



U.S. Department Of Transportation

National Highway Traffic Safety Administration

APPENDIX II

CAFE Analysis Data Book Analysis for Draft Supplemental Environmental Impact Statement

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This appendix presents a broad range of outputs from the CAFE Model “unconstrained” analysis discussed in the draft SEIS. The unconstrained analysis differs from the “standard setting” analysis that is the focus of Today’s notice and the PRIA, in that manufacturers are allowed to 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 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.

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 B-1-1 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars), Total Fleet for Alternative 1

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	68.8	50.6	2.70	3.67
Benefits	89.2	55.6	3.50	4.04
Net Benefits	20.4	5.0	0.80	0.37

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

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	14.3	13.1	0.56	0.95
Benefits	46.8	29.4	1.84	2.13
Net Benefits	32.5	16.3	1.28	1.18

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

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	54.6	37.5	2.14	2.72
Benefits	42.4	26.3	1.66	1.91
Net Benefits	-12.1	-11.2	-0.48	-0.82

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

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	109.9	81.4	4.31	5.91
Benefits	130.7	81.2	5.12	5.90
Net Benefits	20.8	-0.2	0.81	-0.01

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

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	28.0	25.1	1.10	1.83
Benefits	79.3	49.6	3.11	3.60
Net Benefits	51.3	24.5	2.01	1.78

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

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	81.8	56.3	3.21	4.09
Benefits	51.3	31.6	2.01	2.30
Net Benefits	-30.5	-24.7	-1.20	-1.79

**Table B-1-7 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Total Fleet for Alternative 3**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	159.5	120.0	6.25	8.72
Benefits	171.3	106.4	6.72	7.73
Net Benefits	11.8	-13.6	0.46	-0.99

**Table B-1-8 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Passenger Car Fleet for Alternative 3**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	43.1	38.6	1.69	2.80
Benefits	102.3	63.9	4.01	4.64
Net Benefits	59.2	25.3	2.32	1.84

**Table B-1-9 - Estimated Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars),
Light Truck Fleet for Alternative 3**

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	116.4	81.5	4.56	5.92
Benefits	69.0	42.6	2.71	3.09
Net Benefits	-47.4	-38.9	-1.86	-2.83

Table B-1-10 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 1

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	193.5	112.8	9.87	9.09
Benefits	283.3	154.1	14.46	12.42
Net Benefits	89.8	41.3	4.58	3.33

Table B-1-11 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 1

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	11.6	14.2	0.59	1.14
Benefits	151.7	82.9	7.74	6.68
Net Benefits	140.2	68.8	7.15	5.54

Table B-1-12 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 1

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	181.9	98.7	9.28	7.95
Benefits	131.6	71.2	6.71	5.74
Net Benefits	-50.3	-27.5	-2.57	-2.21

Table B-1-13 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 2

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	311.9	183.7	15.91	14.80
Benefits	442.9	241.3	22.60	19.44
Net Benefits	131.1	57.6	6.69	4.64

Table B-1-14 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 2

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	35.7	33.1	1.82	2.67
Benefits	263.3	144.3	13.44	11.63
Net Benefits	227.7	111.3	11.62	8.97

Table B-1-15 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 2

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	276.2	150.6	14.09	12.14
Benefits	179.6	96.9	9.16	7.81
Net Benefits	-96.6	-53.7	-4.93	-4.33

Table B-1-16 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Total Fleet for Alternative 3

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	437.2	261.4	22.31	21.07
Benefits	585.6	319.5	29.87	25.75
Net Benefits	148.3	58.1	7.57	4.68

Table B-1-17 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Passenger Car Fleet for Alternative 3

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	64.7	55.1	3.30	4.44
Benefits	350.9	192.0	17.90	15.47
Net Benefits	286.1	136.9	14.60	11.03

Table B-1-18 - Estimated Costs, Benefits, and Net Benefits Across Calendar Years 2021-2050 (billions of dollars), Light Truck Fleet for Alternative 3

	Totals		Annualized	
	3% Discount Rate	7% Discount Rate	3% Discount Rate	7% Discount Rate
Costs	372.5	206.3	19.00	16.63
Benefits	234.7	127.5	11.97	10.27
Net Benefits	-137.8	-78.8	-7.03	-6.35

Table B-1-19 - Estimated Total Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029 (billions of dollars) Total Fleet, by Alternative

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	68.8	89.2	20.4	50.6	55.6	5.0
Alternative 2	109.9	130.7	20.8	81.4	81.2	-0.2
Alternative 3	159.5	171.3	11.8	120.0	106.4	-13.6

**Table B-1-20 - Estimated Passenger Car Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029
(billions of dollars) Passenger Car Fleet, by Alternative**

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	14.3	46.8	32.5	13.1	29.4	16.3
Alternative 2	28.0	79.3	51.3	25.1	49.6	24.5
Alternative 3	43.1	102.3	59.2	38.6	63.9	25.3

**Table B-1-21 - Estimated Light Truck Fleet Costs, Benefits, and Net Benefits Across MYs 1981-2029
(billions of dollars) Light Truck Fleet, by Alternative**

Alternative	3% Discount Rate			7% Discount Rate		
	Costs	Benefits	Net Benefits	Costs	Benefits	Net Benefits
Alternative 1	54.6	42.4	-12.1	37.5	26.3	-11.2
Alternative 2	81.8	51.3	-30.5	56.3	31.6	-24.7
Alternative 3	116.4	69.0	-47.4	81.5	42.6	-38.9

Table B-1-22 - Estimates of Benefits and Costs of the Preferred Alternative for Model Years 2023 through 2026 (billions of dollars), 3% Discount Rate

MY	Cost	Benefit	Net Benefits
Present Values			
2023	4.4	2.7	-1.7
2024	7.9	13.4	5.5
2025	9.9	20.4	10.6
2026	11.8	28.0	16.1
Sum	34.0	64.5	30.5

2. Estimated Required CAFE Levels

Table B-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	36.8
2023	45.2	32.4	37.4
2024	45.9	32.9	38.1
2025	46.6	33.5	38.8
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	39.6

**Table B-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	36.8
2023	45.2	32.4	37.4
2024	49.8	36.4	41.8
2025	51.5	37.7	43.3
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 B-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	36.8
2023	45.2	32.4	37.4
2024	49.2	35.1	40.7
2025	53.4	38.2	44.3
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 B-2-4 - 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	36.8
2023	45.2	32.4	37.4
2024	50.2	35.9	41.6
2025	55.8	39.9	46.2
2026	62.0	44.3	51.3
2027	62.0	44.3	51.3
2028	62.0	44.3	51.4
2029	62.0	44.3	51.4

Table B-2-5 - 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	36.8	37.4	38.1	38.8	39.4	39.4	39.5	39.6
Alternative 1	35.4	36.0	36.8	37.4	41.8	43.3	44.7	44.8	44.8	44.9
Alternative 2	35.4	36.0	36.8	37.4	40.7	44.3	48.1	48.1	48.2	48.2
Alternative 3	35.4	36.0	36.8	37.4	41.6	46.2	51.3	51.3	51.4	51.4

Table B-2-6 - 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 3	43.3	43.9	44.6	45.2	50.2	55.8	62.0	62.0	62.0	62.0

Table B-2-7 - 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 3	31.0	31.5	31.9	32.4	35.9	39.9	44.3	44.3	44.3	44.3

Table B-2-8 - 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	42.1	42.1	42.2
Alternative 1	37.7	38.4	39.2	39.9	44.5	46.0	47.6	47.6	47.6	47.7
Alternative 2	37.7	38.4	39.2	39.9	43.5	47.3	51.4	51.4	51.5	51.6
Alternative 3	37.7	38.4	39.2	39.9	44.4	49.4	54.8	54.8	54.9	54.9

Table B-2-9 - 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	39.8	39.8
Alternative 1	35.6	36.3	37.0	37.6	42.1	43.5	45.0	45.1	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 3	35.6	36.3	37.0	37.6	41.9	46.6	51.8	51.8	51.8	51.9

Table B-2-10 - 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 3	31.3	31.7	32.3	32.8	36.4	40.5	45.0	45.0	45.0	45.0

Table B-2-11 - 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	35.3	35.3	35.3	35.4
Alternative 1	31.8	32.4	33.0	33.6	37.5	38.9	40.2	40.2	40.3	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 3	31.8	32.4	33.0	33.6	37.2	41.4	46.0	46.0	46.0	46.0

Table B-2-12 - 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	36.2	36.2	36.2	36.3
Alternative 1	32.7	33.2	33.9	34.4	38.3	39.7	41.0	41.1	41.1	41.1
Alternative 2	32.7	33.2	33.9	34.4	37.2	40.5	44.0	44.0	44.1	44.1
Alternative 3	32.7	33.2	33.9	34.4	38.0	42.3	46.9	46.9	47.0	47.0

Table B-2-13 - 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	40.8	41.5	42.2	42.9	42.9	43.0	43.0
Alternative 1	38.6	39.3	40.1	40.8	45.4	47.0	48.6	48.7	48.7	48.7
Alternative 2	38.6	39.3	40.1	40.8	44.4	48.3	52.5	52.5	52.6	52.6
Alternative 3	38.6	39.3	40.1	40.8	45.4	50.5	56.0	56.0	56.1	56.1

Table B-2-14 - 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	46.0	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	51.8	56.2	56.2	56.3	56.3
Alternative 3	41.6	42.3	43.1	43.8	48.7	54.1	60.1	60.1	60.1	60.1

Table B-2-15 - 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	49.3	49.3	49.4
Alternative 2	38.9	39.7	40.5	41.3	45.0	48.9	53.1	53.1	53.2	53.3
Alternative 3	38.9	39.7	40.5	41.3	45.9	51.0	56.7	56.7	56.8	56.8

Table B-2-16 - 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	35.4	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	44.0	44.0	44.0	44.0
Alternative 3	32.6	33.1	33.7	34.2	38.1	42.2	47.0	47.0	47.0	47.0

Table B-2-17 - 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	41.4	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	48.2	52.3	52.3	52.4	52.4
Alternative 3	38.7	39.3	40.0	40.7	45.3	50.3	55.9	55.9	55.9	55.9

Table B-2-18 - 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	42.7	43.5	44.2	44.9	44.9	45.0	45.0
Alternative 1	40.7	41.3	42.1	42.7	47.8	49.4	51.1	51.2	51.2	51.2
Alternative 2	40.7	41.3	42.1	42.7	46.6	50.6	55.0	55.0	55.1	55.1
Alternative 3	40.7	41.3	42.1	42.7	47.6	52.9	58.8	58.7	58.8	58.8

Table B-2-19 - 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	42.1	42.7	43.4	43.5	43.5	43.5
Alternative 1	39.2	39.9	40.6	41.3	45.9	47.5	49.1	49.2	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 3	39.2	39.9	40.6	41.3	46.0	51.1	56.8	56.8	56.8	56.8

Table B-2-20 - 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	39.8	40.4	41.0	41.1	41.1	41.2
Alternative 1	37.0	37.7	38.3	39.0	43.9	45.4	47.0	47.0	47.0	47.1
Alternative 2	37.0	37.7	38.3	39.0	42.5	46.2	50.2	50.2	50.3	50.3
Alternative 3	37.0	37.7	38.3	39.0	43.4	48.3	53.6	53.6	53.6	53.7

Table B-2-21 - 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	45.4	49.3	53.6	53.6	53.6	53.6
Alternative 3	40.5	40.4	41.1	41.8	46.3	51.5	57.3	57.3	57.3	57.3

Table B-2-22 - 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	41.5	41.5	41.6	41.7
Alternative 1	37.1	37.9	38.6	39.3	44.0	45.4	47.0	47.1	47.1	47.2
Alternative 2	37.1	37.9	38.6	39.3	42.9	46.7	50.7	50.7	50.8	50.9
Alternative 3	37.1	37.9	38.6	39.3	43.8	48.7	54.1	54.1	54.2	54.2

Table B-2-23 - 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	36.1	36.6	37.2	37.8	37.9	37.9	37.9
Alternative 1	34.3	34.9	35.5	36.1	40.4	41.8	43.3	43.3	43.3	43.4
Alternative 2	34.3	34.9	35.5	36.1	39.2	42.7	46.3	46.3	46.3	46.4
Alternative 3	34.3	34.9	35.5	36.1	40.1	44.6	49.5	49.5	49.5	49.5

Table B-2-24 - 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	41.6	41.6	41.7
Alternative 1	37.1	37.9	38.7	39.4	44.1	45.6	47.2	47.3	47.3	47.4
Alternative 2	37.1	37.9	38.7	39.4	43.0	46.7	50.8	50.8	50.9	50.9
Alternative 3	37.1	37.9	38.7	39.4	43.9	48.7	54.2	54.2	54.3	54.3

Table B-2-25 - 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	52.2	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 3	42.5	43.1	43.8	44.4	49.4	54.9	60.9	60.9	60.9	60.9

Table B-2-26 - 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 3	41.4	42.0	42.7	43.3	48.1	53.5	59.4	59.4	59.4	59.4

Table B-2-27 - 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	44.8	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	50.8	55.2	55.2	55.1	55.1
Alternative 3	41.6	42.0	42.5	43.0	47.8	53.1	59.0	59.0	59.0	58.9

Table B-2-28 - 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	51.8
Alternative 2	42.2	42.8	43.5	44.1	47.9	52.2	56.7	56.7	56.7	56.7
Alternative 3	42.2	42.8	43.5	44.1	49.0	54.5	60.5	60.5	60.5	60.5

Table B-2-29 - 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	47.2	48.0	48.0	47.9	47.9
Alternative 1	43.9	44.5	45.2	45.8	50.4	52.1	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 3	43.9	44.5	45.2	45.8	50.9	56.6	62.9	62.9	62.9	62.9

Table B-2-30 - 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	53.6
Alternative 2	43.6	44.3	45.0	45.6	49.6	53.9	58.6	58.6	58.6	58.6
Alternative 3	43.6	44.3	45.0	45.6	50.7	56.4	62.6	62.6	62.6	62.6

Table B-2-31 - 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 3	43.3	44.0	44.7	45.5	50.5	56.1	62.3	62.3	62.3	62.3

Table B-2-32 - 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	54.3	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 3	44.0	44.7	45.4	46.1	51.2	56.9	63.3	63.3	63.3	63.3

Table B-2-33 - 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	46.0	46.0	46.0	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 3	42.1	42.7	43.3	44.0	48.9	54.3	60.4	60.4	60.4	60.4

Table B-2-34 - 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	50.5	52.3	54.1	54.1	54.1	54.1
Alternative 2	43.9	44.6	45.2	45.9	49.9	54.3	59.0	59.0	59.0	59.0
Alternative 3	43.9	44.6	45.2	45.9	51.0	56.7	63.0	63.0	63.0	63.0

Table B-2-35 - 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	51.2	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	62.8	62.8
Alternative 3	46.5	47.2	48.0	48.8	54.3	60.3	67.0	67.0	67.0	67.0

Table B-2-36 - 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	47.2	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 3	43.2	43.9	44.5	45.1	50.2	55.8	61.9	61.9	61.9	61.9

Table B-2-37 - 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 3	44.9	45.5	46.2	46.9	52.2	57.9	64.4	64.4	64.4	64.4

Table B-2-38 - 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 3	40.9	40.8	41.4	42.1	46.7	51.9	57.7	57.7	57.7	57.7

Table B-2-39 - 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	54.0	58.6	58.6	58.6	58.6
Alternative 3	43.6	44.3	45.0	45.6	50.8	56.4	62.7	62.7	62.7	62.7

Table B-2-40 - 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 3	40.9	41.5	42.2	42.8	47.5	52.8	58.7	58.7	58.7	58.7

Table B-2-41 - 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 3	43.6	44.3	45.0	45.7	50.8	56.4	62.7	62.7	62.7	62.7

Table B-2-42 - 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 3	31.7	32.2	32.6	33.1	36.8	40.9	45.5	45.5	45.5	45.5

Table B-2-43 - 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 3	31.7	32.2	32.6	33.1	36.8	40.9	45.5	45.5	45.5	45.5

Table B-2-44 - 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 3	30.1	30.5	31.0	31.5	34.9	38.8	43.1	43.1	43.1	43.1

Table B-2-45 - 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 3	29.2	29.7	30.1	30.6	33.8	37.6	41.8	41.8	41.8	41.8

Table B-2-46 - 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 3	29.1	29.5	30.0	30.4	33.4	37.2	41.3	41.3	41.3	41.3

Table B-2-47 - 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 3	33.3	33.8	34.3	34.8	38.7	43.0	47.7	47.7	47.7	47.7

Table B-2-48 - 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	35.6	38.6	42.0	42.0	42.0	42.0
Alternative 3	31.3	31.7	32.2	32.7	36.3	40.4	44.9	44.9	44.9	44.9

Table B-2-49 - 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 3	32.8	33.3	33.9	34.4	38.2	42.4	47.1	47.1	47.1	47.1

Table B-2-50 - 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 3	32.3	32.8	33.3	33.8	37.6	41.7	46.4	46.4	46.4	46.4

Table B-2-51 - 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 3	34.8	35.3	35.8	36.4	40.4	44.9	49.9	49.9	49.9	49.9

Table B-2-52 - 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	38.4	39.0	39.6	40.2	40.2	40.2	40.2
Alternative 1	36.8	37.3	37.9	38.4	43.4	44.8	46.3	46.4	46.4	46.4
Alternative 2	36.8	37.3	37.9	38.4	41.8	45.4	49.4	49.4	49.4	49.4
Alternative 3	36.8	37.3	37.9	38.4	42.7	47.5	52.8	52.7	52.8	52.8

Table B-2-53 - 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 3	32.5	33.0	33.5	34.0	37.8	42.0	46.7	46.7	46.7	46.7

Table B-2-54 - 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 3	35.4	35.9	36.4	37.0	41.1	45.7	50.7	50.7	50.7	50.7

Table B-2-55 - 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	37.8	41.1	41.1	41.1	41.1
Alternative 3	30.6	31.1	31.6	32.0	35.6	39.6	43.9	44.0	44.0	43.9

Table B-2-56 - 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 3	31.8	32.3	32.7	33.2	36.9	41.0	45.6	45.6	45.6	45.6

Table B-2-57 - 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 3	32.5	33.0	33.5	34.0	37.8	42.0	46.6	46.6	46.6	46.6

Table B-2-58 - 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 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 B-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)	34.3	35.9	38.0	39.5	40.8	41.7	42.6	42.9	43.2	43.6
Alternative 1	34.3	35.9	38.0	39.9	42.3	43.7	45.2	45.7	46.2	46.6
Alternative 2	34.3	35.9	38.0	40.0	42.6	44.7	47.2	48.0	48.7	49.2
Alternative 3	34.3	35.9	38.0	40.2	43.4	46.1	49.2	50.2	51.0	51.5

Table B-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)	41.7	43.4	46.2	47.6	49.3	50.6	51.4	51.8	52.0	52.5
Alternative 1	41.7	43.4	46.2	48.4	51.6	53.7	55.0	55.4	56.0	56.7
Alternative 2	41.7	43.4	46.2	48.8	52.6	55.7	58.7	59.6	60.7	61.4
Alternative 3	41.7	43.4	46.2	49.1	53.4	57.7	61.4	62.8	64.1	65.2

Table B-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	32.9	34.3	35.2	35.8	36.6	36.8	37.0	37.2
Alternative 1	30.2	31.5	32.9	34.5	36.3	37.3	38.7	39.1	39.5	39.7
Alternative 2	30.2	31.5	32.9	34.5	36.3	37.8	39.9	40.6	41.1	41.3
Alternative 3	30.2	31.5	32.9	34.6	37.0	38.9	41.6	42.4	42.9	43.0

Table B-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)	34.6	36.3	39.3	41.4	42.4	46.3	48.4	48.8	48.8	49.0
Alternative 1	34.6	36.3	39.3	41.5	43.6	46.6	47.8	48.5	48.6	48.7
Alternative 2	34.6	36.3	39.3	41.3	43.2	46.5	48.1	51.4	51.5	51.7
Alternative 3	34.6	36.3	39.3	41.4	43.2	47.8	49.4	53.3	54.2	54.4

Table B-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)	31.5	33.5	34.7	36.5	38.0	39.6	40.5	41.1	41.3	41.4
Alternative 1	31.5	33.5	34.7	36.5	37.9	39.6	40.9	41.5	43.7	44.2
Alternative 2	31.5	33.5	34.7	36.5	37.9	39.6	40.9	41.4	45.5	45.9
Alternative 3	31.5	33.5	34.7	36.5	37.8	42.0	43.5	44.1	48.3	49.6

Table B-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)	28.4	29.1	31.2	33.3	33.8	33.9	34.6	35.0	35.6	35.9
Alternative 1	28.4	29.1	31.2	33.3	33.7	33.9	35.0	35.6	36.9	38.0
Alternative 2	28.4	29.1	31.2	33.3	33.7	33.9	35.0	35.7	36.9	38.3
Alternative 3	28.4	29.1	31.2	33.3	33.7	33.9	35.0	35.8	37.0	38.6

Table B-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)	31.6	33.0	35.1	37.0	38.1	38.3	38.6	38.7	38.7	38.8
Alternative 1	31.6	33.0	35.1	38.4	39.4	39.9	41.1	41.1	41.2	41.3
Alternative 2	31.6	33.0	35.1	38.7	39.9	40.3	42.7	43.3	43.5	43.8
Alternative 3	31.6	33.0	35.1	39.0	40.9	41.3	45.5	46.3	46.4	46.6

Table B-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	33.9	34.4	35.3	36.2	36.9	37.0	37.2	37.8
Alternative 1	30.9	32.4	33.9	34.4	38.1	40.1	41.5	41.9	42.0	42.1
Alternative 2	30.9	32.4	33.9	34.4	37.1	40.5	44.0	44.7	44.8	44.9
Alternative 3	30.9	32.4	33.9	34.5	37.8	42.3	46.7	47.7	47.8	47.9

Table B-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)	40.3	41.3	43.9	44.3	44.9	46.3	47.6	47.6	47.9	47.9
Alternative 1	40.3	41.3	43.9	44.5	45.4	47.1	48.0	48.7	48.9	48.9
Alternative 2	40.3	41.3	43.9	45.0	46.7	49.3	50.8	52.1	52.8	53.0
Alternative 3	40.3	41.3	43.9	46.0	49.5	52.3	54.0	55.5	56.6	56.6

Table B-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)	37.7	39.0	42.1	44.0	46.3	46.6	47.3	47.6	47.7	48.0
Alternative 1	37.7	39.0	42.1	44.0	47.8	49.2	51.9	52.3	52.4	52.5
Alternative 2	37.7	39.0	42.1	44.0	47.8	50.7	56.4	56.9	57.1	57.2
Alternative 3	37.7	39.0	42.1	44.0	48.2	52.6	60.1	60.6	60.8	61.0

