetime of MY 1981-2029 for Light Truck Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	883	1,508	1,665	2,112
Fatality Costs (\$ Billion, 3% Discount Rate)	6.0	10.4	11.5	14.7
Fatality Costs (\$ Billion, 7% Discount Rate)	3.5	6.2	6.9	8.8
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	5.8	9.6	10.6	13.4
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	3.6	6.0	6.6	8.4
Total Crash Costs (\$ Billion, 3% Discount Rate)	11.8	20.0	22.2	28.1
Total Crash Costs (\$ Billion, 7% Discount Rate)	7.1	12.2	13.5	17.2

Table A-28-4 - Vehicle-Mass-Related Fatality Impacts for CY 2039-2048 for Total Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	597	882	916	1,098
Fatality Costs (\$ Billion, 3% Discount Rate)	3.3	4.9	5.1	6.2
Fatality Costs (\$ Billion, 7% Discount Rate)	1.4	2.1	2.2	2.7
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	3.6	5.6	5.9	7.1
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	1.6	2.4	2.6	3.1
Total Crash Costs (\$ Billion, 3% Discount Rate)	7.0	10.5	11.0	13.3
Total Crash Costs (\$ Billion, 7% Discount Rate)	3.0	4.6	4.8	5.8

Table A-28-5 - Vehicle-Mass-Related Fatality Impacts for CY 2039-2048 for Passenger Car Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	-969	-1,547	-1,739	-2,171
Fatality Costs (\$ Billion, 3% Discount Rate)	-5.3	-8.5	-9.6	-11.9
Fatality Costs (\$ Billion, 7% Discount Rate)	-2.3	-3.6	-4.0	-5.1
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	-6.4	-10.0	-11.3	-13.9
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	-2.7	-4.3	-4.8	-5.9
Total Crash Costs (\$ Billion, 3% Discount Rate)	-11.7	-18.5	-20.8	-25.9
Total Crash Costs (\$ Billion, 7% Discount Rate)	-5.0	-7.9	-8.8	-11.0

Table A-28-6 - Vehicle-Mass-Related Fatality Impacts for CY 2039-2048 for Light Truck Fleet, Compared to Alternative 0 (Baseline) - Fatalities Undiscounted, Dollars Discounted at 3% and 7%

Category	Regulatory Alternative			
	1	2	2.5	3
Fatalities	1,566	2,428	2,655	3,269
Fatality Costs (\$ Billion, 3% Discount Rate)	8.7	13.4	14.7	18.1
Fatality Costs (\$ Billion, 7% Discount Rate)	3.7	5.7	6.3	7.7
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	10.0	15.6	17.2	21.1
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	4.3	6.7	7.3	9.0
Total Crash Costs (\$ Billion, 3% Discount Rate)	18.7	29.1	31.9	39.2
Total Crash Costs (\$ Billion, 7% Discount Rate)	8.0	12.4	13.6	16.8

Table A-28-7 - Incremental Vehicle-Mass-Related Fatality Impacts by Model Year and Fleet, Alternative 1 Compared to Alternative 0 (Baseline), Undiscounted

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	188	5	5	5	-2	-48	-71	-87	-94	-106	-205
Light Trucks	152	7	7	4	19	75	115	151	168	186	883
Total	340	12	12	8	17	27	44	64	73	80	677

Table A-28-8 - Incremental Vehicle-Mass-Related Fatality Impacts by Model Year and Fleet, Alternative 2 Compared to Alternative 0 (Baseline), Undiscounted

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	441	12	13	6	-10	-85	-140	-175	-178	-187	-303
Light Trucks	371	18	19	1	35	114	172	239	260	279	1508
Total	812	30	32	7	25	28	32	65	82	92	1204

Table A-28-9 - Incremental Vehicle-Mass-Related Fatality Impacts by Model Year and Fleet, Alternative 2.5 Compared to Alternative 0 (Baseline), Undiscounted

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	507	14	15	9	-15	-100	-158	-197	-198	-207	-330
Light Trucks	426	20	22	2	44	133	184	259	278	298	1665
Total	933	35	36	11	29	33	26	61	80	91	1335

Table A-28-10 - Incremental Vehicle-Mass-Related Fatality Impacts by Model Year and Fleet, Alternative 3 Compared to Alternative 0 (Baseline), Undiscounted

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	677	19	19	12	-18	-140	-208	-251	-251	-266	-407
Light Trucks	572	28	29	9	52	165	230	317	340	371	2112
Total	1249	46	49	21	34	25	22	66	88	105	1704

Table A-28-11 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 1 Compared to Alternative 0 (Baseline), 3% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	1.6	0.0	0.0	0.0	0.0	-0.3	-0.5	-0.6	-0.6	-0.7	-1.0
Light Trucks	1.2	0.1	0.1	0.0	0.1	0.5	0.8	1.0	1.1	1.1	6.0
Total	2.8	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	4.9

Table A-28-12 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 2 Compared to Alternative 0 (Baseline), 3% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	3.6	0.1	0.1	0.0	-0.1	-0.6	-1.0	-1.2	-1.2	-1.2	-1.3
Light Trucks	2.9	0.1	0.1	0.0	0.2	0.8	1.2	1.6	1.7	1.7	10.4
Total	6.6	0.2	0.2	0.1	0.2	0.2	0.2	0.4	0.5	0.6	9.1

Table A-28-13 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 2.5 Compared to Alternative 0 (Baseline), 3% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	4.2	0.1	0.1	0.1	-0.1	-0.7	-1.1	-1.3	-1.3	-1.3	-1.3
Light Trucks	3.4	0.2	0.2	0.0	0.3	0.9	1.2	1.7	1.8	1.9	11.5
Total	7.6	0.3	0.3	0.1	0.2	0.2	0.2	0.4	0.5	0.5	10.2

Table A-28-14 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 3 Compared to Alternative 0 (Baseline), 3% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	5.6	0.1	0.2	0.1	-0.1	-1.0	-1.4	-1.7	-1.6	-1.7	-1.5
Light Trucks	4.6	0.2	0.2	0.1	0.4	1.1	1.6	2.1	2.2	2.3	14.7
Total	10.2	0.4	0.4	0.2	0.2	0.2	0.1	0.4	0.5	0.6	13.1

Table A-28-15 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 1 Compared to Alternative 0 (Baseline), 7% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	1.1	0.0	0.0	0.0	0.0	-0.2	-0.3	-0.3	-0.3	-0.4	-0.3
Light Trucks	0.9	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.6	0.6	3.5
Total	2.0	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	3.2

Table A-28-16 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 2 Compared to Alternative 0 (Baseline), 7% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	2.6	0.1	0.1	0.0	0.0	-0.4	-0.6	-0.7	-0.6	-0.6	-0.1
Light Trucks	2.0	0.1	0.1	0.0	0.1	0.5	0.7	0.9	0.9	0.9	6.2
Total	4.7	0.1	0.2	0.0	0.1	0.1	0.1	0.2	0.3	0.3	6.1

Table A-28-17 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 2.5 Compared to Alternative 0 (Baseline), 7% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	3.0	0.1	0.1	0.0	-0.1	-0.4	-0.6	-0.8	-0.7	-0.7	-0.1
Light Trucks	2.3	0.1	0.1	0.0	0.2	0.6	0.7	1.0	1.0	1.0	6.9
Total	5.4	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	6.8

Table A-28-18 - Incremental Vehicle-Mass-Related Fatality Costs (\$ billion) by Model Year and Fleet, Alternative 3 Compared to Alternative 0 (Baseline), 7% Discount Rate

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Passenger Cars	4.1	0.1	0.1	0.1	-0.1	-0.6	-0.9	-1.0	-0.9	-0.9	0.0
Light Trucks	3.1	0.1	0.1	0.0	0.2	0.7	0.9	1.2	1.2	1.2	8.8
Total	7.2	0.2	0.2	0.1	0.1	0.1	0.0	0.2	0.3	0.3	8.8

29. Sales Impacts

Table A-29-1 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	13,592,551	0	0	0	0
2021	16,204,667	0	0	0	0
2022	17,350,781	0	0	0	0
2023	17,061,722	-10,496	-32,809	-35,274	-42,622
2024	16,741,749	-43,255	-65,526	-72,993	-105,914
2025	16,455,931	-51,609	-100,766	-109,121	-158,181
2026	16,372,007	-57,292	-139,692	-163,111	-214,152
2027	16,334,135	-50,748	-126,449	-147,659	-194,357
2028	16,248,027	-50,599	-121,524	-142,399	-187,529
2029	16,147,522	-47,350	-113,742	-133,363	-176,137

Table A-29-2 - Estimated Sales Impacts by Alternative, Passenger Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	5,929,602	0	0	0	0
2021	7,268,761	0	0	0	0
2022	8,014,929	0	0	0	0
2023	8,027,783	-4,937	-15,414	-16,580	-20,050
2024	7,995,256	-36,081	-64,297	-77,236	-104,066
2025	7,944,077	-90,855	-160,192	-183,406	-249,744
2026	7,995,798	-125,474	-234,895	-264,061	-343,311
2027	8,036,873	-147,271	-276,534	-310,851	-396,195
2028	8,083,472	-158,787	-286,664	-319,132	-405,399
2029	8,104,878	-172,069	-295,788	-327,943	-421,716

Table A-29-3 - Estimated Sales Impacts by Alternative, Light Truck Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	7,662,949	0	0	0	0
2021	8,935,906	0	0	0	0
2022	9,335,852	0	0	0	0
2023	9,033,939	-5,559	-17,395	-18,694	-22,572
2024	8,746,493	-7,174	-1,229	4,243	-1,848
2025	8,511,854	39,246	59,426	74,285	91,563
2026	8,376,209	68,182	95,203	100,950	129,159
2027	8,297,262	96,523	150,085	163,192	201,838
2028	8,164,555	108,188	165,140	176,733	217,870
2029	8,042,644	124,719	182,046	194,580	245,579

Table A-29-4 - Estimated Sales Impacts by Alternative, Domestic Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	2,780,461	0	0	0	0
2021	3,423,965	0	0	0	0
2022	3,793,051	0	0	0	0
2023	3,809,935	-2,346	-7,333	-7,893	-9,527
2024	3,803,051	-18,268	-32,988	-39,803	-53,346
2025	3,784,796	-47,962	-84,250	-96,638	-131,251
2026	3,815,943	-66,705	-123,770	-138,893	-180,535
2027	3,839,697	-78,832	-146,980	-165,030	-210,150
2028	3,868,114	-85,142	-152,692	-169,750	-215,419
2029	3,883,252	-92,508	-157,947	-174,872	-224,737

Table A-29-5 - Estimated Sales Impacts by Alternative, Imported Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	3,149,141	0	0	0	0
2021	3,844,796	0	0	0	0
2022	4,221,878	0	0	0	0
2023	4,217,848	-2,591	-8,081	-8,687	-10,523
2024	4,192,205	-17,813	-31,309	-37,433	-50,720
2025	4,159,281	-42,893	-75,942	-86,768	-118,493
2026	4,179,855	-58,769	-111,125	-125,168	-162,776
2027	4,197,176	-68,439	-129,554	-145,821	-186,045
2028	4,215,358	-73,645	-133,972	-149,382	-189,980
2029	4,221,626	-79,561	-137,841	-153,071	-196,979

Table A-29-6 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (BMW)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	296,063	0	0	0	0
2021	358,952	0	0	0	0
2022	391,301	0	0	0	0
2023	389,170	-244	-748	-809	-974
2024	385,407	-1,470	-2,479	-2,938	-4,036
2025	381,372	-3,162	-5,650	-6,421	-8,846
2026	382,201	-4,264	-8,250	-9,330	-12,130
2027	383,105	-4,869	-9,403	-10,581	-13,525
2028	383,750	-5,205	-9,648	-10,781	-13,734
2029	383,507	-5,581	-9,851	-10,967	-14,120

Table A-29-7 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Daimler)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	363,906	0	0	0	0
2021	436,221	0	0	0	0
2022	469,848	0	0	0	0
2023	463,766	-286	-887	-954	-1,156
2024	456,478	-1,366	-2,175	-2,488	-3,529
2025	449,708	-2,205	-4,087	-4,539	-6,402
2026	448,513	-2,738	-5,818	-6,670	-8,725
2027	448,185	-2,865	-6,031	-6,892	-8,933
2028	446,887	-3,007	-6,049	-6,880	-8,897
2029	444,973	-3,094	-5,990	-6,788	-8,842