Table B-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)	36.3	40.6	41.4	41.9	44.8	45.6	45.9	46.6	46.7	46.8
Alternative 1	36.3	40.6	41.4	41.9	46.9	48.0	48.4	49.6	49.7	49.7
Alternative 2	36.3	40.6	41.4	41.9	48.2	50.2	52.4	53.6	53.9	54.0
Alternative 3	36.3	40.6	41.4	41.9	49.9	53.5	56.0	57.0	57.5	57.5

Table B-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	31.6	33.6	34.9	35.4	35.9	36.6	36.6	36.8
Alternative 1	28.9	30.1	31.6	33.6	35.4	36.0	37.4	38.4	38.4	39.0
Alternative 2	28.9	30.1	31.6	33.6	35.3	35.9	37.4	38.3	38.4	39.1
Alternative 3	28.9	30.1	31.6	33.6	35.4	36.0	37.5	38.5	38.5	39.2

Table B-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)	36.4	37.7	38.7	43.7	44.3	45.2	45.9	46.0	46.0	46.1
Alternative 1	36.4	37.7	38.7	43.7	44.6	47.7	49.2	49.2	49.3	49.3
Alternative 2	36.4	37.7	38.7	43.7	44.6	50.8	53.7	53.7	53.8	54.0
Alternative 3	36.4	37.7	38.7	43.7	44.8	52.2	56.1	56.1	56.1	56.4

Table B-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)	38.7	39.4	39.8	40.1	40.3	45.9	46.0	46.0	46.1	46.2
Alternative 1	38.7	39.4	39.8	40.1	40.3	51.5	51.6	51.6	51.7	51.7
Alternative 2	38.7	39.4	39.8	40.1	40.3	55.9	56.0	56.0	56.0	56.1
Alternative 3	38.7	39.4	39.8	40.1	40.2	59.0	59.1	59.0	59.1	59.1

Table B-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)	37.6	40.1	42.3	43.0	44.7	45.3	45.7	45.7	46.0	46.1
Alternative 1	37.6	40.1	42.3	43.9	47.0	48.4	49.1	49.2	50.1	50.3
Alternative 2	37.6	40.1	42.3	44.9	48.5	51.7	52.8	53.2	54.5	54.8
Alternative 3	37.6	40.1	42.3	45.1	48.7	53.7	55.2	56.5	58.0	58.5

Table B-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)	38.7	39.9	42.4	45.7	48.0	49.5	50.1	50.3	50.3	50.4
Alternative 1	38.7	39.9	42.4	46.5	49.8	51.4	52.3	52.5	52.5	52.5
Alternative 2	38.7	39.9	42.4	46.3	49.2	50.8	53.1	53.3	53.3	53.4
Alternative 3	38.7	39.9	42.4	46.5	49.8	51.4	54.1	54.3	54.4	54.4

Table B-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)	720.6	747.7	750.3	755.3	756.3	757.2	757.8	758.3	758.9	759.4
Alternative 1	720.6	747.7	750.3	755.3	756.3	756.6	757.0	757.4	757.9	758.3
Alternative 2	720.6	747.7	750.3	755.3	756.2	756.4	756.6	756.6	757.2	757.5
Alternative 3	720.6	747.7	750.3	755.3	756.1	756.1	756.1	756.0	756.6	756.9

Table B-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)	36.7	38.1	40.1	41.5	42.5	42.8	45.1	45.6	46.3	47.1
Alternative 1	36.7	38.1	40.1	42.0	45.6	46.0	48.9	49.3	50.0	50.9
Alternative 2	36.7	38.1	40.1	42.1	47.5	48.1	51.9	52.4	53.2	53.6
Alternative 3	36.7	38.1	40.1	42.1	49.0	49.8	53.4	54.3	55.0	55.5

Table B-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	33.2	33.4	41.2	41.4	42.9	43.4	45.3	45.3	45.3
Alternative 1	33.1	33.2	33.4	41.0	41.2	42.6	43.7	46.4	46.5	46.5
Alternative 2	33.1	33.2	33.4	41.0	41.2	42.7	43.7	47.5	47.6	47.6
Alternative 3	33.1	33.2	33.4	41.4	41.7	43.2	43.5	48.1	48.2	48.2

Table B-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)	33.1	34.9	36.8	38.0	40.5	45.8	47.4	47.8	48.0	48.0
Alternative 1	33.1	34.9	36.8	38.0	40.9	45.9	47.6	47.9	48.5	48.6
Alternative 2	33.1	34.9	36.8	38.0	40.7	45.9	48.3	49.2	50.2	50.4
Alternative 3	33.1	34.9	36.8	38.0	40.7	45.9	48.8	49.7	51.1	51.2

Table B-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)	36.6	38.4	42.2	44.4	45.7	51.7	55.3	55.8	55.7	55.8
Alternative 1	36.6	38.4	42.2	44.4	47.3	51.6	53.5	53.9	53.9	54.1
Alternative 2	36.6	38.4	42.2	44.4	47.3	52.5	55.2	57.1	57.1	57.3
Alternative 3	36.6	38.4	42.2	44.4	47.3	54.9	57.7	60.9	60.9	61.2

Table B-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	36.9	38.7	39.4	42.7	44.1	44.5	45.1	45.3	45.3
Alternative 1	33.9	36.9	38.7	39.4	42.5	44.0	44.3	44.9	49.9	50.9
Alternative 2	33.9	36.9	38.7	39.4	42.5	44.0	44.3	44.9	54.8	55.6
Alternative 3	33.9	36.9	38.7	39.4	42.4	43.7	44.0	44.6	53.6	56.4

Table B-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	34.5	35.0	36.7	37.4	37.5	39.0	39.2	40.9	42.4
Alternative 1	30.7	34.5	35.0	36.7	37.4	37.5	39.7	40.7	42.9	50.2
Alternative 2	30.7	34.5	35.0	36.7	37.4	37.5	39.8	41.2	43.5	54.0
Alternative 3	30.7	34.5	35.0	36.7	37.4	37.5	39.8	41.4	43.7	56.5

Table B-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	37.3	42.9	46.9	46.8	47.2	47.7	47.8	47.8	47.9
Alternative 1	36.9	37.3	42.9	54.9	54.8	56.4	57.3	57.2	57.1	57.0
Alternative 2	36.9	37.3	42.9	57.5	57.4	59.2	61.1	61.3	61.2	61.4
Alternative 3	36.9	37.3	42.9	57.5	57.5	57.5	63.6	64.0	64.0	63.9

Table B-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)	40.0	41.2	43.6	45.2	46.8	48.8	49.0	49.2	49.3	49.5
Alternative 1	40.0	41.2	43.6	45.4	49.7	53.9	55.5	56.0	56.0	56.0
Alternative 2	40.0	41.2	43.6	45.2	49.2	53.9	58.5	60.2	60.3	60.3
Alternative 3	40.0	41.2	43.6	45.7	50.1	56.2	61.4	64.2	64.3	64.3

Table B-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	45.9	48.4	48.8	49.2	50.9	53.2	53.2	53.4	53.4
Alternative 1	45.0	45.9	48.4	49.2	50.1	52.1	53.7	53.8	53.8	53.8
Alternative 2	45.0	45.9	48.4	50.2	51.5	54.1	57.1	57.9	58.6	58.7
Alternative 3	45.0	45.9	48.4	52.3	54.5	57.3	60.6	61.5	62.9	62.9

Table B-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)	39.1	40.6	44.3	45.8	48.5	48.8	49.0	49.3	49.5	49.8
Alternative 1	39.1	40.6	44.3	45.8	50.3	52.0	53.6	54.1	54.2	54.3
Alternative 2	39.1	40.6	44.3	45.8	50.3	53.9	58.5	59.1	59.4	59.5
Alternative 3	39.1	40.6	44.3	45.8	50.8	56.3	62.3	62.8	63.1	63.3

Table B-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)	41.4	45.8	47.0	47.2	49.7	51.0	51.2	51.5	51.5	51.5
Alternative 1	41.4	45.8	47.0	47.2	51.2	52.9	53.4	54.3	54.3	54.3
Alternative 2	41.4	45.8	47.0	47.2	51.2	54.5	58.3	59.2	59.6	59.7
Alternative 3	41.4	45.8	47.0	47.2	52.1	58.1	62.4	63.3	64.0	64.0

Table B-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	44.6	44.6	44.6	47.3	47.9	47.9
Alternative 1	35.7	36.9	37.0	38.7	49.9	49.9	50.0	53.5	53.6	53.6
Alternative 2	35.7	36.9	37.0	38.7	47.8	47.8	47.8	51.0	51.3	55.6
Alternative 3	35.7	36.9	37.0	38.7	53.1	53.1	53.1	57.6	57.8	60.1

Table B-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)	38.6	41.3	43.1	48.2	48.9	50.6	50.8	50.8	50.8	50.8
Alternative 1	38.6	41.3	43.1	48.3	49.7	53.9	55.4	55.4	55.4	55.5
Alternative 2	38.6	41.3	43.1	48.3	49.6	56.8	59.3	59.3	59.4	59.9
Alternative 3	38.6	41.3	43.1	48.3	50.2	60.2	63.1	63.1	63.1	63.8

Table B-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)	42.3	44.0	44.6	45.0	45.3	52.0	52.2	52.3	52.5	52.6
Alternative 1	42.3	44.0	44.6	45.0	45.3	57.7	57.9	57.9	58.1	58.1
Alternative 2	42.3	44.0	44.6	45.0	45.3	64.5	64.6	64.6	64.7	64.8
Alternative 3	42.3	44.0	44.6	45.0	45.3	67.5	67.6	67.5	67.6	67.7

Table B-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)	41.7	43.3	45.4	46.1	48.4	48.8	49.0	49.0	49.1	49.2
Alternative 1	41.7	43.3	45.4	47.2	51.3	52.8	53.1	53.2	54.2	54.3
Alternative 2	41.7	43.3	45.4	48.3	53.3	57.9	58.1	58.5	60.1	60.1
Alternative 3	41.7	43.3	45.4	48.1	53.0	60.8	61.1	62.3	63.9	64.4

Table B-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	44.3	46.0	48.6	48.9	50.5	50.5	50.5	50.5
Alternative 1	38.1	40.1	44.3	46.0	52.4	52.7	55.2	55.2	55.2	55.2
Alternative 2	38.1	40.1	44.3	46.0	50.9	51.2	60.3	60.3	60.3	60.3
Alternative 3	38.1	40.1	44.3	46.0	52.4	52.7	64.4	64.4	64.4	64.4

Table B-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)	725.7	752.4	754.7	756.0	757.0	757.9	758.5	759.0	759.6	760.1
Alternative 1	725.7	752.4	754.7	756.0	757.0	757.3	757.7	758.1	758.6	759.0
Alternative 2	725.7	752.4	754.7	756.0	756.9	757.1	757.3	757.3	757.9	758.2
Alternative 3	725.7	752.4	754.7	756.0	756.8	756.8	756.8	756.7	757.3	757.6

Table B-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)	46.0	47.1	49.1	49.8	50.7	51.1	51.8	52.8	53.1	54.6
Alternative 1	46.0	47.1	49.1	49.8	53.0	53.5	54.3	55.2	55.6	57.2
Alternative 2	46.0	47.1	49.1	49.8	56.1	57.1	58.7	59.8	60.2	60.2
Alternative 3	46.0	47.1	49.1	49.8	57.6	59.1	60.8	62.7	63.0	64.2

Table B-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	35.8	36.0	40.0	40.3	42.5	43.9	45.5	45.5	45.6
Alternative 1	35.7	35.8	36.0	40.0	40.3	42.5	45.4	50.0	50.1	50.1
Alternative 2	35.7	35.8	36.0	40.0	40.3	42.5	45.4	54.9	55.0	55.0
Alternative 3	35.7	35.8	36.0	40.0	40.3	42.5	43.3	52.0	52.1	52.1

Table B-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)	37.6	38.6	40.7	42.4	46.1	49.6	51.8	52.0	52.3	52.3
Alternative 1	37.6	38.6	40.7	42.4	47.8	51.2	53.4	53.5	54.8	54.9
Alternative 2	37.6	38.6	40.7	42.4	47.8	51.9	56.2	56.4	59.0	59.2
Alternative 3	37.6	38.6	40.7	42.4	47.8	53.1	59.2	59.4	63.0	63.2

Table B-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)	31.7	33.1	34.8	36.5	36.9	37.9	38.1	38.1	38.1	38.1
Alternative 1	31.7	33.1	34.8	36.6	37.4	38.7	39.0	39.9	39.9	39.9
Alternative 2	31.7	33.1	34.8	36.3	36.6	37.6	37.9	42.5	42.6	42.6
Alternative 3	31.7	33.1	34.8	36.4	36.7	37.7	38.1	42.5	44.1	44.1

Table B-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)	29.7	30.8	31.4	33.9	33.9	35.6	36.8	37.2	37.3	37.4
Alternative 1	29.7	30.8	31.4	33.9	33.9	35.7	37.7	38.2	38.3	38.4
Alternative 2	29.7	30.8	31.4	33.9	33.9	35.7	37.7	38.2	38.3	38.4
Alternative 3	29.7	30.8	31.4	33.9	33.9	40.4	42.9	43.5	43.6	43.8

Table B-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)	28.1	28.4	30.6	32.8	33.2	33.3	33.9	34.3	34.7	34.8
Alternative 1	28.1	28.4	30.6	32.8	33.1	33.3	34.2	34.8	35.9	36.3
Alternative 2	28.1	28.4	30.6	32.8	33.1	33.3	34.2	34.8	35.9	36.3
Alternative 3	28.1	28.4	30.6	32.8	33.1	33.3	34.2	34.9	36.0	36.4

Table B-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)	30.0	31.6	32.8	34.1	35.4	35.5	35.6	35.7	35.7	35.7
Alternative 1	30.0	31.6	32.8	34.2	35.3	35.5	36.7	36.7	36.8	36.8
Alternative 2	30.0	31.6	32.8	34.2	35.4	35.6	37.9	38.6	38.7	39.0
Alternative 3	30.0	31.6	32.8	34.5	36.5	37.0	40.7	41.5	41.6	41.8

Table B-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	29.3	30.4	30.5	31.2	31.7	32.4	32.5	32.6	33.3
Alternative 1	27.8	29.3	30.4	30.5	33.9	35.2	36.5	36.8	36.9	37.0
Alternative 2	27.8	29.3	30.4	30.5	32.7	35.7	38.8	39.2	39.3	39.3
Alternative 3	27.8	29.3	30.4	30.5	33.4	37.3	41.4	41.9	42.0	42.0

Table B-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)	35.3	36.0	38.5	38.6	39.2	40.2	40.2	40.2	40.2	40.2
Alternative 1	35.3	36.0	38.5	38.6	39.3	40.6	40.6	41.9	42.1	42.1
Alternative 2	35.3	36.0	38.5	38.6	40.4	42.9	42.9	44.6	45.2	45.3
Alternative 3	35.3	36.0	38.5	38.6	42.9	45.7	45.7	47.7	48.4	48.4

Table B-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)	29.1	29.3	29.3	32.2	32.4	32.5	35.4	35.4	35.4	35.4
Alternative 1	29.1	29.3	29.3	32.2	32.4	32.5	39.4	39.4	39.4	39.4
Alternative 2	29.1	29.3	29.3	32.2	32.4	32.5	42.0	42.0	42.0	42.0
Alternative 3	29.1	29.3	29.3	32.2	32.4	32.5	45.1	45.2	45.2	45.2

Table B-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)	30.3	34.0	34.1	34.4	37.4	37.6	37.8	38.8	38.8	38.8
Alternative 1	30.3	34.0	34.1	34.4	40.3	40.6	40.7	42.1	42.1	42.1
Alternative 2	30.3	34.0	34.1	34.4	43.1	43.3	43.5	45.1	45.1	45.1
Alternative 3	30.3	34.0	34.1	34.4	46.1	46.4	46.6	47.7	47.7	47.7

Table B-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	31.4	33.4	34.5	35.0	35.5	36.1	36.1	36.3
Alternative 1	28.7	29.8	31.4	33.4	34.8	35.4	36.9	37.8	37.8	38.4
Alternative 2	28.7	29.8	31.4	33.4	34.8	35.4	36.9	37.8	37.8	38.4
Alternative 3	28.7	29.8	31.4	33.4	34.8	35.4	36.9	37.8	37.8	38.4

Table B-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)	34.5	34.8	35.1	39.8	40.2	40.6	41.6	41.6	41.6	41.6
Alternative 1	34.5	34.8	35.1	39.8	40.2	42.5	43.9	43.9	43.9	43.9
Alternative 2	34.5	34.8	35.1	39.8	40.2	45.6	48.8	48.8	48.8	48.8
Alternative 3	34.5	34.8	35.1	39.8	40.2	45.8	50.1	50.2	50.2	50.2

Table B-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)	36.1	36.2	36.3	36.5	36.5	41.3	41.3	41.3	41.3	41.3
Alternative 1	36.1	36.2	36.3	36.5	36.5	46.8	46.8	46.8	46.8	46.8
Alternative 2	36.1	36.2	36.3	36.5	36.5	49.8	49.8	49.8	49.8	49.8
Alternative 3	36.1	36.2	36.3	36.5	36.5	52.9	52.9	52.9	52.9	52.9

Table B-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)	30.9	34.3	36.1	36.7	37.2	38.1	38.5	38.5	39.1	39.1
Alternative 1	30.9	34.3	36.1	37.3	38.6	39.7	41.0	41.0	41.6	41.8
Alternative 2	30.9	34.3	36.1	38.0	39.2	40.3	42.5	43.1	43.7	44.2
Alternative 3	30.9	34.3	36.1	38.8	40.2	41.3	44.3	45.6	46.7	47.1

Table B-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)	38.8	39.8	41.9	45.6	47.8	49.7	50.0	50.2	50.2	50.3
Alternative 1	38.8	39.8	41.9	46.7	49.0	51.0	51.3	51.6	51.6	51.6
Alternative 2	38.8	39.8	41.9	46.4	48.7	50.7	51.0	51.2	51.2	51.3
Alternative 3	38.8	39.8	41.9	46.7	49.0	51.0	51.3	51.6	51.6	51.6

Table B-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	32.4	33.9	34.7	34.8	38.0	38.0	38.7	38.8
Alternative 1	29.8	31.0	32.4	34.8	38.2	38.5	42.8	42.8	43.6	43.8
Alternative 2	29.8	31.0	32.4	34.9	39.2	39.4	44.6	44.6	45.6	46.3
Alternative 3	29.8	31.0	32.4	34.9	40.6	40.9	45.8	45.8	46.7	46.7

Table B-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	41.7	41.8	43.0	43.2	45.2	45.2	45.2
Alternative 1	32.3	32.4	32.6	41.4	41.6	42.7	43.0	45.1	45.2	45.2
Alternative 2	32.3	32.4	32.6	41.4	41.6	42.7	43.0	45.1	45.1	45.1
Alternative 3	32.3	32.4	32.6	42.0	42.2	43.4	43.6	46.7	46.8	46.8

Table B-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)	30.5	32.5	34.1	34.8	36.3	42.7	43.8	44.2	44.2	44.2
Alternative 1	30.5	32.5	34.1	34.8	36.0	41.9	43.1	43.5	43.6	43.6
Alternative 2	30.5	32.5	34.1	34.8	35.8	41.4	42.6	43.9	44.0	44.0
Alternative 3	30.5	32.5	34.1	34.8	35.8	40.8	42.0	43.3	43.4	43.4

4. CAFE Cost per Vehicle

Table B-4-1 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Costs (billions of dollars) for Total Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$b)
Alternative 0 (Baseline)	39.6	43.6	10.0
Alternative 1	44.9	46.6	16.6
Alternative 2	48.2	49.2	22.2
Alternative 3	51.4	51.5	28.0

Table B-4-2 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Costs (billions of dollars) for Passenger Car Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$b)
Alternative 0 (Baseline)	47.3	52.5	4.3
Alternative 1	53.2	56.7	7.4
Alternative 2	58.1	61.4	10.6
Alternative 3	62.0	65.2	13.5

Table B-4-3 - MY 2029 Required and Achieved CAFE Levels (mpg), and Per-Vehicle Costs (billions of dollars) for Light Truck Fleet by Alternative

	Avg Required (mpg)	Avg Achieved (mpg)	Avg Cost (\$b)
Alternative 0 (Baseline)	33.9	37.2	5.7
Alternative 1	39.0	39.7	9.2
Alternative 2	41.5	41.3	11.6
Alternative 3	44.3	43.0	14.5

5. Various Impacts of Alternatives

Table B-5-1 - Impacts for Alternative 1

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)	56.7	39.7	46.6
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.7	30.2	34.3
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	428	467	450
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-638	-838	-677
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-497	-641	-524
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)	2.0	1.0	1.5
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-17	-13	-30
Total Lifetime CO2 Volume (million metric tons)	-164	-131	-294
Fatalities (Including Rebound Miles)	-95	1,156	1,062
Fatalities (Excluding Rebound Miles)	-272	851	580
Total Technology Costs, 3% Discount Rate (\$b)	16.2	18.2	34.4
Total Technology Costs, 7% Discount Rate (\$b)	13.4	14.8	28.1
Total Net Societal Benefits, 3% Discount Rate (\$b)	32.5	-12.1	20.4
Total Net Societal Benefits, 7% Discount Rate (\$b)	16.3	-11.2	5.0

Table B-5-2 - Impacts for Alternative 2

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)	61.4	41.3	49.2
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.7	30.2	34.3
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	888	815	855
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-1,198	-1,262	-1,128
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-933	-968	-874
Payback Period Relative to MY 2020, 3% Discount Rate (years)	1.0	1.0	1.0
Payback Period Relative to MY 2020, 7% Discount Rate (years)	3.0	1.0	2.0
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-29	-18	-47
Total Lifetime CO2 Volume (million metric tons)	-292	-187	-479
Fatalities (Including Rebound Miles)	-153	1,755	1,601
Fatalities (Excluding Rebound Miles)	-435	1420	985
Total Technology Costs, 3% Discount Rate (\$b)	30.5	27.9	58.4
Total Technology Costs, 7% Discount Rate (\$b)	24.9	22.5	47.4
Total Net Societal Benefits, 3% Discount Rate (\$b)	51.3	-30.5	20.8
Total Net Societal Benefits, 7% Discount Rate (\$b)	24.5	-24.7	-0.2

Table B-5-3 - Impacts for Alternative 3

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	43.0	51.5
Achieved Fuel Economy for MY 2020 - for reference (mpg)	41.7	30.2	34.3
Average MY 2029 Vehicle - Incremental to Alternative 0 (Baseline)			
Per Vehicle Price Increase (dollars)	1,334	1,241	1,291
Lifetime Fuel Cost (per vehicle), 3% Discount Rate (dollars)	-1,579	-1,634	-1,475
Lifetime Fuel Cost (per vehicle), 7% Discount Rate (dollars)	-1,229	-1,251	-1,142
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)	6.0	3.0	4.5
Lifetime of Vehicles Through 2029 - Incremental to Alternative 0 (Baseline)			
Total Lifetime Fuel Volume (billion gallons)	-37	-26	-63
Total Lifetime CO2 Volume (million metric tons)	-379	-283	-663
Fatalities (Including Rebound Miles)	-138	2,401	2,262
Fatalities (Excluding Rebound Miles)	-499	2015	1517
Total Technology Costs, 3% Discount Rate (\$b)	45.9	44.2	90.1
Total Technology Costs, 7% Discount Rate (\$b)	37.5	35.8	73.2
Total Net Societal Benefits, 3% Discount Rate (\$b)	59.2	-47.4	11.8
Total Net Societal Benefits, 7% Discount Rate (\$b)	25.3	-38.9	-13.6