Table A-29-8 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (FCA)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,504,790	0	0	0	0
2021	1,765,156	0	0	0	0
2022	1,856,518	0	0	0	0
2023	1,804,476	-1,124	-3,506	-3,769	-4,510
2024	1,753,610	-2,315	-2,132	-1,558	-3,344
2025	1,711,350	4,182	5,597	7,488	8,623
2026	1,689,306	8,220	9,620	9,769	12,416
2027	1,676,808	12,536	17,919	19,199	23,484
2028	1,655,140	14,233	20,225	21,319	25,994
2029	1,634,635	16,696	22,884	24,120	30,264

Table A-29-9 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Ford)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,686,149	0	0	0	0
2021	1,988,109	0	0	0	0
2022	2,103,077	0	0	0	0
2023	2,051,874	-1,258	-3,935	-4,221	-5,110
2024	2,000,359	-3,454	-4,197	-4,024	-6,750
2025	1,956,770	1,178	342	1,496	356
2026	1,936,625	3,999	1,876	1,093	1,024
2027	1,925,549	7,547	8,782	8,949	10,283
2028	1,905,583	8,821	10,718	10,747	12,464
2029	1,885,888	10,881	13,097	13,317	16,250

Table A-29-10 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (GM)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	2,315,296	0	0	0	0
2021	2,728,261	0	0	0	0
2022	2,884,071	0	0	0	0
2023	2,812,580	-1,718	-5,404	-5,816	-7,029
2024	2,740,962	-4,637	-5,425	-5,185	-8,797
2025	2,680,512	2,100	1,434	3,145	1,965
2026	2,652,049	6,285	4,063	3,103	3,541
2027	2,636,373	11,362	13,912	14,318	16,761
2028	2,608,232	13,225	16,713	16,888	19,871
2029	2,580,683	16,115	20,016	20,457	25,212

Table A-29-11 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Honda)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,293,078	0	0	0	0
2021	1,560,103	0	0	0	0
2022	1,691,990	0	0	0	0
2023	1,677,387	-1,030	-3,216	-3,459	-4,193
2024	1,656,879	-5,709	-9,550	-11,157	-15,447
2025	1,636,518	-11,263	-20,380	-22,998	-31,833
2026	1,636,740	-14,798	-29,444	-33,437	-43,596
2027	1,638,485	-16,468	-32,582	-36,951	-47,433
2028	1,638,093	-17,510	-33,238	-37,420	-47,899
2029	1,634,582	-18,565	-33,656	-37,733	-48,779

Table A-29-12 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	741,548	0	0	0	0
2021	893,059	0	0	0	0
2022	966,682	0	0	0	0
2023	957,173	-583	-1,841	-1,978	-2,392
2024	944,539	-3,127	-5,187	-6,030	-8,389
2025	932,262	-5,890	-10,740	-12,078	-16,792
2026	931,659	-7,646	-15,459	-17,597	-22,964
2027	932,200	-8,415	-16,878	-19,176	-24,671
2028	931,297	-8,937	-17,163	-19,361	-24,850
2029	928,752	-9,415	-17,299	-19,441	-25,185

Table A-29-13 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	596,735	0	0	0	0
2021	723,798	0	0	0	0
2022	789,387	0	0	0	0
2023	785,313	-486	-1,498	-1,625	-1,954
2024	777,901	-2,950	-5,086	-6,022	-8,234
2025	769,921	-6,497	-11,631	-13,226	-18,162
2026	771,718	-8,744	-16,925	-19,146	-24,912
2027	773,630	-9,994	-19,289	-21,787	-27,860
2028	775,071	-10,701	-19,824	-22,209	-28,325
2029	774,703	-11,472	-20,251	-22,597	-29,131

Table A-29-14 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (JLR)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	138,251	0	0	0	0
2021	161,741	0	0	0	0
2022	169,599	0	0	0	0
2023	164,517	-105	-319	-342	-413
2024	159,606	-170	-109	-39	-185
2025	155,561	534	787	987	1,181
2026	153,348	971	1,274	1,309	1,688
2027	152,076	1,411	2,135	2,291	2,840
2028	149,902	1,587	2,372	2,506	3,093
2029	147,881	1,828	2,629	2,784	3,531

Table A-29-15 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Mazda)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	260,417	0	0	0	0
2021	309,262	0	0	0	0
2022	329,732	0	0	0	0
2023	323,354	-201	-622	-662	-809
2024	316,583	-729	-1,040	-1,124	-1,687
2025	310,663	-583	-1,225	-1,270	-1,942
2026	308,525	-501	-1,623	-1,960	-2,597
2027	307,451	-232	-1,082	-1,336	-1,849
2028	305,296	-161	-917	-1,167	-1,644
2029	302,977	-6	-697	-918	-1,299

Table A-29-16 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Mitsubishi)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	112,715	0	0	0	0
2021	133,020	0	0	0	0
2022	140,852	0	0	0	0
2023	137,509	-83	-266	-270	-351
2024	134,131	-244	-303	-286	-495
2025	131,266	31	-47	20	-101
2026	129,971	203	15	-44	-98
2027	129,272	412	439	437	478
2028	127,986	494	569	553	617
2029	126,710	621	727	716	852

Table A-29-17 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Nissan)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,030,570	0	0	0	0
2021	1,238,975	0	0	0	0
2022	1,338,642	0	0	0	0
2023	1,323,932	-802	-2,545	-2,734	-3,303
2024	1,305,237	-4,169	-6,841	-7,902	-11,049
2025	1,287,388	-7,471	-13,709	-15,342	-21,403
2026	1,285,615	-9,569	-19,656	-22,400	-29,256
2027	1,285,730	-10,359	-21,106	-24,019	-30,953
2028	1,283,563	-10,953	-21,366	-24,155	-31,058
2029	1,279,326	-11,473	-21,431	-24,144	-31,292

Table A-29-18 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Subaru)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	751,468	0	0	0	0
2021	890,819	0	0	0	0
2022	947,941	0	0	0	0
2023	928,433	-565	-1,776	-1,916	-2,321
2024	908,025	-1,943	-2,708	-2,876	-4,386
2025	890,362	-1,110	-2,621	-2,578	-4,162
2026	883,481	-609	-3,312	-4,116	-5,505
2027	879,932	370	-1,387	-1,922	-2,854
2028	873,039	676	-806	-1,367	-2,173
2029	865,824	1,230	-56	-545	-999