6. Required and Achieved CAFE Levels, Baseline vs. Alternative 2

Table B-6-1 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	37.7	34.6	37.7	34.6	35.6	31.5	35.6	31.5	31.3	28.4	31.3	28.4
2021	38.4	36.3	38.4	36.3	36.3	33.5	36.3	33.5	31.7	29.1	31.7	29.1
2022	39.2	39.3	39.2	39.3	37.0	34.7	37.0	34.7	32.3	31.2	32.3	31.2
2023	39.9	41.4	39.9	41.3	37.6	36.5	37.6	36.5	32.8	33.3	32.8	33.3
2024	40.6	42.4	43.5	43.2	38.4	38.0	41.0	37.9	33.4	33.8	35.7	33.7
2025	41.3	46.3	47.3	46.5	39.0	39.6	44.6	39.6	33.9	33.9	38.8	33.9
2026	42.0	48.4	51.4	48.1	39.6	40.5	48.5	40.9	34.4	34.6	42.2	35.0
2027	42.1	48.8	51.4	51.4	39.7	41.1	48.5	41.4	34.4	35.0	42.2	35.7
2028	42.1	48.8	51.5	51.5	39.8	41.3	48.6	45.5	34.4	35.6	42.2	36.9
2029	42.2	49.0	51.6	51.7	39.8	41.4	48.6	45.9	34.4	35.9	42.2	38.3

Table B-6-2 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.8	31.6	31.8	31.6	32.7	30.9	32.7	30.9	38.6	40.3	38.6	40.3
2021	32.4	33.0	32.4	33.0	33.2	32.4	33.2	32.4	39.3	41.3	39.3	41.3
2022	33.0	35.1	33.0	35.1	33.9	33.9	33.9	33.9	40.1	43.9	40.1	43.9
2023	33.6	37.0	33.6	38.7	34.4	34.4	34.4	34.4	40.8	44.3	40.8	45.0
2024	34.1	38.1	36.4	39.9	35.0	35.3	37.2	37.1	41.5	44.9	44.4	46.7
2025	34.7	38.3	39.6	40.3	35.6	36.2	40.5	40.5	42.2	46.3	48.3	49.3
2026	35.3	38.6	43.0	42.7	36.2	36.9	44.0	44.0	42.9	47.6	52.5	50.8
2027	35.3	38.7	43.0	43.3	36.2	37.0	44.0	44.7	42.9	47.6	52.5	52.1
2028	35.3	38.7	43.1	43.5	36.2	37.2	44.1	44.8	43.0	47.9	52.6	52.8
2029	35.4	38.8	43.1	43.8	36.3	37.8	44.1	44.9	43.0	47.9	52.6	53.0

Table B-6-3 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.6	37.7	41.6	37.7	38.9	36.3	38.9	36.3	32.6	28.9	32.6	28.9
2021	42.3	39.0	42.3	39.0	39.7	40.6	39.7	40.6	33.1	30.1	33.1	30.1
2022	43.1	42.1	43.1	42.1	40.5	41.4	40.5	41.4	33.7	31.6	33.7	31.6
2023	43.8	44.0	43.8	44.0	41.3	41.9	41.3	41.9	34.2	33.6	34.2	33.6
2024	44.5	46.3	47.6	47.8	42.0	44.8	45.0	48.2	34.7	34.9	37.3	35.3
2025	45.2	46.6	51.8	50.7	42.7	45.6	48.9	50.2	35.4	35.4	40.5	35.9
2026	45.9	47.3	56.2	56.4	43.5	45.9	53.1	52.4	35.9	35.9	44.0	37.4
2027	45.9	47.6	56.2	56.9	43.5	46.6	53.1	53.6	35.9	36.6	44.0	38.3
2028	46.0	47.7	56.3	57.1	43.6	46.7	53.2	53.9	35.9	36.6	44.0	38.4
2029	46.0	48.0	56.3	57.2	43.7	46.8	53.3	54.0	35.9	36.8	44.0	39.1

Table B-6-4 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	38.7	36.4	38.7	36.4	40.7	38.7	40.7	38.7	39.2	37.6	39.2	37.6
2021	39.3	37.7	39.3	37.7	41.3	39.4	41.3	39.4	39.9	40.1	39.9	40.1
2022	40.0	38.7	40.0	38.7	42.1	39.8	42.1	39.8	40.6	42.3	40.6	42.3
2023	40.7	43.7	40.7	43.7	42.7	40.1	42.7	40.1	41.3	43.0	41.3	44.9
2024	41.4	44.3	44.3	44.6	43.5	40.3	46.6	40.3	42.1	44.7	45.0	48.5
2025	42.0	45.2	48.2	50.8	44.2	45.9	50.6	55.9	42.7	45.3	48.9	51.7
2026	42.7	45.9	52.3	53.7	44.9	46.0	55.0	56.0	43.4	45.7	53.2	52.8
2027	42.8	46.0	52.3	53.7	44.9	46.0	55.0	56.0	43.5	45.7	53.2	53.2
2028	42.8	46.0	52.4	53.8	45.0	46.1	55.1	56.0	43.5	46.0	53.2	54.5
2029	42.8	46.1	52.4	54.0	45.0	46.2	55.1	56.1	43.5	46.1	53.3	54.8

Table B-6-5 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	37.0	38.7	37.0	38.7	40.5	720.6	40.5	720.6	37.1	36.7	37.1	36.7
2021	37.7	39.9	37.7	39.9	40.4	747.7	40.4	747.7	37.9	38.1	37.9	38.1
2022	38.3	42.4	38.3	42.4	41.1	750.3	41.1	750.3	38.6	40.1	38.6	40.1
2023	39.0	45.7	39.0	46.3	41.8	755.3	41.8	755.3	39.3	41.5	39.3	42.1
2024	39.8	48.0	42.5	49.2	42.4	756.3	45.4	756.2	40.1	42.5	42.9	47.5
2025	40.4	49.5	46.2	50.8	43.1	757.2	49.3	756.4	40.8	42.8	46.7	48.1
2026	41.0	50.1	50.2	53.1	43.7	757.8	53.6	756.6	41.5	45.1	50.7	51.9
2027	41.1	50.3	50.2	53.3	43.7	758.3	53.6	756.6	41.5	45.6	50.7	52.4
2028	41.1	50.3	50.3	53.3	43.7	758.9	53.6	757.2	41.6	46.3	50.8	53.2
2029	41.2	50.4	50.3	53.4	43.8	759.4	53.6	757.5	41.7	47.1	50.9	53.6

Table B-6-6 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	34.3	33.1	34.3	33.1	37.1	33.1	37.1	33.1	35.4	34.3	35.4	34.3
2021	34.9	33.2	34.9	33.2	37.9	34.9	37.9	34.9	36.0	35.9	36.0	35.9
2022	35.5	33.4	35.5	33.4	38.7	36.8	38.7	36.8	36.8	38.0	36.8	38.0
2023	36.1	41.2	36.1	41.0	39.4	38.0	39.4	38.0	37.4	39.5	37.4	40.0
2024	36.6	41.4	39.2	41.2	40.1	40.5	43.0	40.7	38.1	40.8	40.7	42.6
2025	37.2	42.9	42.7	42.7	40.8	45.8	46.7	45.9	38.8	41.7	44.3	44.7
2026	37.8	43.4	46.3	43.7	41.5	47.4	50.8	48.3	39.4	42.6	48.1	47.2
2027	37.9	45.3	46.3	47.5	41.6	47.8	50.8	49.2	39.4	42.9	48.1	48.0
2028	37.9	45.3	46.3	47.6	41.6	48.0	50.9	50.2	39.5	43.2	48.2	48.7
2029	37.9	45.3	46.4	47.6	41.7	48.0	50.9	50.4	39.6	43.6	48.2	49.2

Table B-6-7 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.5	36.6	42.5	36.6	41.4	33.9	41.4	33.9	41.6	30.7	41.6	30.7
2021	43.1	38.4	43.1	38.4	42.0	36.9	42.0	36.9	42.0	34.5	42.0	34.5
2022	43.8	42.2	43.8	42.2	42.7	38.7	42.7	38.7	42.5	35.0	42.5	35.0
2023	44.4	44.4	44.4	44.4	43.3	39.4	43.3	39.4	43.0	36.7	43.0	36.7
2024	45.1	45.7	48.3	47.3	44.0	42.7	47.1	42.5	43.6	37.4	46.8	37.4
2025	45.8	51.7	52.5	52.5	44.6	44.1	51.2	44.0	44.2	37.5	50.8	37.5
2026	46.5	55.3	57.1	55.2	45.3	44.5	55.6	44.3	44.9	39.0	55.2	39.8
2027	46.5	55.8	57.1	57.1	45.3	45.1	55.6	44.9	44.8	39.2	55.2	41.2
2028	46.5	55.7	57.1	57.1	45.3	45.3	55.6	54.8	44.8	40.9	55.1	43.5
2029	46.5	55.8	57.1	57.3	45.3	45.3	55.6	55.6	44.7	42.4	55.1	54.0

Table B-6-8 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.2	36.9	42.2	36.9	43.9	40.0	43.9	40.0	43.6	45.0	43.6	45.0
2021	42.8	37.3	42.8	37.3	44.5	41.2	44.5	41.2	44.3	45.9	44.3	45.9
2022	43.5	42.9	43.5	42.9	45.2	43.6	45.2	43.6	45.0	48.4	45.0	48.4
2023	44.1	46.9	44.1	57.5	45.8	45.2	45.8	45.2	45.6	48.8	45.6	50.2
2024	44.8	46.8	47.9	57.4	46.5	46.8	49.8	49.2	46.3	49.2	49.6	51.5
2025	45.5	47.2	52.2	59.2	47.2	48.8	54.2	53.9	47.0	50.9	53.9	54.1
2026	46.1	47.7	56.7	61.1	48.0	49.0	58.9	58.5	47.7	53.2	58.6	57.1
2027	46.1	47.8	56.7	61.3	48.0	49.2	58.9	60.2	47.7	53.2	58.6	57.9
2028	46.1	47.8	56.7	61.2	47.9	49.3	58.9	60.3	47.7	53.4	58.6	58.6
2029	46.1	47.9	56.7	61.4	47.9	49.5	58.9	60.3	47.7	53.4	58.6	58.7

Table B-6-9 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.3	39.1	43.3	39.1	44.0	41.4	44.0	41.4	42.1	35.7	42.1	35.7
2021	44.0	40.6	44.0	40.6	44.7	45.8	44.7	45.8	42.7	36.9	42.7	36.9
2022	44.7	44.3	44.7	44.3	45.4	47.0	45.4	47.0	43.3	37.0	43.3	37.0
2023	45.5	45.8	45.5	45.8	46.1	47.2	46.1	47.2	44.0	38.7	44.0	38.7
2024	46.2	48.5	49.4	50.3	46.8	49.7	50.1	51.2	44.7	44.6	47.8	47.8
2025	46.9	48.8	53.7	53.9	47.5	51.0	54.5	54.5	45.4	44.6	52.0	47.8
2026	47.6	49.0	58.3	58.5	48.3	51.2	59.2	58.3	46.0	44.6	56.5	47.8
2027	47.6	49.3	58.3	59.1	48.3	51.5	59.2	59.2	46.0	47.3	56.5	51.0
2028	47.6	49.5	58.3	59.4	48.3	51.5	59.2	59.6	46.0	47.9	56.5	51.3
2029	47.6	49.8	58.3	59.5	48.3	51.5	59.2	59.7	46.1	47.9	56.5	55.6

Table B-6-10 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.9	38.6	43.9	38.6	46.5	42.3	46.5	42.3	43.2	41.7	43.2	41.7
2021	44.6	41.3	44.6	41.3	47.2	44.0	47.2	44.0	43.9	43.3	43.9	43.3
2022	45.2	43.1	45.2	43.1	48.0	44.6	48.0	44.6	44.5	45.4	44.5	45.4
2023	45.9	48.2	45.9	48.3	48.8	45.0	48.8	45.0	45.1	46.1	45.1	48.3
2024	46.6	48.9	49.9	49.6	49.6	45.3	53.1	45.3	45.8	48.4	49.1	53.3
2025	47.3	50.6	54.3	56.8	50.4	52.0	57.7	64.5	46.5	48.8	53.4	57.9
2026	48.0	50.8	59.0	59.3	51.2	52.2	62.7	64.6	47.3	49.0	58.0	58.1
2027	48.0	50.8	59.0	59.3	51.2	52.3	62.7	64.6	47.2	49.0	58.0	58.5
2028	48.0	50.8	59.0	59.4	51.2	52.5	62.8	64.7	47.2	49.1	58.0	60.1
2029	48.0	50.8	59.0	59.9	51.2	52.6	62.8	64.8	47.2	49.2	58.0	60.1

Table B-6-11 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	44.9	38.1	44.9	38.1	40.9	725.7	40.9	725.7	43.6	46.0	43.6	46.0
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	44.3	46.2	44.3	41.4	754.7	41.4	754.7	45.0	49.1	45.0	49.1
2023	46.9	46.0	46.9	46.0	42.1	756.0	42.1	756.0	45.6	49.8	45.6	49.8
2024	47.7	48.6	51.0	50.9	42.7	757.0	45.7	756.9	46.3	50.7	49.7	56.1
2025	48.4	48.9	55.5	51.2	43.4	757.9	49.7	757.1	47.1	51.1	54.0	57.1
2026	49.1	50.5	60.3	60.3	44.0	758.5	54.0	757.3	47.8	51.8	58.6	58.7
2027	49.1	50.5	60.3	60.3	44.0	759.0	54.0	757.3	47.8	52.8	58.6	59.8
2028	49.1	50.5	60.3	60.3	44.0	759.6	54.0	757.9	47.8	53.1	58.6	60.2
2029	49.1	50.5	60.3	60.3	44.1	760.1	54.0	758.2	47.8	54.6	58.6	60.2

Table B-6-12 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	40.9	35.7	40.9	35.7	43.6	37.6	43.6	37.6	43.3	41.7	43.3	41.7
2021	41.5	35.8	41.5	35.8	44.3	38.6	44.3	38.6	43.9	43.4	43.9	43.4
2022	42.2	36.0	42.2	36.0	45.0	40.7	45.0	40.7	44.6	46.2	44.6	46.2
2023	42.8	40.0	42.8	40.0	45.7	42.4	45.7	42.4	45.2	47.6	45.2	48.8
2024	43.4	40.3	46.5	40.3	46.4	46.1	49.7	47.8	45.9	49.3	49.2	52.6
2025	44.1	42.5	50.5	42.5	47.1	49.6	54.0	51.9	46.6	50.6	53.4	55.7
2026	44.7	43.9	54.9	45.4	47.8	51.8	58.7	56.2	47.3	51.4	58.1	58.7
2027	44.7	45.5	54.9	54.9	47.8	52.0	58.7	56.4	47.3	51.8	58.1	59.6
2028	44.7	45.5	54.9	55.0	47.9	52.3	58.7	59.0	47.3	52.0	58.1	60.7
2029	44.7	45.6	54.9	55.0	47.9	52.3	58.7	59.2	47.3	52.5	58.1	61.4

Table B-6-13 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.7	31.7	31.7	31.7	31.7	29.7	31.7	29.7	30.1	28.1	30.1	28.1
2021	32.2	33.1	32.2	33.1	32.2	30.8	32.2	30.8	30.5	28.4	30.5	28.4
2022	32.6	34.8	32.6	34.8	32.6	31.4	32.6	31.4	31.0	30.6	31.0	30.6
2023	33.1	36.5	33.1	36.3	33.1	33.9	33.1	33.9	31.5	32.8	31.5	32.8
2024	33.6	36.9	36.0	36.6	33.7	33.9	36.0	33.9	32.0	33.2	34.2	33.1
2025	34.2	37.9	39.2	37.6	34.2	35.6	39.2	35.7	32.5	33.3	37.2	33.3
2026	34.7	38.1	42.6	37.9	34.7	36.8	42.6	37.7	32.9	33.9	40.4	34.2
2027	34.7	38.1	42.6	42.5	34.7	37.2	42.6	38.2	32.9	34.3	40.4	34.8
2028	34.7	38.1	42.6	42.6	34.7	37.3	42.6	38.3	32.9	34.7	40.4	35.9
2029	34.7	38.1	42.6	42.6	34.7	37.4	42.6	38.4	32.9	34.8	40.4	36.3

Table B-6-14 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	29.2	30.0	29.2	30.0	29.1	27.8	29.1	27.8	33.3	35.3	33.3	35.3
2021	29.7	31.6	29.7	31.6	29.5	29.3	29.5	29.3	33.8	36.0	33.8	36.0
2022	30.1	32.8	30.1	32.8	30.0	30.4	30.0	30.4	34.3	38.5	34.3	38.5
2023	30.6	34.1	30.6	34.2	30.4	30.5	30.4	30.5	34.8	38.6	34.8	38.6
2024	31.0	35.4	33.1	35.4	30.9	31.2	32.7	32.7	35.3	39.2	37.8	40.4
2025	31.5	35.5	36.0	35.6	31.4	31.7	35.6	35.7	35.9	40.2	41.1	42.9
2026	32.0	35.6	39.1	37.9	31.8	32.4	38.7	38.8	36.4	40.2	44.7	42.9
2027	32.0	35.7	39.1	38.6	31.8	32.5	38.7	39.2	36.4	40.2	44.7	44.6
2028	32.0	35.7	39.1	38.7	31.8	32.6	38.7	39.3	36.4	40.2	44.7	45.2
2029	32.0	35.7	39.1	39.0	31.8	33.3	38.7	39.3	36.4	40.2	44.7	45.3

Table B-6-15 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	31.3	29.1	31.3	29.1	32.8	30.3	32.8	30.3	32.3	28.7	32.3	28.7
2021	31.7	29.3	31.7	29.3	33.3	34.0	33.3	34.0	32.8	29.8	32.8	29.8
2022	32.2	29.3	32.2	29.3	33.9	34.1	33.9	34.1	33.3	31.4	33.3	31.4
2023	32.7	32.2	32.7	32.2	34.4	34.4	34.4	34.4	33.8	33.4	33.8	33.4
2024	33.2	32.4	35.6	32.4	34.9	37.4	37.4	43.1	34.3	34.5	36.8	34.8
2025	33.7	32.5	38.6	32.5	35.4	37.6	40.6	43.3	34.9	35.0	40.0	35.4
2026	34.2	35.4	42.0	42.0	36.0	37.8	44.1	43.5	35.4	35.5	43.4	36.9
2027	34.2	35.4	42.0	42.0	36.0	38.8	44.1	45.1	35.4	36.1	43.4	37.8
2028	34.2	35.4	42.0	42.0	36.0	38.8	44.1	45.1	35.4	36.1	43.4	37.8
2029	34.2	35.4	42.0	42.0	36.0	38.8	44.1	45.1	35.4	36.3	43.4	38.4

Table B-6-16 - Comparison of Alternative 0 (Baseline) and Alternative 2 Required and Achieved CAFE Levels in MYs 2020-2029 for the Light Truck Fleet (mpg), Part 4 of 6

	Mazda				Mitsubishi				Nissan			
	Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	34.8	34.5	34.8	34.5	36.8	36.1	36.8	36.1	32.5	30.9	32.5	30.9
2021	35.3	34.8	35.3	34.8	37.3	36.2	37.3	36.2	33.0	34.3	33.0	34.3
2022	35.8	35.1	35.8	35.1	37.9	36.3	37.9	36.3	33.5	36.1	33.5	36.1
2023	36.4	39.8	36.4	39.8	38.4	36.5	38.4	36.5	34.0	36.7	34.0	38.0
2024	36.9	40.2	39.6	40.2	39.0	36.5	41.8	36.5	34.6	37.2	37.0	39.2
2025	37.5	40.6	43.0	45.6	39.6	41.3	45.4	49.8	35.1	38.1	40.2	40.3
2026	38.1	41.6	46.7	48.8	40.2	41.3	49.4	49.8	35.6	38.5	43.7	42.5
2027	38.1	41.6	46.7	48.8	40.2	41.3	49.4	49.8	35.6	38.5	43.7	43.1
2028	38.1	41.6	46.7	48.8	40.2	41.3	49.4	49.8	35.6	39.1	43.7	43.7
2029	38.1	41.6	46.7	48.8	40.2	41.3	49.4	49.8	35.6	39.1	43.7	44.2

Table B-6-17 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	35.4	38.8	35.4	38.8	30.6	588.5	30.6	588.5	31.8	29.8	31.8	29.8
2021	35.9	39.8	35.9	39.8	31.1	617.1	31.1	617.1	32.3	31.0	32.3	31.0
2022	36.4	41.9	36.4	41.9	31.6	617.1	31.6	617.1	32.7	32.4	32.7	32.4
2023	37.0	45.6	37.0	46.4	32.0	728.3	32.0	728.3	33.2	33.9	33.2	34.9
2024	37.6	47.8	40.2	48.7	32.5	728.3	34.8	728.3	33.8	34.7	36.1	39.2
2025	38.1	49.7	43.7	50.7	33.0	728.3	37.8	728.3	34.3	34.8	39.3	39.4
2026	38.7	50.0	47.5	51.0	33.5	728.3	41.1	728.3	34.8	38.0	42.7	44.6
2027	38.7	50.2	47.5	51.2	33.5	728.3	41.1	728.3	34.8	38.0	42.7	44.6
2028	38.7	50.2	47.5	51.2	33.5	728.3	41.1	728.3	34.8	38.7	42.7	45.6
2029	38.7	50.3	47.5	51.3	33.5	728.2	41.1	728.3	34.8	38.8	42.7	46.3

Table B-6-18 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	32.5	32.3	32.5	32.3	33.5	30.5	33.5	30.5	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	32.9	31.9	32.9
2023	34.0	41.7	34.0	41.4	35.1	34.8	35.1	34.8	32.4	34.3	32.4	34.5
2024	34.5	41.8	36.9	41.6	35.6	36.3	38.2	35.8	32.9	35.2	35.1	36.3
2025	35.0	43.0	40.2	42.7	36.2	42.7	41.5	41.4	33.5	35.8	38.2	37.8
2026	35.6	43.2	43.6	43.0	36.7	43.8	45.1	42.6	33.9	36.6	41.5	39.9
2027	35.6	45.2	43.6	45.1	36.7	44.2	45.1	43.9	33.9	36.8	41.5	40.6
2028	35.6	45.2	43.6	45.1	36.7	44.2	45.1	44.0	33.9	37.0	41.5	41.1
2029	35.6	45.2	43.6	45.1	36.7	44.2	45.1	44.0	33.9	37.2	41.5	41.3