Table A-29-19 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Tesla)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	196,000	0	0	0	0
2021	244,803	0	0	0	0
2022	275,063	0	0	0	0
2023	278,650	-170	-539	-578	-698
2024	280,006	-1,578	-2,943	-3,585	-4,753
2025	279,988	-4,554	-7,945	-9,150	-12,362
2026	283,706	-6,431	-11,723	-13,110	-17,029
2027	286,375	-7,710	-14,176	-15,878	-20,180
2028	289,831	-8,353	-14,789	-16,397	-20,763
2029	292,022	-9,122	-15,374	-16,977	-21,785

Table A-29-20 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Toyota)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	1,774,456	0	0	0	0
2021	2,135,077	0	0	0	0
2022	2,308,880	0	0	0	0
2023	2,284,796	-1,410	-4,386	-4,719	-5,714
2024	2,253,530	-7,337	-12,046	-13,985	-19,513
2025	2,223,450	-13,482	-24,567	-27,590	-38,423
2026	2,221,161	-17,369	-35,290	-40,223	-52,527
2027	2,221,872	-18,926	-38,214	-43,466	-55,994
2028	2,218,889	-20,021	-38,774	-43,813	-56,283
2029	2,212,173	-21,031	-38,982	-43,871	-56,890

Table A-29-21 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Volvo)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	103,970	0	0	0	0
2021	123,390	0	0	0	0
2022	131,463	0	0	0	0
2023	128,859	-88	-254	-273	-314
2024	126,104	-287	-398	-421	-642
2025	123,712	-203	-433	-436	-688
2026	122,822	-158	-562	-684	-915
2027	122,376	-41	-329	-416	-580
2028	121,486	-23	-261	-356	-500
2029	120,531	46	-171	-254	-345

Table A-29-22 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (VWA)

Model Year	Regulatory Alternative				
	0 (Baseline)	1	2	2.5	3
2020	427,139	0	0	0	0
2021	513,921	0	0	0	0
2022	555,735	0	0	0	0
2023	549,933	-343	-1,067	-1,149	-1,381
2024	542,392	-1,770	-2,907	-3,373	-4,678
2025	535,128	-3,214	-5,891	-6,629	-9,190
2026	534,567	-4,143	-8,478	-9,668	-12,567
2027	534,716	-4,507	-9,159	-10,429	-13,371
2028	533,982	-4,764	-9,286	-10,506	-13,442
2029	532,355	-5,008	-9,337	-10,522	-13,579

30. Regulatory Costs per Vehicle, by Vehicle Type

Table A-30-1 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Total)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	960	1,240	1,100
Alternative 1	1,358	1,701	1,532
Alternative 2	1,943	2,127	2,038
Alternative 2.5	2,084	2,283	2,187
Alternative 3	2,353	2,650	2,507

Table A-30-2 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (BMW)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,924	1,330	1,745
Alternative 1	1,885	1,454	1,751
Alternative 2	2,431	1,896	2,261
Alternative 2.5	2,587	2,001	2,401
Alternative 3	2,940	2,313	2,738

Table A-30-3 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Daimler)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,922	1,227	1,607
Alternative 1	2,664	1,524	2,135
Alternative 2	3,173	1,716	2,487
Alternative 2.5	3,320	1,783	2,594
Alternative 3	3,721	1,940	2,870

Table A-30-4 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (FCA)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	2,296	1,378	1,532
Alternative 1	2,695	1,862	1,997
Alternative 2	3,607	2,168	2,398
Alternative 2.5	3,958	2,275	2,543
Alternative 3	4,303	2,509	2,791

Table A-30-5 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Ford)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,416	1,536	1,499
Alternative 1	1,881	1,451	1,581
Alternative 2	2,516	2,104	2,228
Alternative 2.5	2,522	2,369	2,415
Alternative 3	2,633	2,827	2,770

Table A-30-6 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (GM)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	877	972	937
Alternative 1	1,779	1,965	1,898
Alternative 2	2,229	2,678	2,519
Alternative 2.5	2,345	2,915	2,713
Alternative 3	2,484	3,314	3,022

Table A-30-7 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Honda)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	977	1,404	1,127
Alternative 1	1,044	1,175	1,091
Alternative 2	1,489	1,646	1,547
Alternative 2.5	1,779	1,849	1,805
Alternative 3	1,977	2,335	2,111

Table A-30-8 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Hyundai Kia-H)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	678	1,239	729
Alternative 1	1,294	1,998	1,358
Alternative 2	1,959	2,598	2,019
Alternative 2.5	2,131	2,757	2,190
Alternative 3	2,489	3,175	2,554

Table A-30-9 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Hyundai Kia-K)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	469	914	607
Alternative 1	880	1,548	1,094
Alternative 2	1,548	2,080	1,722
Alternative 2.5	1,616	2,247	1,823
Alternative 3	1,936	2,532	2,135

Table A-30-10 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (JLR)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,228	1,184	1,186
Alternative 1	1,579	2,337	2,293
Alternative 2	1,971	2,517	2,487
Alternative 2.5	1,989	2,675	2,637
Alternative 3	2,027	2,996	2,943

Table A-30-11 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Mazda)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	2,159	689	1,473
Alternative 1	2,528	898	1,756
Alternative 2	2,969	1,568	2,299
Alternative 2.5	3,046	1,848	2,472
Alternative 3	3,356	1,814	2,611

Table A-30-12 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Mitsubishi)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	496	272	382
Alternative 1	894	971	933
Alternative 2	1,407	1,252	1,327
Alternative 2.5	1,578	1,418	1,496
Alternative 3	1,838	1,770	1,803

Table A-30-13 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Nissan)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	565	1,096	704
Alternative 1	951	1,478	1,092
Alternative 2	2,396	2,682	2,474
Alternative 2.5	2,544	2,713	2,590
Alternative 3	2,888	2,868	2,882

Table A-30-14 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Subaru)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,185	858	950
Alternative 1	1,744	1,073	1,255
Alternative 2	2,246	1,073	1,383
Alternative 2.5	2,404	1,073	1,422
Alternative 3	2,866	1,180	1,615

Table A-30-15 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Tesla)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	24	346	31
Alternative 1	24	346	31
Alternative 2	24	346	31
Alternative 2.5	24	346	31
Alternative 3	24	346	31