Table B-6-19 - Comparison of Alternative 0 (Baseline) and Alternative 2 Required and Achieved CAFE Levels in MYs 2020-2029 for the Domestic Car Fleet (mpg), Part 1 of 6

	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
Model Year	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	34.0	41.3	34.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.8	34.1	41.8	34.1
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	35.9	42.3	35.9
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	36.3	46.0	36.3
2025	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5	36.4	49.9	36.4
2026	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	37.8	54.3	38.6
2027	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	37.8	54.3	38.6
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	39.6	54.2	41.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.0	41.3	54.2	52.7

Table B-6-20 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.9	36.8	41.9	36.8	42.9	39.8	42.9	39.8	43.2	44.7	43.2	44.7
2021	42.5	37.2	42.5	37.2	43.5	40.3	43.5	40.3	43.9	45.7	43.9	45.7
2022	43.2	43.2	43.2	43.2	44.2	42.2	44.2	42.2	44.6	47.8	44.6	47.8
2023	43.8	46.5	43.8	54.4	44.8	44.0	44.8	44.0	45.2	48.3	45.2	50.0
2024	44.5	46.5	47.6	54.3	45.5	45.5	48.7	48.7	45.9	48.7	49.2	51.5
2025	45.2	46.9	51.8	56.1	46.2	48.1	53.0	54.5	46.6	49.7	53.5	53.3
2026	45.8	47.4	56.3	57.9	46.9	48.2	57.6	59.1	47.3	52.4	58.1	56.9
2027	45.8	47.5	56.3	58.1	46.9	48.3	57.6	59.3	47.3	52.4	58.1	57.7
2028	45.8	47.5	56.3	58.0	46.9	48.4	57.6	59.4	47.3	52.7	58.1	58.1
2029	45.8	47.6	56.3	58.2	46.9	48.7	57.6	59.4	47.3	52.7	58.1	58.2

Table B-6-22 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	45.0	38.5	45.0	38.5	0.0	0.0	0.0	0.0	43.0	43.2	43.0	43.2
2021	45.7	38.9	45.7	38.9	0.0	0.0	0.0	0.0	43.7	43.7	43.7	43.7
2022	46.4	39.2	46.4	39.2	0.0	0.0	0.0	0.0	44.3	45.6	44.3	45.6
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	48.7	48.9	51.9
2025	48.5	59.3	55.6	63.3	0.0	0.0	0.0	0.0	46.4	49.2	53.2	57.7
2026	49.3	59.5	60.5	63.5	0.0	0.0	0.0	0.0	47.1	49.4	57.8	57.9
2027	49.3	59.5	60.5	63.5	0.0	0.0	0.0	0.0	47.1	49.4	57.8	58.2
2028	49.3	59.5	60.5	63.5	0.0	0.0	0.0	0.0	47.1	49.6	57.8	60.2
2029	49.3	59.5	60.5	63.5	0.0	0.0	0.0	0.0	47.1	49.6	57.8	60.2

Table B-6-23 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
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	725.7	40.9	725.7	42.1	43.8	42.1	43.8
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	754.7	41.4	754.7	43.4	46.0	43.4	46.0
2023	0.0	0.0	0.0	0.0	42.1	756.0	42.1	756.0	44.1	46.9	44.1	46.9
2024	0.0	0.0	0.0	0.0	42.7	757.0	45.7	756.9	44.7	47.3	47.9	53.5
2025	0.0	0.0	0.0	0.0	43.4	757.9	49.7	757.1	45.4	47.5	52.1	55.6
2026	0.0	0.0	0.0	0.0	44.0	758.5	54.0	757.3	46.1	47.7	56.6	56.0
2027	0.0	0.0	0.0	0.0	44.0	759.0	54.0	757.3	46.1	48.8	56.6	58.0
2028	0.0	0.0	0.0	0.0	44.0	759.6	54.0	757.9	46.1	49.2	56.6	58.1
2029	0.0	0.0	0.0	0.0	44.1	760.1	54.0	758.2	46.1	49.2	56.6	58.1

Table B-6-24 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	41.0	36.4	41.0	36.4	41.2	33.9	41.2	33.9	42.5	43.2	42.5	43.2
2021	41.6	36.4	41.6	36.4	41.9	34.5	41.9	34.5	43.1	44.4	43.1	44.4
2022	42.3	36.4	42.3	36.4	42.7	34.8	42.7	34.8	43.7	47.0	43.7	47.0
2023	42.9	40.6	42.9	40.6	43.4	35.7	43.4	35.7	44.4	48.6	44.4	50.3
2024	43.6	40.9	46.7	40.9	44.1	41.3	47.2	41.3	45.0	49.9	48.2	53.7
2025	44.2	44.0	50.7	44.1	44.8	41.5	51.3	41.4	45.7	51.0	52.5	57.2
2026	44.9	44.2	55.1	44.2	45.5	45.5	55.8	44.2	46.4	52.0	57.0	59.7
2027	44.9	46.2	55.1	55.1	45.5	45.5	55.8	44.2	46.4	52.2	57.0	60.3
2028	44.9	46.2	55.1	55.1	45.6	46.9	55.8	55.8	46.4	52.6	57.0	61.4
2029	44.9	46.2	55.1	55.1	45.6	47.0	55.8	55.9	46.4	52.9	57.0	62.7

Table B-6-25 - Comparison of Alternative 0 (Baseline) and Alternative 2 Required and Achieved CAFE Levels in MYs 2020-2029 for the Imported Car Fleet (mpg), Part 1 of 6

	BMW				Daimler				FCA			
	Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	42.5	36.6	42.5	36.6	41.4	33.9	41.4	33.9	44.8	34.4	44.8	34.4
2021	43.1	38.4	43.1	38.4	42.0	36.9	42.0	36.9	45.5	36.8	45.5	36.8
2022	43.8	42.2	43.8	42.2	42.7	38.7	42.7	38.7	46.1	40.0	46.1	40.0
2023	44.4	44.4	44.4	44.4	43.3	39.4	43.3	39.4	46.7	40.9	46.7	40.9
2024	45.1	45.7	48.3	47.3	44.0	42.7	47.1	42.5	47.4	43.6	50.8	43.5
2025	45.8	51.7	52.5	52.5	44.6	44.1	51.2	44.0	48.1	43.8	55.2	43.7
2026	46.5	55.3	57.1	55.2	45.3	44.5	55.6	44.3	48.8	45.6	60.0	46.2
2027	46.5	55.8	57.1	57.1	45.3	45.1	55.6	44.9	48.8	48.0	60.0	59.9
2028	46.5	55.7	57.1	57.1	45.3	45.3	55.6	54.8	48.8	48.8	59.9	60.5
2029	46.5	55.8	57.1	57.3	45.3	45.3	55.6	55.6	48.7	48.9	59.9	60.8

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

	Ford				GM				Honda			
	Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
Model Year	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	48.0	38.8	48.0	38.8	46.8	40.4	46.8	40.4	45.4	46.4	45.4	46.4
2021	48.7	38.8	48.7	38.8	47.5	43.7	47.5	43.7	46.1	46.9	46.1	46.9
2022	49.5	39.0	49.5	39.0	48.3	48.3	48.3	48.3	46.8	51.0	46.8	51.0
2023	50.2	53.7	50.2	1517.4	49.1	49.0	49.1	49.0	47.4	51.3	47.4	51.3
2024	51.0	53.7	54.6	1517.4	49.8	50.8	53.3	50.8	48.2	51.6	51.6	51.7
2025	51.8	53.7	59.3	1517.4	50.6	51.0	58.0	52.2	48.9	56.7	56.0	57.9
2026	52.5	53.7	64.5	1517.4	51.4	51.4	63.0	56.9	49.6	56.8	60.9	57.9
2027	52.5	53.7	64.5	1517.4	51.4	51.9	63.0	63.0	49.6	56.9	60.9	58.8
2028	52.5	53.7	64.5	1517.4	51.4	52.0	63.0	63.1	49.6	57.0	60.9	60.9
2029	52.5	53.7	64.5	1517.4	51.4	52.0	63.0	63.1	49.6	57.1	60.9	60.9

Table B-6-27 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.2	38.7	43.2	38.7	44.0	41.4	44.0	41.4	42.1	35.7	42.1	35.7
2021	43.9	40.2	43.9	40.2	44.7	45.8	44.7	45.8	42.7	36.9	42.7	36.9
2022	44.6	44.0	44.6	44.0	45.4	47.0	45.4	47.0	43.3	37.0	43.3	37.0
2023	45.3	45.2	45.3	45.2	46.1	47.2	46.1	47.2	44.0	38.7	44.0	38.7
2024	46.0	48.0	49.2	49.8	46.8	49.7	50.1	51.2	44.7	44.6	47.8	47.8
2025	46.7	48.3	53.5	53.5	47.5	51.0	54.5	54.5	45.4	44.6	52.0	47.8
2026	47.4	48.5	58.1	58.2	48.3	51.2	59.2	58.3	46.0	44.6	56.5	47.8
2027	47.4	48.8	58.1	58.8	48.3	51.5	59.2	59.2	46.0	47.3	56.5	51.0
2028	47.4	48.9	58.1	59.1	48.3	51.5	59.2	59.6	46.0	47.9	56.5	51.3
2029	47.4	49.2	58.1	59.2	48.3	51.5	59.2	59.7	46.1	47.9	56.5	55.6

Table B-6-28 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	43.8	38.6	43.8	38.6	46.5	42.3	46.5	42.3	43.6	38.2	43.6	38.2
2021	44.4	41.6	44.4	41.6	47.2	44.0	47.2	44.0	44.3	42.2	44.3	42.2
2022	45.1	43.7	45.1	43.7	48.0	44.6	48.0	44.6	45.0	45.0	45.0	45.0
2023	45.8	48.7	45.8	48.8	48.8	45.0	48.8	45.0	45.6	46.6	45.6	53.0
2024	46.5	49.5	49.8	50.3	49.6	45.3	53.1	45.3	46.3	47.4	49.6	58.1
2025	47.2	49.7	54.1	56.1	50.4	52.0	57.7	64.5	47.0	47.6	53.9	58.5
2026	47.9	49.9	58.8	58.8	51.2	52.2	62.7	64.6	47.8	47.8	58.6	58.9
2027	47.9	49.9	58.8	58.8	51.2	52.3	62.7	64.6	47.7	47.7	58.6	59.4
2028	47.9	50.0	58.8	58.9	51.2	52.5	62.8	64.7	47.7	47.7	58.6	59.6
2029	47.9	50.0	58.8	59.5	51.2	52.6	62.8	64.8	47.7	47.8	58.6	59.7

Table B-6-29 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	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	46.9	44.2	46.9
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	44.3	46.2	44.3	0.0	0.0	0.0	0.0	45.6	50.5	45.6	50.5
2023	46.9	46.0	46.9	46.0	0.0	0.0	0.0	0.0	46.3	51.0	46.3	51.0
2024	47.7	48.6	51.0	50.9	0.0	0.0	0.0	0.0	47.0	52.3	50.4	57.2
2025	48.4	48.9	55.5	51.2	0.0	0.0	0.0	0.0	47.8	52.8	54.8	57.8
2026	49.1	50.5	60.3	60.3	0.0	0.0	0.0	0.0	48.5	53.7	59.5	59.9
2027	49.1	50.5	60.3	60.3	0.0	0.0	0.0	0.0	48.5	54.7	59.5	60.6
2028	49.1	50.5	60.3	60.3	0.0	0.0	0.0	0.0	48.5	54.9	59.5	61.1
2029	49.1	50.5	60.3	60.3	0.0	0.0	0.0	0.0	48.5	57.3	59.5	61.1

Table B-6-30 - Comparison of Alternative 0 (Baseline) and Alternative 2 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		Alternative 0 (Baseline)		Alternative 2		Alternative 0 (Baseline)		Alternative 2	
	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved	Required	Achieved
2020	40.8	35.1	40.8	35.1	44.1	38.4	44.1	38.4	44.0	40.4	44.0	40.4
2021	41.4	35.3	41.4	35.3	44.8	39.5	44.8	39.5	44.6	42.5	44.6	42.5
2022	42.0	35.5	42.0	35.5	45.5	42.1	45.5	42.1	45.3	45.5	45.3	45.5
2023	42.6	39.4	42.6	39.4	46.2	44.0	46.2	44.0	46.0	46.8	46.0	47.4
2024	43.2	39.7	46.3	39.7	46.9	47.2	50.2	49.3	46.7	48.8	50.0	51.5
2025	43.9	40.9	50.3	40.9	47.6	51.5	54.5	54.5	47.4	50.2	54.4	54.5
2026	44.5	43.5	54.7	46.9	48.3	53.2	59.3	59.3	48.1	51.0	59.1	57.7
2027	44.5	44.6	54.7	54.7	48.3	53.4	59.3	59.5	48.1	51.4	59.1	59.0
2028	44.5	44.7	54.7	54.9	48.3	53.4	59.3	59.6	48.1	51.5	59.1	60.1
2029	44.5	44.8	54.7	54.9	48.3	53.4	59.3	59.9	48.1	52.1	59.1	60.3

7. Incremental Benefits and Costs

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	34.4	58.4	90.1
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.4	1.1
Safety Costs Internalized by Drivers	6.6	8.6	10.4
Subtotal - Incremental Private Costs	41.1	67.4	101.5
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	7.8	9.8	11.1
Safety Costs Not Internalized by Drivers	7.7	12.8	19.4
Loss in Fuel Tax Revenue	12.3	19.9	27.5
Subtotal - Incremental External Costs	27.7	42.5	58.0
Total Incremental Social Costs	68.8	109.9	159.5
Private Benefits			
Reduced Fuel Costs	53.2	80.5	107.7
Benefits from Additional Driving	13.3	16.5	19.6
Less Frequent Refueling	-2.7	-4.4	-6.6
Subtotal - Incremental Private Benefits	63.8	92.5	120.7
External Benefits			
Reduction in Petroleum Market Externality	1.0	1.6	2.2
Reduced Climate Damages	22.5	34.8	47.0
Reduced Health Damages	2.0	1.8	1.3
Subtotal - Incremental External Benefits	25.5	38.1	50.6
Total Incremental Social Benefits	89.2	130.7	171.3
Net Incremental Social Benefits			
Net Incremental Social Benefits	20.4	20.8	11.8

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	16.2	30.5	45.9
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.2	0.5
Safety Costs Internalized by Drivers	2.5	4.1	5.2
Subtotal - Incremental Private Costs	18.8	34.8	51.6
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	-6.8	-11.6	-15.5
Safety Costs Not Internalized by Drivers	-4.6	-7.4	-8.9
Loss in Fuel Tax Revenue	6.9	12.2	15.8
Subtotal - Incremental External Costs	-4.6	-6.7	-8.5
Total Incremental Social Costs	14.3	28.0	43.1
Private Benefits			
Reduced Fuel Costs	29.3	50.3	64.9
Benefits from Additional Driving	4.5	7.0	8.8
Less Frequent Refueling	-1.2	-2.3	-2.7
Subtotal - Incremental Private Benefits	32.6	55.0	71.1
External Benefits			
Reduction in Petroleum Market Externality	0.5	1.0	1.3
Reduced Climate Damages	12.4	21.6	27.9
Reduced Health Damages	1.2	1.8	2.0
Subtotal - Incremental External Benefits	14.2	24.3	31.2
Total Incremental Social Benefits	46.8	79.3	102.3
Net Incremental Social Benefits			
Net Incremental Social Benefits	32.5	51.3	59.2

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	18.2	27.9	44.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.2	0.5
Safety Costs Internalized by Drivers	4.1	4.5	5.2
Subtotal - Incremental Private Costs	22.3	32.6	49.9
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	14.6	21.3	26.6
Safety Costs Not Internalized by Drivers	12.3	20.2	28.3
Loss in Fuel Tax Revenue	5.4	7.7	11.6
Subtotal - Incremental External Costs	32.3	49.2	66.5
Total Incremental Social Costs	54.6	81.8	116.4
Private Benefits			
Reduced Fuel Costs	23.9	30.2	42.7
Benefits from Additional Driving	8.8	9.5	10.8
Less Frequent Refueling	-1.6	-2.1	-3.9
Subtotal - Incremental Private Benefits	31.1	37.5	49.6
External Benefits			
Reduction in Petroleum Market Externality	0.4	0.6	0.9
Reduced Climate Damages	10.1	13.2	19.1
Reduced Health Damages	0.8	0.0	-0.7
Subtotal - Incremental External Benefits	11.3	13.8	19.4
Total Incremental Social Benefits	42.4	51.3	69.0
Net Incremental Social Benefits			
Net Incremental Social Benefits	-12.1	-30.5	-47.4

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	28.1	47.4	73.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.3	0.8
Safety Costs Internalized by Drivers	4.0	5.2	6.3
Subtotal - Incremental Private Costs	32.2	52.8	80.4
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	5.0	6.6	7.7
Safety Costs Not Internalized by Drivers	5.6	9.5	14.6
Loss in Fuel Tax Revenue	7.8	12.5	17.3
Subtotal - Incremental External Costs	18.4	28.6	39.7
Total Incremental Social Costs	50.6	81.4	120.0
Private Benefits			
Reduced Fuel Costs	32.9	49.4	66.0
Benefits from Additional Driving	8.0	10.0	11.9
Less Frequent Refueling	-1.8	-2.9	-4.2
Subtotal - Incremental Private Benefits	39.2	56.5	73.7
External Benefits			
Reduction in Petroleum Market Externality	0.6	1.0	1.3
Reduced Climate Damages	14.8	22.9	30.9
Reduced Health Damages	1.1	0.9	0.5
Subtotal - Incremental External Benefits	16.5	24.7	32.8
Total Incremental Social Benefits	55.6	81.2	106.4
Net Incremental Social Benefits			
Net Incremental Social Benefits	5.0	-0.2	-13.6

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	13.4	24.9	37.5
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.2	0.4
Safety Costs Internalized by Drivers	1.6	2.5	3.2
Subtotal - Incremental Private Costs	15.0	27.5	41.1
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	-4.1	-6.8	-9.0
Safety Costs Not Internalized by Drivers	-2.2	-3.3	-3.6
Loss in Fuel Tax Revenue	4.4	7.7	10.0
Subtotal - Incremental External Costs	-1.9	-2.4	-2.5
Total Incremental Social Costs	13.1	25.1	38.6
Private Benefits			
Reduced Fuel Costs	18.2	31.1	40.0
Benefits from Additional Driving	2.8	4.3	5.5
Less Frequent Refueling	-0.8	-1.5	-1.7
Subtotal - Incremental Private Benefits	20.2	33.9	43.7
External Benefits			
Reduction in Petroleum Market Externality	0.3	0.6	0.8
Reduced Climate Damages	8.2	14.2	18.4
Reduced Health Damages	0.6	0.9	1.0
Subtotal - Incremental External Benefits	9.2	15.7	20.1
Total Incremental Social Benefits	29.4	49.6	63.9
Net Incremental Social Benefits			
Net Incremental Social Benefits	16.3	24.5	25.3

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

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	14.8	22.5	35.8
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.2	0.4
Safety Costs Internalized by Drivers	2.4	2.7	3.1
Subtotal - Incremental Private Costs	17.2	25.3	39.3
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	9.1	13.3	16.7
Safety Costs Not Internalized by Drivers	7.8	12.8	18.2
Loss in Fuel Tax Revenue	3.4	4.8	7.3
Subtotal - Incremental External Costs	20.2	30.9	42.2
Total Incremental Social Costs	37.5	56.3	81.5
Private Benefits			
Reduced Fuel Costs	14.7	18.3	26.0
Benefits from Additional Driving	5.2	5.7	6.5
Less Frequent Refueling	-1.0	-1.4	-2.5
Subtotal - Incremental Private Benefits	18.9	22.6	30.0
External Benefits			
Reduction in Petroleum Market Externality	0.3	0.4	0.6
Reduced Climate Damages	6.6	8.7	12.5
Reduced Health Damages	0.4	-0.1	-0.5
Subtotal - Incremental External Benefits	7.3	9.0	12.6
Total Incremental Social Benefits	26.3	31.6	42.6
Net Incremental Social Benefits			
Net Incremental Social Benefits	-11.2	-24.7	-38.9

Table B-7-7 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.7	5.0	5.5	5.8	5.6	5.5	5.2	34.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.2	0.7	0.9	1.1	1.2	1.2	1.2	6.6
Subtotal - Private Costs	0.0	0.0	0.0	1.8	5.8	6.5	7.0	6.8	6.8	6.5	41.1
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	6.4	0.7	0.8	0.3	-1.0	-0.6	-0.3	0.1	0.5	0.8	7.8
Safety Costs Not Internalized by Drivers	5.6	-2.2	-3.8	-5.5	-7.5	-7.5	-7.6	-7.1	-6.7	-6.3	-48.5
Loss in Fuel Tax Revenue	-1.2	-0.1	-0.1	0.4	1.9	2.1	2.4	2.3	2.3	2.1	12.3
Subtotal - External Costs	10.8	-1.6	-3.1	-4.7	-6.5	-5.9	-5.5	-4.7	-3.9	-3.4	-28.5
Total Social Costs	16.1	1.3	1.6	2.8	5.4	6.8	8.0	8.4	9.2	9.3	68.8
Private Benefits											
Reduced Fuel Costs	-5.6	-0.5	-0.6	1.6	8.2	9.2	10.4	10.3	10.5	9.8	53.2
Benefits from Additional Driving	-0.9	0.0	0.0	0.3	1.5	1.8	2.2	2.3	2.5	2.6	12.4
Less Frequent Refueling	-0.2	0.0	0.0	-0.1	-0.5	-0.5	-0.4	-0.4	-0.3	-0.2	-2.7
Subtotal - Private Benefits	-6.7	-0.6	-0.6	1.7	9.1	10.5	12.3	12.2	12.8	12.1	62.9
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	1.0
Reduced Climate Damages	-2.2	-0.2	-0.3	0.7	3.4	3.8	4.4	4.3	4.4	4.2	22.5
Reduced Health Damages	-1.3	-0.1	-0.1	0.1	0.5	0.5	0.6	0.6	0.6	0.6	2.0
Subtotal - External Benefits	-3.6	-0.3	-0.3	0.7	4.0	4.5	5.2	5.1	5.2	4.9	25.5
Total Social Benefits	-9.4	-0.8	-1.0	2.5	13.1	15.0	17.4	17.3	18.0	17.1	89.2
Net Social Benefits											
Net Social Benefits	-25.4	-2.1	-2.5	-0.3	7.7	8.2	9.4	8.9	8.8	7.8	20.4