Table A-30-16 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Toyota)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	616	1,254	868
Alternative 1	876	2,114	1,377
Alternative 2	1,148	2,040	1,514
Alternative 2.5	1,237	2,118	1,601
Alternative 3	1,584	2,805	2,094

Table A-30-17 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (Volvo)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,912	1,918	1,916
Alternative 1	4,196	1,870	2,550
Alternative 2	4,655	2,007	2,771
Alternative 2.5	4,808	2,116	2,890
Alternative 3	4,996	2,425	3,156

Table A-30-18 - Estimated Average Per Vehicle Regulatory Costs (\$) for MY 2029, by Alternative for Manufacturer (VWA)

	Passenger Cars	Light Trucks	Total Fleet
Alternative 0 (Baseline)	1,994	2,072	2,032
Alternative 1	1,935	2,557	2,246
Alternative 2	2,086	2,437	2,265
Alternative 2.5	2,215	2,507	2,364
Alternative 3	2,313	2,991	2,663

Table A-30-19 - Estimated Average Per Vehicle Fuel Costs (\$) for MY 2029 Total Fleet, by Alternative

	Lifetime Fuel Expenditures		Lifetime Increase	
	7% Discount Rate	3% Discount Rate	7% Discount Rate	3% Discount Rate
Alternative 0 (Baseline)	12,107	15,629	0	0
Alternative 1	11,557	14,920	-550	-709
Alternative 2	11,156	14,406	-950	-1,222
Alternative 2.5	11,036	14,252	-1,070	-1,377
Alternative 3	10,792	13,937	-1,315	-1,692

Table A-30-20 - Estimated Average Per Vehicle Fuel Costs (\$) for MY 2029 Passenger Car Fleet, by Alternative

	Lifetime Fuel Expenditures		Lifetime Increase	
	7% Discount Rate	3% Discount Rate	7% Discount Rate	3% Discount Rate
Alternative 0 (Baseline)	9,627	12,295	0	0
Alternative 1	9,159	11,697	-468	-598
Alternative 2	8,671	11,072	-956	-1,223
Alternative 2.5	8,522	10,881	-1,104	-1,413
Alternative 3	8,270	10,559	-1,356	-1,736

Table A-30-21 - Estimated Average Per Vehicle Fuel Costs (\$) for MY 2029 Light Truck Fleet, by Alternative

	Lifetime Fuel Expenditures		Lifetime Increase	
	7% Discount Rate	3% Discount Rate	7% Discount Rate	3% Discount Rate
Alternative 0 (Baseline)	14,606	18,988	0	0
Alternative 1	13,886	18,050	-720	-938
Alternative 2	13,516	17,572	-1,090	-1,416
Alternative 2.5	13,410	17,434	-1,196	-1,554
Alternative 3	13,129	17,068	-1,477	-1,921

31. Change in Safety Parameters

Table A-31-1 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Total Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	72	95	95	134
Fatalities from Rebound Effect	360	561	620	758
Fatalities from Sales/Scrappage	245	548	620	812
Total Changes in Fatalities	677	1,204	1,335	1,704
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.5	0.7	0.7	0.9
Fatality Costs From Rebound Effect	2.4	3.8	4.2	5.1
Fatality Costs from Sales/Scrappage	2.1	4.7	5.4	7.1
Total - Fatality Costs (\$b)	4.9	9.1	10.2	13.1
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.6	0.7	0.7	1.1
Non-Fatal Crash Costs From Rebound Effect	2.6	4.2	4.6	5.6
Non-Fatal Crash Costs from Sales/Scrappage	0.6	1.4	1.6	2.0
Total - Non-Fatal Crash Costs (\$b)	3.8	6.3	6.9	8.7
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.2	0.2	0.2
Property Damage Costs From Rebound Effect	0.5	0.9	1.0	1.2
Property Damage Costs From Sales/Scrappage	0.1	0.2	0.3	0.3
Total - Property Damage Costs (\$b)	0.8	1.2	1.4	1.7
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	1.2	1.5	1.5	2.2
Crash Costs from Rebound Effect	5.5	8.8	9.7	11.9
Crash Costs from Sales/Scrappage	2.8	6.3	7.2	9.5
Total - Societal Crash Costs (\$b)	9.5	16.7	18.5	23.5

Table A-31-2 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Passenger Car Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	89	113	113	174
Fatalities from Rebound Effect	143	263	309	371
Fatalities from Sales/Scrappage	-437	-680	-753	-953
Total Changes in Fatalities	-205	-303	-330	-407
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.6	0.8	0.8	1.2
Fatality Costs From Rebound Effect	1.0	1.8	2.1	2.5
Fatality Costs from Sales/Scrappage	-2.6	-3.8	-4.2	-5.3
Total - Fatality Costs (\$b)	-1.0	-1.3	-1.3	-1.5
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.7	0.9	0.9	1.4
Non-Fatal Crash Costs From Rebound Effect	1.1	2.0	2.4	2.9
Non-Fatal Crash Costs from Sales/Scrappage	-3.8	-6.3	-7.0	-8.9
Total - Non-Fatal Crash Costs (\$b)	-2.0	-3.4	-3.7	-4.7
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.2	0.2	0.3
Property Damage Costs From Rebound Effect	0.2	0.4	0.5	0.6
Property Damage Costs From Sales/Scrappage	-0.8	-1.3	-1.5	-1.9
Total - Property Damage Costs (\$b)	-0.4	-0.7	-0.8	-1.0
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	1.4	1.8	1.8	2.8
Crash Costs from Rebound Effect	2.3	4.2	5.0	6.0
Crash Costs from Sales/Scrappage	-7.2	-11.4	-12.7	-16.1
Total - Societal Crash Costs (\$b)	-3.5	-5.4	-5.9	-7.3