Table B-7-8 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.2	2.4	2.7	2.6	2.5	2.5	2.4	16.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.5	0.5	2.5
Subtotal - Private Costs	0.0	0.0	0.0	1.3	2.7	3.1	3.0	2.9	2.9	2.9	18.8
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	3.4	0.3	0.4	0.1	-0.6	-1.7	-2.1	-2.2	-2.1	-2.2	-6.8
Safety Costs Not Internalized by Drivers	2.0	-1.7	-2.5	-3.3	-4.2	-5.3	-5.6	-5.6	-5.5	-5.6	-37.1
Loss in Fuel Tax Revenue	-0.5	0.0	0.0	0.3	0.9	1.2	1.3	1.2	1.3	1.3	6.9
Subtotal - External Costs	4.9	-1.4	-2.2	-2.8	-4.0	-5.8	-6.4	-6.5	-6.3	-6.5	-37.1
Total Social Costs	7.8	0.6	0.7	1.8	2.4	0.9	0.3	0.0	0.1	-0.2	14.3
Private Benefits											
Reduced Fuel Costs	-2.5	-0.2	-0.2	1.0	3.6	5.0	5.4	5.5	5.7	5.9	29.3
Benefits from Additional Driving	-0.6	0.0	0.0	0.1	0.5	0.7	0.7	0.8	0.8	0.8	3.9
Less Frequent Refueling	-0.1	0.0	0.0	-0.1	-0.3	-0.2	-0.2	-0.1	-0.1	-0.1	-1.2
Subtotal - Private Benefits	-3.2	-0.2	-0.2	1.0	3.8	5.5	6.0	6.2	6.5	6.7	32.0
External Benefits											
Reduction in Petroleum Market Externality	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Reduced Climate Damages	-1.0	-0.1	-0.1	0.4	1.5	2.1	2.3	2.3	2.4	2.5	12.4
Reduced Health Damages	-0.6	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	1.2
Subtotal - External Benefits	-1.6	-0.1	-0.1	0.5	1.7	2.5	2.7	2.7	2.9	3.0	14.2
Total Social Benefits	-4.2	-0.3	-0.3	1.5	5.6	8.0	8.7	8.9	9.4	9.6	46.8
Net Social Benefits											
Net Social Benefits	-12.0	-0.9	-1.0	-0.3	3.2	7.1	8.4	9.0	9.3	9.8	32.5

Table B-7-9 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.4	2.6	2.8	3.2	3.1	3.1	2.8	18.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.4	0.5	0.7	0.7	0.8	0.8	4.1
Subtotal - Private Costs	0.0	0.0	0.0	0.5	3.0	3.4	3.9	3.9	3.9	3.6	22.3
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	3.0	0.4	0.5	0.2	-0.3	1.1	1.8	2.3	2.6	3.1	14.6
Safety Costs Not Internalized by Drivers	3.6	-0.5	-1.3	-2.2	-3.3	-2.2	-2.0	-1.6	-1.2	-0.8	-11.4
Loss in Fuel Tax Revenue	-0.6	-0.1	-0.1	0.1	1.1	1.0	1.1	1.1	1.0	0.8	5.4
Subtotal - External Costs	5.9	-0.2	-0.9	-1.9	-2.6	-0.1	0.9	1.8	2.4	3.1	8.6
Total Social Costs	8.3	0.7	0.9	1.0	3.1	5.9	7.7	8.5	9.1	9.4	54.6
Private Benefits											
Reduced Fuel Costs	-3.1	-0.4	-0.4	0.5	4.6	4.2	5.0	4.8	4.8	3.9	23.9
Benefits from Additional Driving	-0.3	0.0	0.0	0.2	0.9	1.1	1.5	1.6	1.7	1.7	8.5
Less Frequent Refueling	-0.1	0.0	0.0	0.0	-0.2	-0.3	-0.2	-0.3	-0.2	-0.1	-1.6
Subtotal - Private Benefits	-3.5	-0.4	-0.4	0.7	5.3	5.1	6.3	6.1	6.2	5.5	30.9
External Benefits											
Reduction in Petroleum Market Externality	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.4
Reduced Climate Damages	-1.2	-0.1	-0.2	0.2	1.9	1.7	2.1	2.0	2.0	1.7	10.1
Reduced Health Damages	-0.7	0.0	0.0	0.0	0.3	0.2	0.3	0.2	0.2	0.2	0.8
Subtotal - External Benefits	-2.0	-0.2	-0.2	0.3	2.3	2.0	2.4	2.4	2.3	2.0	11.3
Total Social Benefits	-5.2	-0.5	-0.6	1.0	7.5	7.1	8.7	8.4	8.6	7.5	42.4
Net Social Benefits											
Net Social Benefits	-13.4	-1.3	-1.5	0.0	4.4	1.1	1.0	0.0	-0.5	-2.0	-12.1

Table B-7-10 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	2.4	5.8	8.6	11.0	10.7	10.4	9.6	58.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.4
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.2	0.8	1.1	1.4	1.6	1.7	1.7	8.6
Subtotal - Private Costs	0.0	0.0	0.0	2.5	6.6	9.8	12.5	12.4	12.2	11.4	67.4
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	11.3	1.2	1.5	0.7	-0.3	-1.3	-2.1	-1.2	-0.3	0.3	9.8
Safety Costs Not Internalized by Drivers	14.0	-1.6	-3.2	-5.0	-6.8	-8.1	-9.3	-8.4	-7.8	-7.1	-43.3
Loss in Fuel Tax Revenue	-2.0	-0.2	-0.2	0.5	2.1	3.1	4.2	4.2	4.2	3.9	19.9
Subtotal - External Costs	23.2	-0.6	-1.9	-3.8	-5.0	-6.3	-7.2	-5.4	-3.9	-2.9	-13.7
Total Social Costs	28.4	2.3	2.8	4.4	7.9	9.9	11.8	13.3	14.5	14.6	109.9
Private Benefits											
Reduced Fuel Costs	-9.9	-1.0	-1.1	1.7	8.4	12.8	17.4	17.6	17.8	16.7	80.5
Benefits from Additional Driving	-0.9	0.0	0.0	0.3	1.5	2.1	2.7	3.1	3.3	3.3	15.6
Less Frequent Refueling	-0.4	0.0	-0.1	-0.2	-0.6	-0.7	-0.7	-0.6	-0.5	-0.6	-4.4
Subtotal - Private Benefits	-11.2	-1.0	-1.1	1.8	9.3	14.2	19.4	20.1	20.6	19.5	91.6
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.3	1.6
Reduced Climate Damages	-3.9	-0.4	-0.5	0.8	3.6	5.4	7.4	7.5	7.6	7.2	34.8
Reduced Health Damages	-2.3	-0.1	-0.1	0.0	0.4	0.6	0.8	0.8	0.8	0.8	1.8
Subtotal - External Benefits	-6.3	-0.5	-0.6	0.8	4.1	6.3	8.6	8.7	8.8	8.3	38.1
Total Social Benefits	-16.6	-1.5	-1.7	2.7	13.4	20.4	28.0	28.8	29.4	27.8	130.7
Net Social Benefits											
Net Social Benefits	-45.1	-3.8	-4.5	-1.7	5.5	10.6	16.1	15.5	15.0	13.3	20.8

Table B-7-11 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.9	3.2	4.5	5.5	5.3	5.2	4.9	30.5
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.5	0.6	0.7	0.7	0.8	0.7	4.1
Subtotal - Private Costs	0.0	0.0	0.0	2.0	3.7	5.2	6.3	6.0	6.0	5.6	34.8
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	6.0	0.5	0.7	0.3	-0.4	-2.3	-3.8	-4.4	-4.1	-4.1	-11.6
Safety Costs Not Internalized by Drivers	5.8	-1.4	-2.3	-3.1	-4.0	-5.9	-7.1	-7.5	-7.3	-7.2	-39.9
Loss in Fuel Tax Revenue	-0.9	-0.1	-0.1	0.4	1.2	1.8	2.4	2.5	2.5	2.5	12.2
Subtotal - External Costs	10.9	-1.0	-1.7	-2.3	-3.2	-6.4	-8.5	-9.5	-8.8	-8.8	-39.2
Total Social Costs	13.8	1.0	1.2	3.0	4.1	2.5	1.4	0.1	0.7	0.3	28.0
Private Benefits											
Reduced Fuel Costs	-4.4	-0.3	-0.4	1.4	4.6	7.7	9.9	10.5	10.8	10.7	50.3
Benefits from Additional Driving	-0.6	0.0	0.0	0.1	0.8	1.1	1.2	1.2	1.3	1.3	6.4
Less Frequent Refueling	-0.2	0.0	0.0	-0.2	-0.3	-0.4	-0.3	-0.2	-0.2	-0.3	-2.3
Subtotal - Private Benefits	-5.2	-0.3	-0.4	1.3	5.1	8.3	10.7	11.5	11.9	11.7	54.4
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	1.0
Reduced Climate Damages	-1.7	-0.1	-0.2	0.6	2.0	3.2	4.2	4.4	4.6	4.6	21.6
Reduced Health Damages	-1.1	0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.6	0.6	1.8
Subtotal - External Benefits	-2.9	-0.2	-0.2	0.6	2.3	3.8	4.9	5.2	5.4	5.3	24.3
Total Social Benefits	-7.5	-0.5	-0.6	1.9	7.3	12.1	15.6	16.7	17.3	17.0	79.3
Net Social Benefits											
Net Social Benefits	-21.3	-1.5	-1.8	-1.1	3.2	9.6	14.2	16.6	16.6	16.7	51.3

Table B-7-12 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.5	2.6	4.1	5.4	5.4	5.2	4.7	27.9
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.3	0.5	0.8	0.9	0.9	1.0	4.5
Subtotal - Private Costs	0.0	0.0	0.0	0.6	2.9	4.6	6.2	6.4	6.2	5.8	32.6
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	5.3	0.7	0.8	0.4	0.1	1.1	1.7	3.2	3.7	4.3	21.3
Safety Costs Not Internalized by Drivers	8.1	-0.1	-0.9	-2.0	-2.8	-2.3	-2.2	-0.9	-0.5	0.1	-3.5
Loss in Fuel Tax Revenue	-1.1	-0.1	-0.1	0.1	0.9	1.3	1.9	1.8	1.7	1.4	7.7
Subtotal - External Costs	12.3	0.4	-0.2	-1.5	-1.8	0.1	1.4	4.0	4.9	5.9	25.5
Total Social Costs	14.6	1.3	1.5	1.4	3.7	7.4	10.5	13.2	13.8	14.3	81.8
Private Benefits											
Reduced Fuel Costs	-5.5	-0.6	-0.7	0.4	3.8	5.1	7.5	7.1	7.0	6.1	30.2
Benefits from Additional Driving	-0.2	0.0	0.0	0.2	0.7	1.0	1.6	1.8	2.0	2.1	9.2
Less Frequent Refueling	-0.2	0.0	0.0	0.0	-0.3	-0.3	-0.4	-0.3	-0.3	-0.3	-2.1
Subtotal - Private Benefits	-6.0	-0.7	-0.7	0.6	4.2	5.8	8.7	8.6	8.8	7.8	37.2
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Reduced Climate Damages	-2.2	-0.3	-0.3	0.2	1.6	2.2	3.2	3.1	3.0	2.6	13.2
Reduced Health Damages	-1.2	-0.1	-0.1	0.0	0.2	0.2	0.3	0.2	0.2	0.2	0.0
Subtotal - External Benefits	-3.5	-0.3	-0.4	0.2	1.8	2.5	3.7	3.4	3.4	3.0	13.8
Total Social Benefits	-9.2	-1.0	-1.1	0.8	6.0	8.3	12.4	12.1	12.1	10.8	51.3
Net Social Benefits											
Net Social Benefits	-23.8	-2.3	-2.7	-0.7	2.3	0.9	1.9	-1.1	-1.7	-3.4	-30.5

Table B-7-13 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	3.8	9.9	14.2	16.7	16.1	15.3	14.2	90.1
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.1	1.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.3	1.1	1.4	1.7	1.9	2.0	2.0	10.4
Subtotal - Private Costs	0.0	0.0	0.0	4.1	11.0	15.7	18.7	18.2	17.5	16.3	101.5
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	18.6	2.0	2.5	1.2	-1.1	-3.0	-4.1	-2.8	-1.5	-0.6	11.1
Safety Costs Not Internalized by Drivers	26.4	-0.8	-2.2	-4.6	-7.6	-9.8	-11.1	-10.0	-9.0	-8.1	-36.8
Loss in Fuel Tax Revenue	-3.4	-0.3	-0.4	0.7	3.1	4.7	6.0	5.9	5.8	5.5	27.5
Subtotal - External Costs	41.6	0.9	-0.1	-2.7	-5.7	-8.2	-9.3	-6.9	-4.7	-3.2	1.8
Total Social Costs	46.8	3.8	4.6	7.1	11.6	13.9	15.8	17.6	19.0	19.2	159.5
Private Benefits											
Reduced Fuel Costs	-16.3	-1.6	-1.9	2.2	12.2	18.5	23.9	24.0	23.9	22.6	107.7
Benefits from Additional Driving	-0.8	0.0	0.1	0.5	2.0	2.6	3.2	3.5	3.8	3.8	18.8
Less Frequent Refueling	-0.7	-0.1	-0.1	-0.1	-0.7	-1.0	-1.1	-1.0	-0.9	-0.9	-6.6
Subtotal - Private Benefits	-17.8	-1.6	-1.9	2.6	13.6	20.1	26.0	26.6	26.8	25.5	119.8
External Benefits											
Reduction in Petroleum Market Externality	-0.2	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.5	0.5	2.2
Reduced Climate Damages	-6.5	-0.6	-0.7	1.0	5.2	7.9	10.3	10.4	10.3	9.8	47.0
Reduced Health Damages	-3.7	-0.2	-0.2	0.0	0.6	0.8	1.0	1.0	1.0	0.9	1.3
Subtotal - External Benefits	-10.5	-0.8	-1.0	1.1	6.0	9.1	11.8	11.8	11.8	11.2	50.6
Total Social Benefits	-27.4	-2.5	-2.8	3.7	19.6	29.2	37.8	38.4	38.6	36.8	171.3
Net Social Benefits											
Net Social Benefits	-74.2	-6.3	-7.4	-3.4	8.0	15.3	22.0	20.8	19.6	17.5	11.8

Table B-7-14 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	3.1	5.0	7.2	8.1	7.8	7.5	7.1	45.9
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.5
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.2	0.6	0.8	0.9	0.9	0.9	0.9	5.2
Subtotal - Private Costs	0.0	0.0	0.0	3.2	5.7	8.0	9.1	8.8	8.6	8.1	51.6
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	9.8	0.9	1.1	0.5	-1.0	-3.7	-5.7	-6.2	-5.7	-5.5	-15.5
Safety Costs Not Internalized by Drivers	11.4	-1.1	-1.9	-2.9	-4.6	-7.1	-8.8	-9.2	-8.8	-8.6	-41.4
Loss in Fuel Tax Revenue	-1.5	-0.1	-0.1	0.5	1.5	2.5	3.1	3.3	3.3	3.3	15.8
Subtotal - External Costs	19.7	-0.3	-0.9	-1.8	-4.0	-8.3	-11.3	-12.1	-11.2	-10.8	-41.0
Total Social Costs	22.6	1.7	2.0	4.8	5.2	3.4	1.4	0.3	0.9	0.7	43.1
Private Benefits											
Reduced Fuel Costs	-7.2	-0.6	-0.7	1.7	6.1	10.3	13.1	13.9	14.2	14.1	64.9
Benefits from Additional Driving	-0.6	0.0	0.0	0.3	1.0	1.3	1.5	1.5	1.6	1.6	8.2
Less Frequent Refueling	-0.3	0.0	0.0	-0.1	-0.3	-0.4	-0.4	-0.3	-0.3	-0.4	-2.7
Subtotal - Private Benefits	-8.2	-0.6	-0.7	1.8	6.9	11.2	14.1	15.1	15.5	15.3	70.5
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	1.3
Reduced Climate Damages	-2.9	-0.2	-0.3	0.8	2.6	4.3	5.5	5.9	6.0	6.1	27.9
Reduced Health Damages	-1.8	-0.1	-0.1	0.0	0.3	0.6	0.7	0.8	0.8	0.7	2.0
Subtotal - External Benefits	-4.7	-0.3	-0.3	0.8	3.0	5.1	6.5	6.9	7.1	7.1	31.2
Total Social Benefits	-12.3	-0.8	-1.0	2.6	9.9	16.3	20.7	22.0	22.6	22.3	102.3
Net Social Benefits											
Net Social Benefits	-34.9	-2.5	-3.0	-2.1	4.6	12.9	19.2	21.8	21.7	21.6	59.2

Table B-7-15 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 3% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.7	4.9	7.0	8.6	8.3	7.7	7.0	44.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.5
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.5	0.6	0.8	1.0	1.0	1.1	5.2
Subtotal - Private Costs	0.0	0.0	0.0	0.9	5.4	7.7	9.6	9.4	8.9	8.2	49.9
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	8.7	1.2	1.4	0.7	-0.1	0.7	1.5	3.4	4.2	5.0	26.6
Safety Costs Not Internalized by Drivers	15.0	0.3	-0.3	-1.7	-3.1	-2.7	-2.4	-0.9	-0.2	0.5	4.6
Loss in Fuel Tax Revenue	-1.9	-0.2	-0.2	0.1	1.5	2.1	2.8	2.6	2.5	2.2	11.6
Subtotal - External Costs	21.9	1.3	0.8	-0.9	-1.7	0.1	2.0	5.2	6.5	7.7	42.8
Total Social Costs	24.2	2.2	2.6	2.3	6.3	10.5	14.4	17.3	18.1	18.5	116.4
Private Benefits											
Reduced Fuel Costs	-9.1	-1.0	-1.2	0.5	6.1	8.2	10.9	10.1	9.7	8.4	42.7
Benefits from Additional Driving	-0.2	0.0	0.0	0.3	1.0	1.3	1.7	2.0	2.2	2.3	10.5
Less Frequent Refueling	-0.4	0.0	-0.1	0.0	-0.4	-0.6	-0.7	-0.7	-0.6	-0.4	-3.9
Subtotal - Private Benefits	-9.7	-1.1	-1.2	0.8	6.7	8.9	11.9	11.5	11.3	10.3	49.4
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.9
Reduced Climate Damages	-3.6	-0.4	-0.5	0.2	2.6	3.6	4.7	4.5	4.3	3.8	19.1
Reduced Health Damages	-2.0	-0.1	-0.1	0.0	0.3	0.3	0.3	0.2	0.2	0.2	-0.7
Subtotal - External Benefits	-5.7	-0.5	-0.6	0.2	3.0	4.0	5.3	4.9	4.7	4.1	19.4
Total Social Benefits	-15.1	-1.6	-1.8	1.0	9.7	12.9	17.2	16.4	16.0	14.4	69.0
Net Social Benefits	-39.3	-3.8	-4.4	-1.3	3.4	2.5	2.7	-0.9	-2.1	-4.1	-47.4

Table B-7-16 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.6	4.5	4.7	4.8	4.5	4.3	3.9	28.1
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.5	0.6	0.7	0.7	0.7	0.7	4.0
Subtotal - Private Costs	0.0	0.0	0.0	1.7	5.0	5.3	5.5	5.2	5.0	4.6	32.2
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	4.5	0.5	0.6	0.2	-0.7	-0.4	-0.2	0.0	0.3	0.5	5.0
Safety Costs Not Internalized by Drivers	3.6	-1.7	-2.8	-3.8	-5.0	-4.9	-4.7	-4.3	-3.9	-3.5	-30.9
Loss in Fuel Tax Revenue	-0.8	-0.1	-0.1	0.3	1.4	1.4	1.5	1.4	1.4	1.2	7.8
Subtotal - External Costs	7.3	-1.3	-2.3	-3.3	-4.4	-3.9	-3.4	-2.8	-2.2	-1.8	-18.1
Total Social Costs	11.4	0.9	1.0	2.3	4.7	5.5	6.1	6.1	6.4	6.1	50.6
Private Benefits											
Reduced Fuel Costs	-3.9	-0.4	-0.4	1.1	5.6	6.1	6.7	6.3	6.2	5.6	32.9
Benefits from Additional Driving	0.8	0.0	0.0	0.2	1.0	1.2	1.4	1.4	1.5	1.4	8.8
Less Frequent Refueling	-0.2	0.0	0.0	-0.1	-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	-1.8
Subtotal - Private Benefits	-3.2	-0.4	-0.4	1.3	6.2	6.9	7.8	7.5	7.5	6.9	40.0
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Reduced Climate Damages	-1.5	-0.1	-0.2	0.4	2.3	2.5	2.9	2.9	2.9	2.7	14.8
Reduced Health Damages	-0.8	0.0	0.0	0.0	0.3	0.3	0.4	0.3	0.3	0.3	1.1
Subtotal - External Benefits	-2.3	-0.2	-0.2	0.5	2.6	3.0	3.3	3.3	3.3	3.1	16.5
Total Social Benefits	-6.4	-0.5	-0.6	1.8	8.8	9.9	11.1	10.8	10.8	10.0	55.6
Net Social Benefits											
Net Social Benefits	-17.8	-1.4	-1.7	-0.5	4.1	4.3	5.0	4.6	4.5	3.9	5.0

Table B-7-17 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.2	2.1	2.3	2.2	2.0	1.9	1.8	13.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	1.6
Subtotal - Private Costs	0.0	0.0	0.0	1.2	2.4	2.6	2.4	2.2	2.2	2.0	15.0
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	2.4	0.2	0.3	0.1	-0.5	-1.2	-1.4	-1.4	-1.3	-1.3	-4.1
Safety Costs Not Internalized by Drivers	1.3	-1.3	-1.9	-2.3	-2.9	-3.4	-3.5	-3.3	-3.2	-3.1	-23.5
Loss in Fuel Tax Revenue	-0.4	0.0	0.0	0.2	0.6	0.8	0.8	0.8	0.8	0.8	4.4
Subtotal - External Costs	3.4	-1.1	-1.6	-2.0	-2.7	-3.8	-4.0	-3.9	-3.7	-3.7	-23.2
Total Social Costs	5.7	0.4	0.5	1.5	2.1	1.1	0.7	0.4	0.5	0.3	13.1
Private Benefits											
Reduced Fuel Costs	-1.8	-0.1	-0.1	0.7	2.5	3.3	3.5	3.4	3.4	3.4	18.2
Benefits from Additional Driving	0.4	0.0	0.0	0.1	0.4	0.5	0.5	0.5	0.5	0.5	3.2
Less Frequent Refueling	-0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.1	-0.1	0.0	0.0	-0.8
Subtotal - Private Benefits	-1.5	-0.1	-0.1	0.7	2.6	3.6	3.8	3.8	3.9	3.8	20.6
External Benefits											
Reduction in Petroleum Market Externality	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3
Reduced Climate Damages	-0.7	0.0	-0.1	0.3	1.0	1.4	1.5	1.5	1.6	1.6	8.2
Reduced Health Damages	-0.4	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.6
Subtotal - External Benefits	-1.1	-0.1	-0.1	0.3	1.2	1.6	1.8	1.8	1.8	1.9	9.2
Total Social Benefits	-2.9	-0.2	-0.2	1.0	3.8	5.3	5.6	5.6	5.7	5.7	29.4
Net Social Benefits											
Net Social Benefits	-8.6	-0.6	-0.7	-0.5	1.7	4.2	5.0	5.2	5.2	5.4	16.3