Table A-31-3 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Light Truck Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	-17	-18	-19	-40
Fatalities from Rebound Effect	217	298	311	387
Fatalities from Sales/Scrappage	682	1,228	1,373	1,765
Total Changes in Fatalities	883	1,508	1,665	2,112
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	-0.1	-0.1	-0.1	-0.3
Fatality Costs From Rebound Effect	1.4	2.0	2.0	2.5
Fatality Costs from Sales/Scrappage	4.7	8.6	9.6	12.4
Total - Fatality Costs (\$b)	6.0	10.4	11.5	14.7
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.1	-0.1	-0.3
Non-Fatal Crash Costs From Rebound Effect	1.5	2.1	2.2	2.8
Non-Fatal Crash Costs from Sales/Scrappage	4.4	7.7	8.5	10.9
Total - Non-Fatal Crash Costs (\$b)	5.8	9.6	10.6	13.4
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.0	0.0	0.0	-0.1
Property Damage Costs From Rebound Effect	0.3	0.4	0.5	0.6
Property Damage Costs From Sales/Scrappage	0.9	1.6	1.7	2.2
Total - Property Damage Costs (\$b)	1.2	2.0	2.2	2.7
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	-0.3	-0.3	-0.3	-0.6
Crash Costs from Rebound Effect	3.2	4.5	4.7	5.9
Crash Costs from Sales/Scrappage	10.0	17.8	19.9	25.5
Total - Societal Crash Costs (\$b)	13.0	22.0	24.3	30.8

Table A-31-4 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Total Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	72	95	95	134
Fatalities from Rebound Effect	360	561	620	758
Fatalities from Sales/Scrappage	245	548	620	812
Total Changes in Fatalities	677	1,204	1,335	1,704
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.3	0.4	0.4	0.5
Fatality Costs From Rebound Effect	1.4	2.2	2.4	2.9
Fatality Costs from Sales/Scrappage	1.5	3.5	4.0	5.4
Total - Fatality Costs (\$b)	3.2	6.1	6.8	8.8
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.4	0.5	0.5	0.7
Non-Fatal Crash Costs From Rebound Effect	1.6	2.6	2.9	3.5
Non-Fatal Crash Costs from Sales/Scrappage	0.5	1.1	1.3	1.7
Total - Non-Fatal Crash Costs (\$b)	2.5	4.2	4.6	5.9
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.1	0.1	0.1
Property Damage Costs From Rebound Effect	0.3	0.5	0.6	0.7
Property Damage Costs From Sales/Scrappage	0.1	0.2	0.2	0.3
Total - Property Damage Costs (\$b)	0.5	0.8	0.9	1.2
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	0.7	1.0	1.0	1.4
Crash Costs from Rebound Effect	3.3	5.3	5.9	7.2
Crash Costs from Sales/Scrappage	2.1	4.8	5.5	7.3
Total - Societal Crash Costs (\$b)	6.1	11.1	12.4	15.9

Table A-31-5 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Passenger Car Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	89	113	113	174
Fatalities from Rebound Effect	143	263	309	371
Fatalities from Sales/Scrappage	-437	-680	-753	-953
Total Changes in Fatalities	-205	-303	-330	-407
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.4	0.5	0.5	0.7
Fatality Costs From Rebound Effect	0.6	1.0	1.2	1.5
Fatality Costs from Sales/Scrappage	-1.2	-1.6	-1.8	-2.2
Total - Fatality Costs (\$b)	-0.3	-0.1	-0.1	0.0
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.4	0.6	0.6	0.9
Non-Fatal Crash Costs From Rebound Effect	0.7	1.3	1.5	1.8
Non-Fatal Crash Costs from Sales/Scrappage	-2.2	-3.7	-4.1	-5.2
Total - Non-Fatal Crash Costs (\$b)	-1.1	-1.8	-2.0	-2.5
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.1	0.1	0.2
Property Damage Costs From Rebound Effect	0.1	0.3	0.3	0.4
Property Damage Costs From Sales/Scrappage	-0.5	-0.8	-0.9	-1.1
Total - Property Damage Costs (\$b)	-0.2	-0.4	-0.4	-0.6
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	0.9	1.1	1.1	1.7
Crash Costs from Rebound Effect	1.4	2.6	3.0	3.7
Crash Costs from Sales/Scrappage	-4.0	-6.1	-6.7	-8.5
Total - Societal Crash Costs (\$b)	-1.7	-2.3	-2.5	-3.0

Table A-31-6 - Change in Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Light Truck Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	-17	-18	-19	-40
Fatalities from Rebound Effect	217	298	311	387
Fatalities from Sales/Scrappage	682	1,228	1,373	1,765
Total Changes in Fatalities	883	1,508	1,665	2,112
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	-0.1	-0.1	-0.1	-0.2
Fatality Costs From Rebound Effect	0.8	1.1	1.2	1.4
Fatality Costs from Sales/Scrappage	2.8	5.2	5.8	7.5
Total - Fatality Costs (\$b)	3.5	6.2	6.9	8.8
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.1	-0.1	-0.2
Non-Fatal Crash Costs From Rebound Effect	0.9	1.3	1.4	1.7
Non-Fatal Crash Costs from Sales/Scrappage	2.7	4.8	5.3	6.8
Total - Non-Fatal Crash Costs (\$b)	3.6	6.0	6.6	8.4
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.0	0.0	0.0	0.0
Property Damage Costs From Rebound Effect	0.2	0.3	0.3	0.4
Property Damage Costs From Sales/Scrappage	0.6	1.0	1.1	1.4
Total - Property Damage Costs (\$b)	0.7	1.2	1.4	1.7
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	-0.2	-0.2	-0.2	-0.4
Crash Costs from Rebound Effect	1.9	2.7	2.8	3.5
Crash Costs from Sales/Scrappage	6.1	10.9	12.2	15.8
Total - Societal Crash Costs (\$b)	7.8	13.4	14.9	18.9

Table A-31-7 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Total Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	79	111	107	170
Fatalities from Rebound Effect	529	847	915	1,078
Fatalities from Sales/Scrappage	-12	-77	-106	-149
Total Changes in Fatalities	597	882	916	1,098
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.4	0.6	0.6	0.9
Fatality Costs From Rebound Effect	2.9	4.7	5.1	6.0
Fatality Costs from Sales/Scrappage	-0.1	-0.4	-0.6	-0.8
Total - Fatality Costs (\$b)	3.3	4.9	5.1	6.2
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.5	0.7	0.6	1.1
Non-Fatal Crash Costs From Rebound Effect	3.3	5.2	5.6	6.6
Non-Fatal Crash Costs from Sales/Scrappage	-0.1	-0.3	-0.4	-0.5
Total - Non-Fatal Crash Costs (\$b)	3.6	5.6	5.9	7.1
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.1	0.1	0.2
Property Damage Costs From Rebound Effect	0.7	1.1	1.2	1.3
Property Damage Costs From Sales/Scrappage	0.0	-0.1	-0.1	-0.1
Total - Property Damage Costs (\$b)	0.7	1.2	1.2	1.5
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	1.0	1.4	1.4	2.2
Crash Costs from Rebound Effect	6.9	11.0	11.9	13.9
Crash Costs from Sales/Scrappage	-0.2	-0.7	-1.0	-1.4
Total - Societal Crash Costs (\$b)	7.7	11.7	12.3	14.8