Table B-7-18 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 1

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.4	2.3	2.4	2.7	2.5	2.4	2.1	14.8
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.4	0.4	0.4	2.4
Subtotal - Private Costs	0.0	0.0	0.0	0.5	2.6	2.8	3.1	2.9	2.8	2.5	17.2
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	2.1	0.3	0.3	0.1	-0.3	0.7	1.1	1.4	1.6	1.8	9.1
Safety Costs Not Internalized by Drivers	2.3	-0.4	-0.9	-1.5	-2.2	-1.4	-1.2	-0.9	-0.7	-0.4	-7.4
Loss in Fuel Tax Revenue	-0.4	0.0	-0.1	0.1	0.7	0.6	0.7	0.7	0.6	0.5	3.4
Subtotal - External Costs	3.9	-0.2	-0.7	-1.3	-1.7	-0.1	0.6	1.1	1.5	1.8	5.0
Total Social Costs	5.8	0.5	0.6	0.8	2.6	4.4	5.5	5.7	5.9	5.8	37.5
Private Benefits											
Reduced Fuel Costs	-2.1	-0.2	-0.3	0.4	3.1	2.7	3.2	2.9	2.8	2.2	14.7
Benefits from Additional Driving	0.4	0.0	0.0	0.1	0.6	0.7	0.9	0.9	1.0	1.0	5.7
Less Frequent Refueling	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-1.0
Subtotal - Private Benefits	-1.8	-0.2	-0.3	0.5	3.6	3.3	3.9	3.7	3.6	3.1	19.4
External Benefits											
Reduction in Petroleum Market Externality	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.3
Reduced Climate Damages	-0.8	-0.1	-0.1	0.1	1.3	1.1	1.4	1.3	1.3	1.1	6.6
Reduced Health Damages	-0.4	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.4
Subtotal - External Benefits	-1.3	-0.1	-0.1	0.2	1.5	1.3	1.6	1.5	1.5	1.2	7.3
Total Social Benefits	-3.5	-0.4	-0.4	0.7	5.0	4.6	5.5	5.2	5.1	4.3	26.3
Net Social Benefits											
Net Social Benefits	-9.2	-0.8	-1.0	0.0	2.4	0.2	0.0	-0.5	-0.7	-1.5	-11.2

Table B-7-19 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	2.2	5.2	7.4	9.1	8.5	7.9	7.1	47.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.3
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.5	0.7	0.9	1.0	1.0	0.9	5.2
Subtotal - Private Costs	0.0	0.0	0.0	2.3	5.7	8.2	10.0	9.5	9.0	8.1	52.8
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	7.9	0.8	1.0	0.4	-0.3	-0.9	-1.4	-0.8	-0.2	0.2	6.6
Safety Costs Not Internalized by Drivers	9.4	-1.3	-2.4	-3.6	-4.6	-5.3	-5.8	-5.1	-4.5	-4.0	-27.1
Loss in Fuel Tax Revenue	-1.4	-0.1	-0.1	0.4	1.5	2.1	2.8	2.6	2.5	2.3	12.5
Subtotal - External Costs	15.9	-0.6	-1.5	-2.8	-3.4	-4.1	-4.5	-3.2	-2.2	-1.5	-8.0
Total Social Costs	20.0	1.5	1.8	3.5	6.5	8.1	9.6	10.1	10.4	9.9	81.4
Private Benefits											
Reduced Fuel Costs	-6.8	-0.6	-0.7	1.3	5.8	8.5	11.1	10.8	10.6	9.6	49.4
Benefits from Additional Driving	0.8	0.0	0.0	0.2	1.0	1.4	1.7	1.9	1.9	1.9	10.8
Less Frequent Refueling	-0.3	0.0	0.0	-0.2	-0.4	-0.5	-0.4	-0.4	-0.3	-0.3	-2.9
Subtotal - Private Benefits	-6.3	-0.7	-0.7	1.4	6.4	9.3	12.3	12.3	12.2	11.1	57.3
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	1.0
Reduced Climate Damages	-2.6	-0.3	-0.3	0.5	2.4	3.6	4.9	4.9	5.0	4.7	22.9
Reduced Health Damages	-1.4	-0.1	-0.1	0.0	0.2	0.4	0.5	0.5	0.4	0.4	0.9
Subtotal - External Benefits	-4.2	-0.3	-0.4	0.6	2.7	4.1	5.6	5.6	5.7	5.3	24.7
Total Social Benefits	-11.3	-1.0	-1.1	1.9	9.1	13.5	17.9	17.9	17.8	16.4	81.2
Net Social Benefits											
Net Social Benefits	-31.3	-2.5	-2.9	-1.5	2.6	5.3	8.3	7.8	7.5	6.5	-0.2

Table B-7-20 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	1.8	2.9	3.9	4.6	4.2	4.0	3.6	24.9
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4	2.5
Subtotal - Private Costs	0.0	0.0	0.0	1.8	3.2	4.3	5.1	4.7	4.4	4.0	27.5
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	4.3	0.4	0.4	0.1	-0.3	-1.6	-2.5	-2.8	-2.5	-2.4	-6.8
Safety Costs Not Internalized by Drivers	4.0	-1.1	-1.7	-2.2	-2.7	-3.8	-4.4	-4.5	-4.2	-4.0	-24.7
Loss in Fuel Tax Revenue	-0.7	0.0	-0.1	0.3	0.8	1.3	1.5	1.5	1.5	1.4	7.7
Subtotal - External Costs	7.6	-0.8	-1.3	-1.7	-2.2	-4.2	-5.4	-5.8	-5.1	-4.9	-23.7
Total Social Costs	9.9	0.7	0.8	2.5	3.5	2.5	1.9	1.0	1.3	1.0	25.1
Private Benefits											
Reduced Fuel Costs	-3.1	-0.2	-0.3	1.0	3.2	5.1	6.3	6.5	6.4	6.1	31.1
Benefits from Additional Driving	0.4	0.0	0.0	0.1	0.5	0.7	0.7	0.7	0.8	0.7	4.7
Less Frequent Refueling	-0.1	0.0	0.0	-0.2	-0.2	-0.3	-0.2	-0.1	-0.1	-0.2	-1.5
Subtotal - Private Benefits	-2.9	-0.2	-0.3	0.9	3.5	5.5	6.8	7.1	7.1	6.7	34.3
External Benefits											
Reduction in Petroleum Market Externality	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Reduced Climate Damages	-1.2	-0.1	-0.1	0.4	1.3	2.1	2.8	2.9	3.0	3.0	14.2
Reduced Health Damages	-0.7	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.3	0.9
Subtotal - External Benefits	-1.9	-0.1	-0.1	0.4	1.5	2.5	3.2	3.4	3.5	3.4	15.7
Total Social Benefits	-5.2	-0.3	-0.4	1.3	5.0	8.0	10.0	10.5	10.5	10.1	49.6
Net Social Benefits											
Net Social Benefits	-15.1	-1.0	-1.2	-1.1	1.5	5.5	8.1	9.4	9.2	9.1	24.5

Table B-7-21 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 2

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.4	2.3	3.5	4.5	4.3	4.0	3.5	22.5
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.5	0.5	0.5	2.7
Subtotal - Private Costs	0.0	0.0	0.0	0.5	2.5	3.8	5.0	4.9	4.5	4.1	25.3
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	3.6	0.5	0.5	0.2	0.0	0.7	1.1	2.0	2.2	2.5	13.3
Safety Costs Not Internalized by Drivers	5.4	-0.2	-0.7	-1.4	-1.9	-1.5	-1.3	-0.6	-0.3	0.1	-2.4
Loss in Fuel Tax Revenue	-0.8	-0.1	-0.1	0.1	0.7	0.9	1.2	1.1	1.0	0.8	4.8
Subtotal - External Costs	8.3	0.2	-0.2	-1.1	-1.2	0.1	0.9	2.5	2.9	3.4	15.7
Total Social Costs	10.1	0.9	1.0	1.0	3.0	5.6	7.7	9.1	9.0	8.9	56.3
Private Benefits											
Reduced Fuel Costs	-3.7	-0.4	-0.5	0.3	2.6	3.4	4.8	4.3	4.1	3.4	18.3
Benefits from Additional Driving	0.4	0.0	0.0	0.1	0.5	0.7	1.0	1.1	1.2	1.2	6.1
Less Frequent Refueling	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-1.4
Subtotal - Private Benefits	-3.4	-0.4	-0.5	0.5	2.9	3.8	5.5	5.2	5.1	4.4	23.1
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.4
Reduced Climate Damages	-1.4	-0.2	-0.2	0.1	1.1	1.4	2.1	2.0	2.0	1.7	8.7
Reduced Health Damages	-0.8	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	-0.1
Subtotal - External Benefits	-2.3	-0.2	-0.2	0.1	1.2	1.6	2.4	2.2	2.2	1.9	9.0
Total Social Benefits	-6.1	-0.6	-0.7	0.6	4.1	5.4	7.9	7.5	7.3	6.3	31.6
Net Social Benefits											
Net Social Benefits	-16.2	-1.5	-1.7	-0.4	1.1	-0.2	0.2	-1.6	-1.7	-2.6	-24.7

Table B-7-22 - Incremental Benefits and Costs By Model Year for the Total Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	3.5	8.8	12.2	13.8	12.8	11.7	10.4	73.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.8
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.2	0.7	0.9	1.1	1.1	1.1	1.1	6.3
Subtotal - Private Costs	0.0	0.0	0.0	3.7	9.6	13.2	15.1	14.1	13.0	11.6	80.4
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	13.0	1.4	1.6	0.7	-0.9	-2.1	-2.8	-1.8	-0.9	-0.3	7.7
Safety Costs Not Internalized by Drivers	18.1	-0.8	-1.7	-3.3	-5.2	-6.4	-6.9	-6.0	-5.2	-4.5	-21.9
Loss in Fuel Tax Revenue	-2.3	-0.2	-0.2	0.5	2.2	3.1	3.9	3.7	3.5	3.2	17.3
Subtotal - External Costs	28.8	0.4	-0.4	-2.1	-4.0	-5.4	-5.8	-4.1	-2.6	-1.6	3.1
Total Social Costs	32.9	2.5	3.0	5.5	9.8	11.9	13.3	13.7	13.9	13.4	120.0
Private Benefits											
Reduced Fuel Costs	-11.3	-1.1	-1.2	1.7	8.5	12.3	15.3	14.8	14.2	12.9	66.0
Benefits from Additional Driving	0.8	0.0	0.0	0.4	1.3	1.7	2.0	2.1	2.2	2.1	12.7
Less Frequent Refueling	-0.5	-0.1	-0.1	-0.1	-0.5	-0.7	-0.7	-0.6	-0.6	-0.5	-4.2
Subtotal - Private Benefits	-10.9	-1.1	-1.2	2.0	9.3	13.3	16.6	16.3	15.8	14.5	74.5
External Benefits											
Reduction in Petroleum Market Externality	-0.2	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.3	1.3
Reduced Climate Damages	-4.3	-0.4	-0.5	0.6	3.4	5.2	6.8	6.8	6.8	6.4	30.9
Reduced Health Damages	-2.4	-0.1	-0.1	0.0	0.4	0.5	0.6	0.6	0.5	0.5	0.5
Subtotal - External Benefits	-6.8	-0.5	-0.6	0.7	4.0	6.0	7.7	7.7	7.6	7.2	32.8
Total Social Benefits	-18.6	-1.6	-1.8	2.7	13.3	19.3	24.2	24.0	23.4	21.7	106.4

Net Social Benefits	-51.5	-4.1	-4.8	-2.9	3.5	7.4	11.0	10.2	9.4	8.3	-13.6
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Table B-7-23 - Incremental Benefits and Costs By Model Year for the Passenger Car Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	2.8	4.5	6.2	6.7	6.2	5.8	5.3	37.5
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.4
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.4	0.5	0.5	0.5	0.5	0.5	3.2
Subtotal - Private Costs	0.0	0.0	0.0	3.0	4.9	6.7	7.3	6.8	6.4	5.8	41.1
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	7.0	0.6	0.7	0.3	-0.8	-2.5	-3.7	-3.9	-3.5	-3.2	-9.0
Safety Costs Not Internalized by Drivers	8.0	-0.9	-1.4	-2.0	-3.1	-4.6	-5.5	-5.5	-5.1	-4.8	-24.9
Loss in Fuel Tax Revenue	-1.1	-0.1	-0.1	0.4	1.1	1.7	2.1	2.1	2.0	1.9	10.0
Subtotal - External Costs	14.0	-0.4	-0.8	-1.3	-2.8	-5.4	-7.1	-7.4	-6.5	-6.1	-23.9
Total Social Costs	16.3	1.1	1.4	3.9	4.6	3.7	2.5	1.6	1.9	1.7	38.6
Private Benefits											
Reduced Fuel Costs	-5.1	-0.4	-0.4	1.3	4.3	6.9	8.4	8.6	8.4	8.1	40.0
Benefits from Additional Driving	0.4	0.0	0.0	0.2	0.7	0.8	0.9	0.9	1.0	0.9	5.8
Less Frequent Refueling	-0.2	0.0	0.0	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2	-0.3	-1.7
Subtotal - Private Benefits	-5.0	-0.4	-0.4	1.3	4.8	7.4	9.1	9.3	9.2	8.8	44.1
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.8
Reduced Climate Damages	-1.9	-0.1	-0.2	0.5	1.7	2.9	3.7	3.9	4.0	4.0	18.4
Reduced Health Damages	-1.1	0.0	0.0	0.0	0.2	0.4	0.4	0.4	0.4	0.4	1.0
Subtotal - External Benefits	-3.1	-0.2	-0.2	0.5	2.0	3.3	4.2	4.5	4.5	4.5	20.1
Total Social Benefits	-8.5	-0.6	-0.7	1.9	6.7	10.8	13.3	13.8	13.8	13.3	63.9
Net Social Benefits											
Net Social Benefits	-24.7	-1.7	-2.0	-2.1	2.2	7.1	10.8	12.2	11.9	11.6	25.3

Table B-7-24 - Incremental Benefits and Costs By Model Year for the Light Truck Fleet Produced Through 2029 (2018\$ Billions), 7% Percent Discount Rate, for Alternative 3

Model Year	1981-2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Private Costs											
Technology Costs to Increase Fuel Economy	0.0	0.0	0.0	0.7	4.3	6.0	7.1	6.6	5.9	5.2	35.8
Increased Maintenance and Repair Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.4
Safety Costs Internalized by Drivers	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.6	0.6	3.1
Subtotal - Private Costs	0.0	0.0	0.0	0.8	4.7	6.4	7.7	7.2	6.6	5.8	39.3
External Costs											
Congestion and Noise Costs from Rebound-Effect Driving	6.0	0.8	0.9	0.4	-0.2	0.4	1.0	2.1	2.5	2.9	16.7
Safety Costs Not Internalized by Drivers	10.1	0.1	-0.3	-1.3	-2.1	-1.8	-1.5	-0.5	-0.1	0.3	3.0
Loss in Fuel Tax Revenue	-1.3	-0.1	-0.2	0.1	1.1	1.4	1.8	1.6	1.5	1.2	7.3
Subtotal - External Costs	14.8	0.8	0.4	-0.8	-1.2	0.1	1.3	3.2	3.9	4.4	27.0
Total Social Costs	16.7	1.4	1.6	1.6	5.2	8.2	10.8	12.1	12.1	11.7	81.5
Private Benefits											
Reduced Fuel Costs	-6.2	-0.7	-0.8	0.5	4.2	5.4	6.9	6.2	5.7	4.8	26.0
Benefits from Additional Driving	0.4	0.0	0.0	0.2	0.7	0.8	1.1	1.2	1.3	1.3	6.9
Less Frequent Refueling	-0.3	0.0	0.0	0.0	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-2.5
Subtotal - Private Benefits	-6.0	-0.7	-0.8	0.6	4.6	5.8	7.5	7.0	6.6	5.8	30.4
External Benefits											
Reduction in Petroleum Market Externality	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Reduced Climate Damages	-2.4	-0.3	-0.3	0.1	1.7	2.4	3.1	2.9	2.8	2.5	12.5
Reduced Health Damages	-1.3	-0.1	-0.1	0.0	0.2	0.2	0.2	0.1	0.1	0.1	-0.5
Subtotal - External Benefits	-3.7	-0.3	-0.4	0.2	2.0	2.6	3.4	3.2	3.0	2.7	12.6
Total Social Benefits	-10.1	-1.0	-1.2	0.8	6.5	8.5	10.9	10.1	9.6	8.4	42.6
Net Social Benefits											
Net Social Benefits	-26.8	-2.5	-2.8	-0.8	1.3	0.2	0.1	-2.0	-2.4	-3.3	-38.9

Table B-7-25 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Total Fleet Produced Through MY2050 (2018\$ Billions), 3% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	103.4	171.6	252.4
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.2	0.7	1.7
Safety Costs Internalized by Drivers	19.3	26.8	31.9
Subtotal - Incremental Private Costs	122.9	199.1	286.1
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	25.1	35.0	41.4
Safety Costs Not Internalized by Drivers	10.7	17.1	24.8
Loss in Fuel Tax Revenue	34.9	60.7	85.0
Subtotal - Incremental External Costs	70.6	112.8	151.2
Total Incremental Social Costs	193.5	311.9	437.2
Private Benefits			
Reduced Fuel Costs	163.2	265.5	358.9
Benefits from Additional Driving	41.2	54.7	64.0
Less Frequent Refueling	-3.2	-10.0	-16.0
Subtotal - Incremental Private Benefits	201.2	310.2	406.9
External Benefits			
Reduction in Petroleum Market Externality	3.1	5.4	7.6
Reduced Climate Damages	71.6	118.2	161.4
Reduced Health Damages	7.4	9.0	9.6
Subtotal - Incremental External Benefits	82.1	132.7	178.6
Total Incremental Social Benefits	283.3	442.9	585.6
Net Incremental Social Benefits			
Net Incremental Social Benefits	89.8	131.1	148.3

Table B-7-26 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Passenger Car Fleet Produced Through MY2050 (2018\$ Billions), 3% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	41.4	78.1	118.3
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.3	0.8
Safety Costs Internalized by Drivers	6.9	11.2	14.5
Subtotal - Incremental Private Costs	48.4	89.7	133.6
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	-30.8	-49.6	-65.4
Safety Costs Not Internalized by Drivers	-25.6	-40.8	-52.8
Loss in Fuel Tax Revenue	19.6	36.4	49.2
Subtotal - Incremental External Costs	-36.8	-54.0	-68.9
Total Incremental Social Costs	11.6	35.7	64.7
Private Benefits			
Reduced Fuel Costs	91.7	163.4	219.3
Benefits from Additional Driving	12.7	20.1	25.6
Less Frequent Refueling	0.6	-3.1	-5.2
Subtotal - Incremental Private Benefits	105.1	180.4	239.7
External Benefits			
Reduction in Petroleum Market Externality	1.7	3.2	4.4
Reduced Climate Damages	40.2	72.2	97.2
Reduced Health Damages	4.8	7.5	9.5
Subtotal - Incremental External Benefits	46.7	82.9	111.2
Total Incremental Social Benefits	151.7	263.3	350.9
Net Incremental Social Benefits			
Net Incremental Social Benefits	140.2	227.7	286.1

Table B-7-27 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Light Truck Fleet Produced Through MY2050 (2018\$ Billions), 3% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	62.0	93.5	134.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.3	0.9
Safety Costs Internalized by Drivers	12.4	15.6	17.3
Subtotal - Incremental Private Costs	74.5	109.4	152.4
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	55.9	84.7	106.7
Safety Costs Not Internalized by Drivers	36.2	57.9	77.6
Loss in Fuel Tax Revenue	15.3	24.3	35.7
Subtotal - Incremental External Costs	107.4	166.8	220.1
Total Incremental Social Costs	181.9	276.2	372.5
Private Benefits			
Reduced Fuel Costs	71.5	102.1	139.7
Benefits from Additional Driving	28.5	34.6	38.4
Less Frequent Refueling	-3.8	-6.9	-10.8
Subtotal - Incremental Private Benefits	96.2	129.8	167.2
External Benefits			
Reduction in Petroleum Market Externality	1.4	2.2	3.2
Reduced Climate Damages	31.4	46.1	64.2
Reduced Health Damages	2.6	1.5	0.0
Subtotal - Incremental External Benefits	35.4	49.8	67.5
Total Incremental Social Benefits	131.6	179.6	234.7
Net Incremental Social Benefits			
Net Incremental Social Benefits	-50.3	-96.6	-137.8

Table B-7-28 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Total Fleet Produced Through MY2050 (2018\$ Billions), 7% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	64.5	108.4	161.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.5	1.3
Safety Costs Internalized by Drivers	9.8	13.6	16.2
Subtotal - Incremental Private Costs	74.5	122.4	178.6
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	13.1	18.2	21.5
Safety Costs Not Internalized by Drivers	6.9	11.3	16.9
Loss in Fuel Tax Revenue	18.3	31.8	44.4
Subtotal - Incremental External Costs	38.3	61.3	82.8
Total Incremental Social Costs	112.8	183.7	261.4
Private Benefits			
Reduced Fuel Costs	83.6	135.5	182.8
Benefits from Additional Driving	21.0	27.7	32.5
Less Frequent Refueling	-2.0	-5.5	-8.6
Subtotal - Incremental Private Benefits	102.6	157.7	206.7
External Benefits			
Reduction in Petroleum Market Externality	1.6	2.7	3.8
Reduced Climate Damages	46.5	76.9	104.9
Reduced Health Damages	3.4	4.0	4.1
Subtotal - Incremental External Benefits	51.5	83.6	112.8
Total Incremental Social Benefits	154.1	241.3	319.5
Net Incremental Social Benefits			
Net Incremental Social Benefits	41.3	57.6	58.1

Table B-7-29 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Passenger Car Fleet Produced Through MY2050 (2018\$ Billions), 7% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	27.0	51.1	77.2
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.2	0.6
Safety Costs Internalized by Drivers	3.6	5.8	7.5
Subtotal - Incremental Private Costs	30.7	57.1	85.4
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	-15.2	-24.6	-32.4
Safety Costs Not Internalized by Drivers	-11.7	-18.7	-23.7
Loss in Fuel Tax Revenue	10.4	19.2	25.8
Subtotal - Incremental External Costs	-16.5	-24.1	-30.3
Total Incremental Social Costs	14.2	33.1	55.1
Private Benefits			
Reduced Fuel Costs	47.1	83.9	112.0
Benefits from Additional Driving	6.6	10.4	13.3
Less Frequent Refueling	0.0	-2.0	-3.0
Subtotal - Incremental Private Benefits	53.8	92.4	122.3
External Benefits			
Reduction in Petroleum Market Externality	0.9	1.6	2.2
Reduced Climate Damages	26.1	46.9	63.2
Reduced Health Damages	2.2	3.4	4.2
Subtotal - Incremental External Benefits	29.2	52.0	69.7
Total Incremental Social Benefits	82.9	144.3	192.0
Net Incremental Social Benefits			
Net Incremental Social Benefits	68.8	111.3	136.9

Table B-7-30 - Incremental Benefits and Costs for Calendar Years 2021-2050 for Light Truck Fleet Produced Through MY2050 (2018\$ Billions), 7% Percent Discount Rate, by Alternative

Alternative	1	2	3
Private Costs			
Technology Costs to Increase Fuel Economy	37.5	57.3	83.9
Increased Maintenance and Repair Costs	0.0	0.0	0.0
Sacrifice in Other Vehicle Attributes	0.0	0.0	0.0
Consumer Surplus Loss from Reduced New Vehicle Sales	0.1	0.2	0.6
Safety Costs Internalized by Drivers	6.3	7.8	8.7
Subtotal - Incremental Private Costs	43.8	65.3	93.3
External Costs			
Congestion and Noise Costs from Rebound-Effect Driving	28.3	42.8	53.9
Safety Costs Not Internalized by Drivers	18.6	30.0	40.6
Loss in Fuel Tax Revenue	7.9	12.6	18.6
Subtotal - Incremental External Costs	54.9	85.3	113.1
Total Incremental Social Costs	98.7	150.6	206.3
Private Benefits			
Reduced Fuel Costs	36.4	51.5	70.8
Benefits from Additional Driving	14.4	17.3	19.2
Less Frequent Refueling	-2.0	-3.6	-5.7
Subtotal - Incremental Private Benefits	48.9	65.3	84.4
External Benefits			
Reduction in Petroleum Market Externality	0.7	1.1	1.6
Reduced Climate Damages	20.4	29.9	41.7
Reduced Health Damages	1.2	0.6	-0.2
Subtotal - Incremental External Benefits	22.3	31.6	43.1
Total Incremental Social Benefits	71.2	96.9	127.5
Net Incremental Social Benefits			
Net Incremental Social Benefits	-27.5	-53.7	-78.8

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

Table B-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)	203	236	401	505	575	653	689	673	655	642
Alternative 1	203	236	401	609	977	1,094	1,184	1,158	1,131	1,091
Alternative 2	203	236	401	652	1,000	1,338	1,642	1,610	1,566	1,496
Alternative 3	203	236	401	741	1,296	1,772	2,147	2,101	2,027	1,932

Table B-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)	309	273	406	461	509	598	629	598	573	556
Alternative 1	309	273	405	622	896	1,045	1,084	1,039	1,005	968
Alternative 2	309	273	405	710	998	1,358	1,615	1,546	1,491	1,413
Alternative 3	309	273	405	860	1,274	1,799	2,098	2,037	1,952	1,854

Table B-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)	121	207	398	545	635	704	747	745	737	729
Alternative 1	121	207	398	598	1,050	1,140	1,279	1,270	1,254	1,212
Alternative 2	121	207	398	601	1,002	1,320	1,666	1,669	1,637	1,575
Alternative 3	121	207	398	634	1,316	1,747	2,191	2,160	2,097	2,004

Table B-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)	70	582	673	724	778	1,237	1,613	1,550	1,472	1,397
Alternative 1	70	582	673	727	1,057	1,282	1,447	1,444	1,384	1,332
Alternative 2	70	582	673	709	957	1,286	1,695	1,828	1,737	1,653
Alternative 3	70	582	673	710	1,064	1,522	2,083	2,098	1,996	1,874

Table B-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)	437	464	743	745	724	914	988	948	923	885
Alternative 1	437	464	743	745	1,149	1,394	1,551	1,480	1,471	1,377
Alternative 2	437	464	743	745	1,025	1,548	1,995	1,912	1,926	1,790
Alternative 3	437	464	743	745	1,136	2,198	2,703	2,553	2,527	2,341

Table B-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)	380	100	537	1,010	1,051	1,066	1,108	1,124	1,145	1,130
Alternative 1	380	100	535	1,009	1,340	1,383	1,627	1,619	1,642	1,647
Alternative 2	380	100	535	1,009	1,193	1,468	1,964	1,949	1,962	1,966
Alternative 3	380	100	535	1,009	1,285	1,676	2,301	2,275	2,280	2,274

Table B-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	463	729	804	887	884	849	808	770	729
Alternative 1	137	463	729	1,346	1,369	1,391	1,468	1,386	1,317	1,238
Alternative 2	137	463	729	1,512	1,537	1,545	1,816	1,783	1,700	1,623
Alternative 3	137	463	729	1,572	1,757	1,783	2,328	2,259	2,139	2,014

Table B-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)	290	347	408	442	481	609	644	640	624	651
Alternative 1	290	347	408	446	1,218	1,545	1,644	1,609	1,557	1,501
Alternative 2	290	347	408	442	876	1,722	2,219	2,126	2,030	1,924
Alternative 3	290	347	408	468	1,124	2,220	2,826	2,682	2,552	2,409

Table B-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	13	118	121	136	289	399	369	345	315
Alternative 1	0	13	118	146	194	398	456	473	449	412
Alternative 2	0	13	118	221	428	810	996	1,066	1,056	988
Alternative 3	0	13	118	524	1,079	1,366	1,513	1,616	1,541	1,436

Table B-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)	562	330	375	440	534	512	544	519	496	483
Alternative 1	562	330	375	440	724	846	1,076	1,034	990	938
Alternative 2	562	330	375	440	724	1,165	1,893	1,801	1,719	1,623
Alternative 3	562	330	375	446	783	1,559	2,427	2,292	2,177	2,047

Table B-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)	269	354	356	347	594	602	576	577	556	534
Alternative 1	269	354	356	346	848	871	855	898	867	837
Alternative 2	269	354	356	346	1,074	1,212	1,629	1,622	1,571	1,494
Alternative 3	269	354	356	346	1,417	1,837	2,221	2,160	2,099	1,994

Table B-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	398	590	685	710	725	830	813	798
Alternative 1	96	78	398	590	1,156	1,250	1,367	1,364	1,318	1,286
Alternative 2	96	78	398	590	993	1,342	1,708	1,695	1,641	1,595
Alternative 3	96	78	398	590	1,113	1,525	2,056	2,028	1,966	1,914

Table B-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)	342	960	1,027	1,183	1,164	1,229	1,210	1,169	1,137	1,097
Alternative 1	342	960	1,027	1,188	1,250	1,479	1,521	1,472	1,433	1,386
Alternative 2	342	960	1,027	1,188	1,240	1,988	2,173	2,102	2,046	2,017
Alternative 3	342	960	1,027	1,188	1,307	2,332	2,604	2,509	2,429	2,378

Table B-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)	209	43	166	403	466	395	382	368	357	345
Alternative 1	209	43	166	403	1,002	934	917	901	888	873
Alternative 2	209	43	166	403	856	1,526	1,487	1,451	1,418	1,384
Alternative 3	209	43	166	403	986	1,951	1,888	1,830	1,777	1,725

Table B-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)	97	224	263	270	395	402	396	388	393	388
Alternative 1	97	224	263	414	710	746	764	739	775	756
Alternative 2	97	224	263	682	1,066	1,427	1,468	1,426	1,443	1,392
Alternative 3	97	224	263	1,208	1,949	2,672	2,703	2,738	2,705	2,624

Table B-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	250	520	553	579	575	554	536	520
Alternative 1	28	46	250	786	1,111	1,121	1,115	1,084	1,055	1,029
Alternative 2	28	46	250	703	895	1,041	1,022	984	955	926
Alternative 3	28	46	250	786	1,110	1,266	1,230	1,180	1,141	1,102

Table B-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	210	230	315	319	395	375	372	388
Alternative 1	49	45	210	307	818	798	877	851	855	840
Alternative 2	49	45	210	312	1,101	1,118	1,257	1,221	1,211	1,125
Alternative 3	49	45	210	315	1,408	1,431	1,523	1,506	1,470	1,389

Table B-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)	170	193	223	1,505	1,405	1,454	1,396	1,537	1,452	1,364
Alternative 1	170	193	223	1,454	1,489	1,580	1,585	1,707	1,617	1,523
Alternative 2	170	193	223	1,454	1,470	1,644	1,739	1,878	1,777	1,670
Alternative 3	170	193	223	1,580	1,620	1,827	1,924	2,095	1,986	1,870

Table B-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)	405	103	488	532	777	1,482	1,492	1,441	1,382	1,310
Alternative 1	405	103	488	532	1,204	1,564	1,589	1,542	1,464	1,399
Alternative 2	405	103	488	532	1,067	1,579	1,881	1,798	1,665	1,574
Alternative 3	405	103	488	532	1,184	1,820	2,232	2,133	1,966	1,859

Table B-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)	111	755	806	761	836	1,447	1,977	1,892	1,781	1,679
Alternative 1	111	755	806	750	1,198	1,432	1,650	1,607	1,531	1,469
Alternative 2	111	755	806	750	1,122	1,549	2,131	1,969	1,861	1,766
Alternative 3	111	755	806	750	1,269	1,891	2,430	2,210	2,076	1,946

Table B-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	689	1,196	1,179	1,134	1,116	1,116	1,060	1,037	991
Alternative 1	620	689	1,196	1,179	1,606	1,690	1,798	1,727	1,754	1,622
Alternative 2	620	689	1,196	1,179	1,529	1,921	2,358	2,273	2,351	2,144
Alternative 3	620	689	1,196	1,179	1,653	2,172	2,766	2,669	2,762	2,566

Table B-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	658	1,006	1,506	1,618	1,719	1,704	1,658	1,676	1,700
Alternative 1	1,219	658	996	1,506	1,993	2,287	2,402	2,293	2,322	2,502
Alternative 2	1,219	658	996	1,506	1,934	2,510	2,957	2,849	2,849	3,057
Alternative 3	1,219	658	996	1,506	2,054	2,793	3,395	3,275	3,255	3,452

Table B-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	698	953	1,095	1,028	1,024	986	931	885	832
Alternative 1	516	698	953	2,953	2,713	2,785	2,611	2,420	2,247	2,071
Alternative 2	516	698	953	3,529	3,228	3,257	3,092	2,880	2,665	2,455
Alternative 3	516	698	953	3,529	3,238	3,001	3,176	2,992	2,800	2,594

Table B-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)	523	174	272	400	444	768	736	700	664	630
Alternative 1	523	174	272	412	896	1,486	1,541	1,458	1,375	1,285
Alternative 2	523	174	272	400	809	1,549	2,003	1,864	1,754	1,636
Alternative 3	523	174	272	475	995	1,927	2,461	2,256	2,119	1,974

Table B-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	11	122	128	132	226	413	376	349	312
Alternative 1	0	11	122	168	222	360	467	432	399	362
Alternative 2	0	11	122	290	382	652	986	989	965	888
Alternative 3	0	11	122	782	981	1,188	1,493	1,571	1,469	1,362

Table B-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)	593	352	375	440	540	512	488	466	446	437
Alternative 1	593	352	375	440	702	825	980	941	901	851
Alternative 2	593	352	375	440	719	1,170	1,817	1,725	1,644	1,548
Alternative 3	593	352	375	446	774	1,583	2,335	2,198	2,084	1,952

Table B-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)	223	294	306	297	455	486	464	444	426	408
Alternative 1	223	294	306	295	569	629	628	651	626	599
Alternative 2	223	294	306	295	574	821	1,480	1,431	1,385	1,298
Alternative 3	223	294	306	295	712	1,397	2,018	1,923	1,872	1,754

Table B-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	53	450	969	986	1,008	1,055	1,087	1,042
Alternative 1	0	56	53	450	1,516	1,391	1,500	1,415	1,335	1,238
Alternative 2	0	56	53	450	1,328	1,744	2,185	1,943	1,840	1,593
Alternative 3	0	56	53	451	1,812	1,654	2,387	1,998	1,899	1,688

Table B-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)	709	1,951	2,042	2,079	2,027	2,139	2,056	1,971	1,899	1,817
Alternative 1	709	1,951	2,042	2,089	2,196	2,458	2,470	2,374	2,291	2,199
Alternative 2	709	1,951	2,042	2,089	2,178	2,957	3,033	2,915	2,813	2,767
Alternative 3	709	1,951	2,042	2,089	2,309	3,540	3,589	3,433	3,292	3,208

Table B-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)	404	92	227	580	632	519	495	470	451	429
Alternative 1	404	92	227	580	1,156	925	900	875	855	833
Alternative 2	404	92	227	580	1,068	1,608	1,545	1,485	1,430	1,374
Alternative 3	404	92	227	580	1,217	1,879	1,800	1,725	1,657	1,587

Table B-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)	128	172	187	195	316	314	311	306	305	303
Alternative 1	128	172	187	347	642	681	661	645	696	677
Alternative 2	128	172	187	616	1,020	1,515	1,440	1,385	1,419	1,352
Alternative 3	128	172	187	1,259	1,877	2,889	2,750	2,759	2,729	2,639

Table B-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	688	740	656	625	661	635	613	590
Alternative 1	134	144	688	739	1,845	1,776	1,832	1,779	1,725	1,677
Alternative 2	134	144	688	740	1,304	1,756	1,750	1,671	1,603	1,531
Alternative 3	134	144	688	740	1,845	2,360	2,312	2,201	2,100	1,998

Table B-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	133	174	203	203	188	177	217
Alternative 1	0	21	131	133	395	427	425	445	450	496
Alternative 2	0	21	131	134	601	712	773	787	777	749
Alternative 3	0	21	131	138	739	897	956	1,037	1,016	984

Table B-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	736	814	656	682	889	969	966	931	893
Alternative 1	592	736	814	656	1,136	1,450	1,732	1,574	1,503	1,429
Alternative 2	592	736	814	656	1,068	1,675	2,274	2,170	2,053	1,933
Alternative 3	592	736	814	656	1,193	1,954	2,598	2,465	2,349	2,232

Table B-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)	626	39	641	679	798	1,150	1,174	1,115	1,067	1,000
Alternative 1	626	39	641	679	1,284	1,458	1,480	1,410	1,312	1,246
Alternative 2	626	39	641	679	1,209	1,601	1,864	1,763	1,573	1,468
Alternative 3	626	39	641	679	1,346	1,923	2,244	2,110	1,853	1,716

Table B-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	270	415	648	658	788	814	786	763	739
Alternative 1	0	270	415	681	766	968	1,015	1,092	1,060	1,025
Alternative 2	0	270	415	627	614	738	780	1,531	1,471	1,406
Alternative 3	0	270	415	629	640	762	1,367	1,867	1,829	1,721

Table B-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)	274	250	287	290	280	690	841	817	787	756
Alternative 1	274	250	287	290	654	1,069	1,277	1,202	1,145	1,091
Alternative 2	274	250	287	290	480	1,142	1,599	1,516	1,452	1,391
Alternative 3	274	250	287	290	579	2,226	2,635	2,427	2,269	2,091

Table B-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)	246	6	454	920	946	943	993	1,020	1,039	1,015
Alternative 1	246	6	454	919	1,219	1,215	1,481	1,491	1,511	1,480
Alternative 2	246	6	454	919	1,056	1,275	1,779	1,781	1,794	1,757
Alternative 3	246	6	454	919	1,144	1,469	2,100	2,091	2,098	2,053

Table B-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	374	641	686	828	825	790	755	719	683
Alternative 1	0	374	641	693	810	808	983	944	914	873
Alternative 2	0	374	641	693	835	832	1,282	1,323	1,290	1,266
Alternative 3	0	374	641	777	1,144	1,280	1,977	1,956	1,862	1,769

Table B-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	434	478	464	501	522	594	606	601	663
Alternative 1	178	434	478	464	1,392	1,577	1,700	1,692	1,659	1,622
Alternative 2	178	434	478	464	913	1,816	2,336	2,268	2,182	2,083
Alternative 3	178	434	478	464	1,194	2,378	3,022	2,911	2,786	2,646

Table B-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	113	110	142	397	376	355	338	319
Alternative 1	0	17	113	110	146	461	438	544	536	502
Alternative 2	0	17	113	110	505	1,073	1,012	1,196	1,212	1,162
Alternative 3	0	17	113	110	1,241	1,659	1,547	1,689	1,662	1,561

Table B-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)	301	142	379	446	473	512	1,084	1,039	999	958
Alternative 1	301	142	379	446	934	1,048	1,997	1,928	1,865	1,801
Alternative 2	301	142	379	446	772	1,109	2,620	2,528	2,442	2,357
Alternative 3	301	142	379	446	860	1,328	3,295	3,176	3,064	2,953

Table B-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)	342	456	447	443	868	837	809	860	838	815
Alternative 1	342	456	447	443	1,398	1,355	1,316	1,405	1,374	1,343
Alternative 2	342	456	447	443	2,058	1,987	1,927	2,003	1,951	1,900
Alternative 3	342	456	447	443	2,800	2,701	2,618	2,624	2,551	2,480

Table B-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	416	597	668	694	708	816	795	783
Alternative 1	100	79	416	597	1,136	1,242	1,360	1,361	1,317	1,289
Alternative 2	100	79	416	597	974	1,320	1,681	1,681	1,630	1,595
Alternative 3	100	79	416	597	1,073	1,517	2,038	2,030	1,970	1,927

Table B-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	245	431	495	489	483	478
Alternative 2	0	0	0	249	245	956	1,252	1,231	1,213	1,197
Alternative 3	0	0	0	249	245	1,051	1,561	1,533	1,505	1,482

Table B-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)	44	0	111	242	312	279	274	270	266	263
Alternative 1	44	0	111	242	860	942	933	925	918	912
Alternative 2	44	0	111	242	661	1,450	1,434	1,419	1,406	1,394
Alternative 3	44	0	111	242	773	2,018	1,969	1,927	1,889	1,854

Table B-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)	26	347	451	460	602	638	626	613	642	630
Alternative 1	26	347	451	584	887	919	1,037	990	991	976
Alternative 2	26	347	451	848	1,184	1,197	1,544	1,535	1,507	1,501
Alternative 3	26	347	451	1,078	2,137	2,107	2,579	2,682	2,640	2,585

Table B-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	448	518	563	543	523	506	492
Alternative 1	0	18	113	801	860	894	862	834	808	786
Alternative 2	0	18	113	691	755	795	769	745	724	707
Alternative 3	0	18	113	801	860	894	862	834	808	786

Table B-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	73	312	359	510	485	673	650	669	651
Alternative 1	105	73	312	540	1,400	1,314	1,517	1,432	1,447	1,349
Alternative 2	105	73	312	552	1,790	1,681	1,930	1,826	1,829	1,667
Alternative 3	105	73	312	552	2,327	2,164	2,300	2,147	2,104	1,961

Table B-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	1,833	1,691	1,682	1,571	1,774	1,673	1,566
Alternative 1	27	0	3	1,762	1,628	1,632	1,526	1,761	1,664	1,562
Alternative 2	27	0	3	1,762	1,628	1,632	1,527	1,761	1,665	1,563
Alternative 3	27	0	3	1,937	1,787	1,777	1,660	1,950	1,841	1,725

Table B-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)	245	153	359	401	757	1,801	1,805	1,769	1,707	1,639
Alternative 1	245	153	359	401	1,129	1,663	1,694	1,669	1,616	1,553
Alternative 2	245	153	359	401	936	1,560	1,897	1,831	1,754	1,677
Alternative 3	245	153	359	401	1,036	1,726	2,220	2,154	2,071	1,996

9. Regulatory Costs per Vehicle, by Model Year

Table B-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)	203	348	566	726	855	987	1,052	1,044	1,021	1,003
Alternative 1	203	348	565	830	1,257	1,429	1,548	1,530	1,498	1,453
Alternative 2	203	348	565	873	1,281	1,673	2,006	1,982	1,933	1,858
Alternative 3	203	348	565	961	1,577	2,107	2,511	2,474	2,395	2,294

Table B-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)	265	328	524	622	726	879	936	918	893	874
Alternative 1	265	328	524	784	1,118	1,320	1,391	1,362	1,327	1,302
Alternative 2	265	328	524	871	1,214	1,620	1,916	1,873	1,824	1,762
Alternative 3	265	328	524	1,023	1,489	2,053	2,392	2,362	2,285	2,208

Table B-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)	155	365	601	819	973	1,089	1,164	1,167	1,150	1,134
Alternative 1	155	365	601	871	1,384	1,530	1,696	1,689	1,663	1,601
Alternative 2	155	365	601	875	1,342	1,721	2,089	2,083	2,036	1,950
Alternative 3	155	365	601	906	1,656	2,156	2,619	2,577	2,496	2,375

Table B-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)	70	611	740	835	955	1,437	1,810	1,744	1,664	1,586
Alternative 1	70	611	740	839	1,234	1,481	1,644	1,638	1,575	1,520
Alternative 2	70	611	740	821	1,133	1,485	1,891	2,021	1,927	1,841
Alternative 3	70	611	740	821	1,240	1,721	2,279	2,291	2,187	2,062

Table B-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)	437	436	794	887	915	1,210	1,367	1,441	1,424	1,410
Alternative 1	437	436	794	887	1,340	1,690	1,931	1,974	1,974	1,905
Alternative 2	437	436	794	887	1,216	1,845	2,376	2,408	2,431	2,321
Alternative 3	437	436	794	887	1,327	2,495	3,084	3,050	3,033	2,872

Table B-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)	380	317	810	1,318	1,361	1,377	1,414	1,425	1,441	1,422
Alternative 1	380	317	809	1,317	1,649	1,694	1,933	1,920	1,939	1,939
Alternative 2	380	317	809	1,317	1,503	1,780	2,270	2,251	2,259	2,258
Alternative 3	380	317	809	1,317	1,595	1,987	2,608	2,577	2,577	2,567

Table B-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	501	840	993	1,129	1,122	1,083	1,038	996	952
Alternative 1	137	501	840	1,535	1,610	1,629	1,702	1,616	1,544	1,461
Alternative 2	137	501	840	1,702	1,779	1,783	2,051	2,014	1,927	1,846
Alternative 3	137	501	840	1,761	1,999	2,022	2,563	2,490	2,366	2,238

Table B-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)	290	546	638	737	837	1,025	1,053	1,042	1,020	1,041
Alternative 1	290	546	638	741	1,575	1,961	2,053	2,012	1,954	1,892
Alternative 2	290	546	638	737	1,233	2,137	2,628	2,529	2,427	2,314
Alternative 3	290	546	638	763	1,480	2,636	3,235	3,085	2,948	2,799

Table B-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	95	254	310	377	673	778	742	714	678
Alternative 1	0	95	254	334	435	781	834	846	816	775
Alternative 2	0	95	254	410	669	1,193	1,373	1,438	1,423	1,350
Alternative 3	0	95	254	713	1,320	1,748	1,890	1,987	1,908	1,797