Table A-31-8 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Passenger Car Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	120	163	163	256
Fatalities from Rebound Effect	188	342	393	478
Fatalities from Sales/Scrappage	-1,278	-2,052	-2,295	-2,905
Total Changes in Fatalities	-969	-1,547	-1,739	-2,171
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.7	0.9	0.9	1.4
Fatality Costs From Rebound Effect	1.1	1.9	2.2	2.7
Fatality Costs from Sales/Scrappage	-7.0	-11.3	-12.7	-16.0
Total - Fatality Costs (\$b)	-5.3	-8.5	-9.6	-11.9
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.7	1.0	1.0	1.6
Non-Fatal Crash Costs From Rebound Effect	1.2	2.1	2.4	2.9
Non-Fatal Crash Costs from Sales/Scrappage	-8.3	-13.1	-14.6	-18.4
Total - Non-Fatal Crash Costs (\$b)	-6.4	-10.0	-11.3	-13.9
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.2	0.2	0.2	0.3
Property Damage Costs From Rebound Effect	0.2	0.4	0.5	0.6
Property Damage Costs From Sales/Scrappage	-1.7	-2.7	-3.0	-3.8
Total - Property Damage Costs (\$b)	-1.3	-2.1	-2.3	-2.9
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	1.6	2.1	2.1	3.4
Crash Costs from Rebound Effect	2.4	4.4	5.0	6.1
Crash Costs from Sales/Scrappage	-17.0	-27.1	-30.3	-38.2
Total - Societal Crash Costs (\$b)	-13.0	-20.6	-23.1	-28.7

Table A-31-9 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Light Truck Fleet, 3% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	-41	-52	-56	-86
Fatalities from Rebound Effect	341	505	523	600
Fatalities from Sales/Scrappage	1,266	1,975	2,188	2,756
Total Changes in Fatalities	1,566	2,428	2,655	3,269
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	-0.2	-0.3	-0.3	-0.5
Fatality Costs From Rebound Effect	1.9	2.8	2.9	3.3
Fatality Costs from Sales/Scrappage	7.0	10.9	12.1	15.2
Total - Fatality Costs (\$b)	8.7	13.4	14.7	18.1
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	-0.3	-0.3	-0.4	-0.5
Non-Fatal Crash Costs From Rebound Effect	2.1	3.2	3.3	3.7
Non-Fatal Crash Costs from Sales/Scrappage	8.2	12.8	14.3	17.9
Total - Non-Fatal Crash Costs (\$b)	10.0	15.6	17.2	21.1
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	-0.1	-0.1	-0.1	-0.1
Property Damage Costs From Rebound Effect	0.4	0.6	0.7	0.8
Property Damage Costs From Sales/Scrappage	1.7	2.6	2.9	3.7
Total - Property Damage Costs (\$b)	2.1	3.2	3.5	4.3
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	-0.5	-0.7	-0.7	-1.1
Crash Costs from Rebound Effect	4.4	6.6	6.8	7.8
Crash Costs from Sales/Scrappage	16.8	26.4	29.3	36.8
Total - Societal Crash Costs (\$b)	20.7	32.3	35.4	43.5

Table A-31-10 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Total Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	79	111	107	170
Fatalities from Rebound Effect	529	847	915	1,078
Fatalities from Sales/Scrappage	-12	-77	-106	-149
Total Changes in Fatalities	597	882	916	1,098
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.2	0.3	0.3	0.4
Fatality Costs From Rebound Effect	1.3	2.0	2.2	2.6
Fatality Costs from Sales/Scrappage	0.0	-0.2	-0.2	-0.3
Total - Fatality Costs (\$b)	1.4	2.1	2.2	2.7
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.2	0.3	0.3	0.5
Non-Fatal Crash Costs From Rebound Effect	1.4	2.3	2.4	2.9
Non-Fatal Crash Costs from Sales/Scrappage	0.0	-0.1	-0.2	-0.2
Total - Non-Fatal Crash Costs (\$b)	1.6	2.4	2.6	3.1
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.0	0.1	0.1	0.1
Property Damage Costs From Rebound Effect	0.3	0.5	0.5	0.6
Property Damage Costs From Sales/Scrappage	0.0	0.0	0.0	0.0
Total - Property Damage Costs (\$b)	0.3	0.5	0.5	0.6
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	0.4	0.6	0.6	1.0
Crash Costs from Rebound Effect	3.0	4.8	5.1	6.0
Crash Costs from Sales/Scrappage	-0.1	-0.3	-0.4	-0.6
Total - Societal Crash Costs (\$b)	3.3	5.1	5.3	6.4

Table A-31-11 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Passenger Car Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	120	163	163	256
Fatalities from Rebound Effect	188	342	393	478
Fatalities from Sales/Scrappage	-1,278	-2,052	-2,295	-2,905
Total Changes in Fatalities	-969	-1,547	-1,739	-2,171
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	0.3	0.4	0.4	0.6
Fatality Costs From Rebound Effect	0.5	0.8	1.0	1.2
Fatality Costs from Sales/Scrappage	-3.0	-4.8	-5.4	-6.8
Total - Fatality Costs (\$b)	-2.3	-3.6	-4.0	-5.1
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	0.3	0.4	0.4	0.7
Non-Fatal Crash Costs From Rebound Effect	0.5	0.9	1.0	1.3
Non-Fatal Crash Costs from Sales/Scrappage	-3.5	-5.6	-6.2	-7.9
Total - Non-Fatal Crash Costs (\$b)	-2.7	-4.3	-4.8	-5.9
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.1	0.1	0.1	0.1
Property Damage Costs From Rebound Effect	0.1	0.2	0.2	0.3
Property Damage Costs From Sales/Scrappage	-0.7	-1.1	-1.3	-1.6
Total - Property Damage Costs (\$b)	-0.6	-0.9	-1.0	-1.2
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	0.7	0.9	0.9	1.4
Crash Costs from Rebound Effect	1.1	1.9	2.2	2.7
Crash Costs from Sales/Scrappage	-7.2	-11.6	-12.9	-16.3
Total - Societal Crash Costs (\$b)	-5.5	-8.7	-9.8	-12.2

Table A-31-12 - Change in Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Light Truck Fleet, 7% Percent Discount Rate, by Alternative

Alternative	1	2	2.5	3
Fatalities				
Fatalities From Mass Changes	-41	-52	-56	-86
Fatalities from Rebound Effect	341	505	523	600
Fatalities from Sales/Scrappage	1,266	1,975	2,188	2,756
Total Changes in Fatalities	1,566	2,428	2,655	3,269
Fatality Costs (\$b)				
Fatality Costs From Mass Changes	-0.1	-0.1	-0.1	-0.2
Fatality Costs From Rebound Effect	0.8	1.2	1.2	1.4
Fatality Costs from Sales/Scrappage	3.0	4.7	5.2	6.5
Total - Fatality Costs (\$b)	3.7	5.7	6.3	7.7
Non-Fatal Crash Costs (\$b)				
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.1	-0.2	-0.2
Non-Fatal Crash Costs From Rebound Effect	0.9	1.4	1.4	1.6
Non-Fatal Crash Costs from Sales/Scrappage	3.5	5.5	6.1	7.7
Total - Non-Fatal Crash Costs (\$b)	4.3	6.7	7.3	9.0
Property Damage Costs (\$b)				
Property Damage Costs From Mass Changes	0.0	0.0	0.0	0.0
Property Damage Costs From Rebound Effect	0.2	0.3	0.3	0.3
Property Damage Costs From Sales/Scrappage	0.7	1.1	1.3	1.6
Total - Property Damage Costs (\$b)	0.9	1.4	1.5	1.9
Societal Crash Costs (\$b)				
Crash Costs from Mass Changes	-0.2	-0.3	-0.3	-0.5
Crash Costs from Rebound Effect	1.9	2.8	2.9	3.4
Crash Costs from Sales/Scrappage	7.2	11.3	12.5	15.7
Total - Societal Crash Costs (\$b)	8.9	13.8	15.1	18.6

Table A-31-13 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Total Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	6,310	8,238	8,234	11,733
Non-Fatal Injuries from Rebound Effect	29,554	46,915	51,936	63,338
Non-Fatal Injuries from Sales/Scrappage	5,455	11,684	12,986	16,206
Total Changes in Non-Fatal Injuries	41,318	66,837	73,156	91,278
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	24,159	31,543	31,530	44,932
Property Damaged Vehicles from Rebound Effect	112,966	179,371	198,576	242,157
Property Damaged Vehicles from Sales/Scrappage	17,287	36,723	40,597	49,865
Total Changes in Property Damaged Vehicles	154,412	247,637	270,704	336,953

Table A-31-14 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Passenger Car Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	7,712	9,788	9,826	15,097
Non-Fatal Injuries from Rebound Effect	12,205	22,546	26,449	31,791
Non-Fatal Injuries from Sales/Scrappage	-44,611	-74,649	-83,212	-106,560
Total Changes in Non-Fatal Injuries	-24,694	-42,315	-46,937	-59,672
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	29,516	37,467	37,611	57,784
Property Damaged Vehicles from Rebound Effect	46,702	86,262	101,200	121,635
Property Damaged Vehicles from Sales/Scrappage	-172,433	-289,558	-322,881	-413,745
Total Changes in Property Damaged Vehicles	-96,215	-165,829	-184,070	-234,326

Table A-31-15 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Light Truck Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	-1,402	-1,551	-1,592	-3,364
Non-Fatal Injuries from Rebound Effect	17,348	24,369	25,487	31,548
Non-Fatal Injuries from Sales/Scrappage	50,065	86,333	96,198	122,766
Total Changes in Non-Fatal Injuries	66,012	109,152	120,093	150,950
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	-5,357	-5,924	-6,081	-12,852
Property Damaged Vehicles from Rebound Effect	66,264	93,109	97,377	120,522
Property Damaged Vehicles from Sales/Scrappage	189,720	326,281	363,478	463,609
Total Changes in Property Damaged Vehicles	250,627	413,466	454,774	571,279

Table A-31-16 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Total Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	6,921	9,870	9,487	15,480
Non-Fatal Injuries from Rebound Effect	47,956	76,460	82,275	96,314
Non-Fatal Injuries from Sales/Scrappage	-1,552	-4,274	-5,276	-7,632
Total Changes in Non-Fatal Injuries	53,324	82,056	86,486	104,163
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	26,291	37,561	36,095	59,025
Property Damaged Vehicles from Rebound Effect	182,780	291,134	313,169	366,448
Property Damaged Vehicles from Sales/Scrappage	-5,559	-14,124	-17,230	-25,284
Total Changes in Property Damaged Vehicles	203,512	314,571	332,034	400,189

Table A-31-17 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Passenger Car Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	10,755	14,872	14,884	23,547
Non-Fatal Injuries from Rebound Effect	16,953	30,067	34,160	41,809
Non-Fatal Injuries from Sales/Scrappage	-122,082	-193,171	-216,039	-271,485
Total Changes in Non-Fatal Injuries	-94,374	-148,232	-166,995	-206,129
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	40,944	56,696	56,744	89,840
Property Damaged Vehicles from Rebound Effect	64,557	114,153	129,546	158,648
Property Damaged Vehicles from Sales/Scrappage	-466,939	-737,733	-825,132	-1,036,077
Total Changes in Property Damaged Vehicles	-361,438	-566,884	-638,842	-787,589

Table A-31-18 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Light Truck Fleet, by Alternative

Alternative	1	2	2.5	3
Non-Fatal Injuries				
Non-Fatal Injuries From Mass Changes	-3,834	-5,002	-5,397	-8,067
Non-Fatal Injuries from Rebound Effect	31,003	46,393	48,115	54,506
Non-Fatal Injuries from Sales/Scrappage	120,530	188,897	210,763	263,853
Total Changes in Non-Fatal Injuries	147,699	230,288	253,481	310,292
Property Damaged Vehicles				
Property Damaged Vehicles From Mass Changes	-14,654	-19,135	-20,649	-30,815
Property Damaged Vehicles from Rebound Effect	118,223	176,981	183,623	207,800
Property Damaged Vehicles from Sales/Scrappage	461,380	723,609	807,902	1,010,793
Total Changes in Property Damaged Vehicles	564,950	881,455	970,876	1,187,778