Table B-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)	562	396	505	622	759	777	848	888	861	844
Alternative 1	562	396	505	622	949	1,111	1,380	1,403	1,355	1,299
Alternative 2	562	396	505	622	949	1,430	2,198	2,171	2,084	1,985
Alternative 3	562	396	505	628	1,007	1,824	2,732	2,662	2,543	2,408

Table B-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)	269	409	443	475	774	831	851	899	872	845
Alternative 1	269	409	443	474	1,028	1,101	1,132	1,220	1,184	1,149
Alternative 2	269	409	443	474	1,254	1,442	1,906	1,944	1,888	1,806
Alternative 3	269	409	443	474	1,597	2,067	2,499	2,483	2,417	2,307

Table B-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	84	468	734	905	1,001	1,082	1,191	1,168	1,148
Alternative 1	96	84	468	734	1,376	1,541	1,725	1,725	1,673	1,636
Alternative 2	96	84	468	734	1,213	1,633	2,066	2,056	1,997	1,945
Alternative 3	96	84	468	734	1,333	1,815	2,415	2,389	2,322	2,264

Table B-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)	342	1,009	1,173	1,406	1,462	1,597	1,635	1,606	1,571	1,529
Alternative 1	342	1,009	1,173	1,410	1,548	1,847	1,947	1,910	1,868	1,819
Alternative 2	342	1,009	1,173	1,411	1,538	2,356	2,599	2,540	2,482	2,451
Alternative 3	342	1,009	1,173	1,410	1,604	2,700	3,031	2,948	2,866	2,812

Table B-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)	209	119	300	582	685	643	633	615	601	585
Alternative 1	209	119	300	582	1,221	1,181	1,168	1,148	1,131	1,113
Alternative 2	209	119	300	582	1,076	1,774	1,738	1,697	1,660	1,623
Alternative 3	209	119	300	582	1,205	2,198	2,138	2,076	2,019	1,963

Table B-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)	97	291	384	444	620	716	758	749	748	737
Alternative 1	97	291	384	589	936	1,061	1,127	1,101	1,131	1,106
Alternative 2	97	291	384	856	1,291	1,741	1,832	1,789	1,800	1,743
Alternative 3	97	291	384	1,382	2,175	2,987	3,067	3,101	3,062	2,975

Table B-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	185	471	803	910	1,024	1,087	1,111	1,083	1,057
Alternative 1	28	185	471	1,068	1,468	1,566	1,629	1,644	1,604	1,569
Alternative 2	28	185	471	986	1,253	1,487	1,536	1,546	1,507	1,468
Alternative 3	28	185	471	1,068	1,467	1,712	1,745	1,744	1,694	1,646

Table B-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	35	49	49	48	50	49	48	48	47
Alternative 1	0	35	49	49	48	50	49	48	48	47
Alternative 2	0	35	49	49	48	50	49	49	48	47
Alternative 3	0	35	49	49	48	50	49	49	48	47

Table B-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	131	346	423	645	704	884	861	849	857
Alternative 1	49	131	346	501	1,147	1,182	1,368	1,338	1,334	1,311
Alternative 2	49	131	346	506	1,431	1,503	1,748	1,710	1,691	1,597
Alternative 3	49	131	346	508	1,738	1,816	2,015	1,995	1,951	1,862

Table B-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)	170	249	312	1,661	1,653	1,768	1,780	1,924	1,840	1,745
Alternative 1	170	249	312	1,610	1,737	1,895	1,970	2,095	2,006	1,906
Alternative 2	170	249	312	1,610	1,718	1,959	2,124	2,267	2,167	2,053
Alternative 3	170	249	312	1,736	1,868	2,142	2,310	2,485	2,376	2,254

Table B-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)	405	406	814	895	1,173	1,911	1,951	1,893	1,825	1,746
Alternative 1	405	406	814	895	1,600	1,993	2,050	1,994	1,909	1,837
Alternative 2	405	406	814	895	1,463	2,009	2,342	2,252	2,111	2,013
Alternative 3	405	406	814	895	1,580	2,250	2,693	2,587	2,413	2,299

Table B-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)	92	708	865	907	1,058	1,666	2,193	2,104	1,991	1,886
Alternative 1	92	708	865	896	1,377	1,651	1,866	1,820	1,740	1,675
Alternative 2	92	708	865	895	1,322	1,768	2,287	2,186	2,070	1,973
Alternative 3	92	708	865	896	1,438	2,110	2,732	2,549	2,343	2,200

Table B-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)	665	777	1,189	1,171	1,237	1,337	1,416	1,456	1,426	1,374
Alternative 1	665	777	1,189	1,171	1,742	1,890	2,042	2,039	2,210	2,098
Alternative 2	665	777	1,189	1,171	1,615	2,109	2,619	2,604	2,986	2,787
Alternative 3	665	777	1,189	1,171	1,756	2,051	2,723	2,694	3,051	2,934

Table B-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)	941	666	927	1,184	1,333	1,393	1,431	1,428	1,567	1,702
Alternative 1	941	666	924	1,184	1,841	1,911	2,279	2,229	2,244	2,874
Alternative 2	941	666	924	1,184	1,626	2,105	2,867	2,879	2,860	3,676
Alternative 3	941	666	924	1,184	1,808	2,437	3,350	3,346	3,325	4,251

Table B-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	447	1,034	1,259	1,190	1,184	1,143	1,086	1,037	982
Alternative 1	284	447	1,034	3,117	2,874	2,945	2,769	2,574	2,400	2,221
Alternative 2	284	447	1,034	3,693	3,390	3,416	3,250	3,035	2,817	2,605
Alternative 3	284	447	1,034	3,693	3,399	3,160	3,333	3,147	2,953	2,744

Table B-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)	413	396	565	714	814	1,172	1,134	1,092	1,050	1,010
Alternative 1	413	396	565	735	1,223	1,838	1,931	1,850	1,761	1,665
Alternative 2	413	396	565	713	1,146	1,862	2,313	2,256	2,140	2,016
Alternative 3	413	396	565	811	1,316	2,196	2,704	2,648	2,505	2,354

Table B-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	113	252	297	340	664	844	800	767	724
Alternative 1	0	113	252	337	430	798	898	856	817	774
Alternative 2	0	113	252	459	590	1,090	1,417	1,413	1,383	1,300
Alternative 3	0	113	252	951	1,189	1,626	1,924	1,962	1,887	1,774

Table B-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)	592	409	536	620	763	775	773	822	796	782
Alternative 1	592	409	536	620	966	1,136	1,265	1,297	1,251	1,196
Alternative 2	592	409	536	620	969	1,488	2,102	2,081	1,994	1,892
Alternative 3	592	409	536	626	1,033	1,922	2,620	2,554	2,434	2,297

Table B-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)	291	345	379	410	608	676	689	741	719	695
Alternative 1	291	345	379	408	722	818	853	948	918	887
Alternative 2	291	345	379	408	727	1,010	1,705	1,727	1,677	1,585
Alternative 3	291	345	379	408	865	1,587	2,243	2,220	2,164	2,042

Table B-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	16	63	459	1,056	1,005	962	1,289	1,317	1,269
Alternative 1	141	16	63	459	1,990	1,975	1,885	1,967	1,874	1,714
Alternative 2	141	16	63	459	1,696	2,030	2,282	2,338	2,253	2,334
Alternative 3	141	16	63	460	2,230	2,535	2,901	2,924	2,813	2,736

Table B-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)	573	1,981	2,163	2,283	2,290	2,463	2,423	2,349	2,270	2,181
Alternative 1	573	1,981	2,163	2,292	2,434	2,782	2,836	2,751	2,662	2,564
Alternative 2	573	1,981	2,163	2,293	2,427	3,281	3,399	3,292	3,184	3,131
Alternative 3	573	1,981	2,163	2,292	2,549	3,864	3,955	3,810	3,663	3,573

Table B-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)	348	183	443	822	931	827	812	782	757	731
Alternative 1	348	183	443	822	1,422	1,232	1,217	1,187	1,162	1,135
Alternative 2	348	183	443	822	1,334	1,916	1,862	1,797	1,737	1,675
Alternative 3	348	183	443	822	1,463	2,186	2,117	2,037	1,963	1,889

Table B-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)	99	213	282	343	513	599	630	620	614	607
Alternative 1	99	213	282	495	840	966	981	959	1,005	981
Alternative 2	99	213	282	764	1,218	1,800	1,759	1,699	1,728	1,656
Alternative 3	99	213	282	1,406	2,074	3,175	3,070	3,073	3,038	2,943

Table B-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	207	798	909	866	932	1,009	978	950	921
Alternative 1	88	207	798	909	2,055	2,083	2,180	2,121	2,062	2,008
Alternative 2	88	207	798	909	1,514	1,833	2,098	2,014	1,940	1,863
Alternative 3	88	207	798	909	2,055	2,390	2,660	2,543	2,437	2,330

Table B-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	34	49	48	47	49	49	48	47	46
Alternative 1	0	34	49	48	47	49	49	48	47	46
Alternative 2	0	34	49	48	47	49	49	48	47	46
Alternative 3	0	34	49	48	47	49	49	48	47	46

Table B-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	70	230	328	484	546	618	597	579	613
Alternative 1	34	70	230	328	705	771	840	853	852	892
Alternative 2	34	70	230	328	910	1,056	1,188	1,195	1,179	1,144
Alternative 3	34	70	230	332	1,048	1,241	1,370	1,445	1,418	1,379

Table B-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	369	429	672	783	1,059	1,191	1,211	1,173	1,131
Alternative 1	327	369	429	672	929	1,281	1,661	1,786	1,712	1,635
Alternative 2	327	369	429	672	965	1,404	1,898	2,416	2,295	2,171
Alternative 3	327	369	429	672	1,003	1,519	1,809	2,313	2,208	2,098

Table B-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)	501	269	772	904	1,103	1,490	1,567	1,503	1,448	1,375
Alternative 1	501	269	772	904	1,695	1,755	1,833	1,759	1,693	1,622
Alternative 2	501	269	772	904	1,601	1,892	2,354	2,151	2,024	1,905
Alternative 3	501	269	772	904	1,719	2,343	2,936	2,708	2,536	2,379

Table B-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)	33	438	499	691	740	946	969	939	914	887
Alternative 1	33	438	499	724	937	1,125	1,171	1,246	1,211	1,173
Alternative 2	33	438	499	670	742	895	1,060	1,675	1,621	1,554
Alternative 3	33	438	499	672	831	919	1,343	1,760	1,858	1,768

Table B-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)	233	115	396	589	566	1,068	1,310	1,423	1,421	1,453
Alternative 1	233	115	396	589	904	1,472	1,808	1,902	1,703	1,679
Alternative 2	233	115	396	589	784	1,557	2,109	2,193	1,812	1,793
Alternative 3	233	115	396	589	865	2,973	3,472	3,432	3,013	2,804

Table B-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)	291	258	790	1,342	1,366	1,374	1,410	1,424	1,416	1,365
Alternative 1	291	258	789	1,341	1,614	1,654	1,868	1,862	1,880	1,756
Alternative 2	291	258	789	1,341	1,480	1,719	2,159	2,134	2,145	1,987
Alternative 3	291	258	789	1,341	1,556	1,904	2,471	2,436	2,438	2,250

Table B-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	521	763	886	1,103	1,096	1,057	1,018	978	938
Alternative 1	83	521	763	893	1,085	1,079	1,250	1,207	1,173	1,128
Alternative 2	83	521	763	893	1,110	1,103	1,549	1,586	1,549	1,521
Alternative 3	83	521	763	977	1,419	1,551	2,244	2,219	2,121	2,024

Table B-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)	231	621	676	750	850	944	1,009	1,015	1,004	1,059
Alternative 1	231	621	676	744	1,764	2,027	2,119	2,101	2,062	2,019
Alternative 2	231	621	676	750	1,280	2,286	2,799	2,677	2,584	2,479
Alternative 3	231	621	676	738	1,569	2,872	3,520	3,319	3,189	3,043

Table B-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	69	257	330	438	689	664	639	617	594
Alternative 1	0	69	257	330	442	753	726	828	815	777
Alternative 2	0	69	257	330	801	1,366	1,300	1,480	1,491	1,437
Alternative 3	0	69	257	330	1,537	1,952	1,835	2,029	1,942	1,836

Table B-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)	312	290	231	638	720	801	1,577	1,543	1,514	1,483
Alternative 1	312	290	231	638	787	879	2,490	2,432	2,380	2,326
Alternative 2	312	290	231	638	760	879	3,113	3,033	2,958	2,882
Alternative 3	312	290	231	638	771	900	3,788	3,681	3,579	3,478

Table B-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)	233	519	562	599	1,102	1,146	1,190	1,235	1,207	1,179
Alternative 1	233	519	562	599	1,633	1,664	1,698	1,780	1,744	1,707
Alternative 2	233	519	562	599	2,293	2,296	2,308	2,378	2,321	2,264
Alternative 3	233	519	562	599	3,035	3,010	2,999	2,999	2,921	2,844

Table B-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	87	489	749	896	1,000	1,089	1,185	1,158	1,140
Alternative 1	94	87	489	749	1,341	1,516	1,716	1,711	1,661	1,631
Alternative 2	94	87	489	749	1,186	1,610	2,054	2,040	1,982	1,921
Alternative 3	94	87	489	749	1,283	1,775	2,388	2,359	2,294	2,237

Table B-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)	127	67	171	492	580	656	767	778	778	779
Alternative 1	127	67	171	492	605	845	985	992	990	988
Alternative 2	127	67	171	492	594	1,370	1,742	1,735	1,719	1,706
Alternative 3	127	67	171	492	603	1,466	2,052	2,037	2,012	1,991

Table B-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)	91	63	172	363	457	471	463	456	449	442
Alternative 1	91	63	172	363	1,036	1,134	1,122	1,111	1,101	1,091
Alternative 2	91	63	172	363	837	1,642	1,622	1,605	1,588	1,574
Alternative 3	91	63	172	363	968	2,210	2,158	2,113	2,071	2,033

Table B-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)	92	472	634	703	900	1,029	1,106	1,105	1,126	1,106
Alternative 1	92	472	634	827	1,185	1,310	1,516	1,482	1,475	1,452
Alternative 2	92	472	634	1,091	1,482	1,587	2,024	2,026	1,991	1,977
Alternative 3	92	472	634	1,321	2,436	2,498	3,059	3,174	3,124	3,061

Table B-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	178	369	768	925	1,056	1,115	1,161	1,135	1,111
Alternative 1	12	178	369	1,121	1,267	1,387	1,434	1,473	1,436	1,405
Alternative 2	12	178	369	1,011	1,163	1,367	1,341	1,384	1,353	1,325
Alternative 3	12	178	369	1,121	1,267	1,481	1,434	1,473	1,436	1,405

Table B-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	63	67	82	81	79	78	77	75	74
Alternative 1	0	63	67	82	81	79	78	77	75	74
Alternative 2	0	63	67	82	81	79	78	77	75	74
Alternative 3	0	63	67	82	81	79	78	77	75	74

Table B-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	205	495	551	868	927	1,272	1,251	1,260	1,234
Alternative 1	67	205	495	732	1,759	1,756	2,117	2,033	2,038	1,932
Alternative 2	67	205	495	744	2,148	2,123	2,530	2,427	2,421	2,250
Alternative 3	67	205	495	744	2,685	2,606	2,900	2,749	2,696	2,544

Table B-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	207	268	2,041	1,997	2,054	2,022	2,221	2,123	2,009
Alternative 1	117	207	268	1,971	2,055	2,138	2,094	2,221	2,128	2,018
Alternative 2	117	207	268	1,971	2,014	2,178	2,215	2,207	2,115	2,006
Alternative 3	117	207	268	2,146	2,207	2,387	2,507	2,552	2,443	2,316

Table B-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)	336	512	848	887	1,238	2,314	2,328	2,285	2,215	2,139
Alternative 1	336	512	848	887	1,512	2,216	2,256	2,222	2,124	2,053
Alternative 2	336	512	848	887	1,336	2,117	2,331	2,346	2,195	2,118
Alternative 3	336	512	848	887	1,453	2,164	2,470	2,477	2,297	2,223

10. Incremental Societal Impacts

Table B-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	16.1	1.3	1.6	2.8	5.4	6.8	8.0	8.4	9.2	9.3	68.8
Alternative 2	28.4	2.3	2.8	4.4	7.9	9.9	11.8	13.3	14.5	14.6	109.9
Alternative 3	46.8	3.8	4.6	7.1	11.6	13.9	15.8	17.6	19.0	19.2	159.5

Table B-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	7.8	0.6	0.7	1.8	2.4	0.9	0.3	0.0	0.1	-0.2	14.3
Alternative 2	13.8	1.0	1.2	3.0	4.1	2.5	1.4	0.1	0.7	0.3	28.0
Alternative 3	22.6	1.7	2.0	4.8	5.2	3.4	1.4	0.3	0.9	0.7	43.1

Table B-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	8.3	0.7	0.9	1.0	3.1	5.9	7.7	8.5	9.1	9.4	54.6
Alternative 2	14.6	1.3	1.5	1.4	3.7	7.4	10.5	13.2	13.8	14.3	81.8
Alternative 3	24.2	2.2	2.6	2.3	6.3	10.5	14.4	17.3	18.1	18.5	116.4

Table B-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	11.4	0.9	1.0	2.3	4.7	5.5	6.1	6.1	6.4	6.1	50.6
Alternative 2	20.0	1.5	1.8	3.5	6.5	8.1	9.6	10.1	10.4	9.9	81.4
Alternative 3	32.9	2.5	3.0	5.5	9.8	11.9	13.3	13.7	13.9	13.4	120.0

Table B-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	5.7	0.4	0.5	1.5	2.1	1.1	0.7	0.4	0.5	0.3	13.1
Alternative 2	9.9	0.7	0.8	2.5	3.5	2.5	1.9	1.0	1.3	1.0	25.1
Alternative 3	16.3	1.1	1.4	3.9	4.6	3.7	2.5	1.6	1.9	1.7	38.6

Table B-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	5.8	0.5	0.6	0.8	2.6	4.4	5.5	5.7	5.9	5.8	37.5
Alternative 2	10.1	0.9	1.0	1.0	3.0	5.6	7.7	9.1	9.0	8.9	56.3
Alternative 3	16.7	1.4	1.6	1.6	5.2	8.2	10.8	12.1	12.1	11.7	81.5

Table B-10-7 - Incremental Total Societal Benefits (\$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	-9.4	-0.8	-1.0	2.5	13.1	15.0	17.4	17.3	18.0	17.1	89.2
Alternative 2	-16.6	-1.5	-1.7	2.7	13.4	20.4	28.0	28.8	29.4	27.8	130.7
Alternative 3	-27.4	-2.5	-2.8	3.7	19.6	29.2	37.8	38.4	38.6	36.8	171.3

Table B-10-8 - Incremental Total Societal Benefits (\$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	-4.2	-0.3	-0.3	1.5	5.6	8.0	8.7	8.9	9.4	9.6	46.8
Alternative 2	-7.5	-0.5	-0.6	1.9	7.3	12.1	15.6	16.7	17.3	17.0	79.3
Alternative 3	-12.3	-0.8	-1.0	2.6	9.9	16.3	20.7	22.0	22.6	22.3	102.3

Table B-10-9 - Incremental Total Societal Benefits (\$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	-5.2	-0.5	-0.6	1.0	7.5	7.1	8.7	8.4	8.6	7.5	42.4
Alternative 2	-9.2	-1.0	-1.1	0.8	6.0	8.3	12.4	12.1	12.1	10.8	51.3
Alternative 3	-15.1	-1.6	-1.8	1.0	9.7	12.9	17.2	16.4	16.0	14.4	69.0

Table B-10-10 - Incremental Total Societal Benefits (\$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	-6.4	-0.5	-0.6	1.8	8.8	9.9	11.1	10.8	10.8	10.0	55.6
Alternative 2	-11.3	-1.0	-1.1	1.9	9.1	13.5	17.9	17.9	17.8	16.4	81.2
Alternative 3	-18.6	-1.6	-1.8	2.7	13.3	19.3	24.2	24.0	23.4	21.7	106.4

Table B-10-11 - Incremental Total Societal Benefits (\$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	-2.9	-0.2	-0.2	1.0	3.8	5.3	5.6	5.6	5.7	5.7	29.4
Alternative 2	-5.2	-0.3	-0.4	1.3	5.0	8.0	10.0	10.5	10.5	10.1	49.6
Alternative 3	-8.5	-0.6	-0.7	1.9	6.7	10.8	13.3	13.8	13.8	13.3	63.9

Table B-10-12 - Incremental Total Societal Benefits (\$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	-3.5	-0.4	-0.4	0.7	5.0	4.6	5.5	5.2	5.1	4.3	26.3
Alternative 2	-6.1	-0.6	-0.7	0.6	4.1	5.4	7.9	7.5	7.3	6.3	31.6
Alternative 3	-10.1	-1.0	-1.2	0.8	6.5	8.5	10.9	10.1	9.6	8.4	42.6

Table B-10-13 - Incremental Total Societal Net Benefits (\$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	-25.4	-2.1	-2.5	-0.3	7.7	8.2	9.4	8.9	8.8	7.8	20.4
Alternative 2	-45.1	-3.8	-4.5	-1.7	5.5	10.6	16.1	15.5	15.0	13.3	20.8
Alternative 3	-74.2	-6.3	-7.4	-3.4	8.0	15.3	22.0	20.8	19.6	17.5	11.8

Table B-10-14 - Incremental Total Societal Net Benefits (\$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	-12.0	-0.9	-1.0	-0.3	3.2	7.1	8.4	9.0	9.3	9.8	32.5
Alternative 2	-21.3	-1.5	-1.8	-1.1	3.2	9.6	14.2	16.6	16.6	16.7	51.3
Alternative 3	-34.9	-2.5	-3.0	-2.1	4.6	12.9	19.2	21.8	21.7	21.6	59.2

Table B-10-15 - Incremental Total Societal Net Benefits (\$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	-13.4	-1.3	-1.5	0.0	4.4	1.1	1.0	0.0	-0.5	-2.0	-12.1
Alternative 2	-23.8	-2.3	-2.7	-0.7	2.3	0.9	1.9	-1.1	-1.7	-3.4	-30.5
Alternative 3	-39.3	-3.8	-4.4	-1.3	3.4	2.5	2.7	-0.9	-2.1	-4.1	-47.4

Table B-10-16 - Incremental Total Societal Net Benefits (\$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	-17.8	-1.4	-1.7	-0.5	4.1	4.3	5.0	4.6	4.5	3.9	5.0
Alternative 2	-31.3	-2.5	-2.9	-1.5	2.6	5.3	8.3	7.8	7.5	6.5	-0.2
Alternative 3	-51.5	-4.1	-4.8	-2.9	3.5	7.4	11.0	10.2	9.4	8.3	-13.6

Table B-10-17 - Incremental Total Societal Net Benefits (\$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	-8.6	-0.6	-0.7	-0.5	1.7	4.2	5.0	5.2	5.2	5.4	16.3
Alternative 2	-15.1	-1.0	-1.2	-1.1	1.5	5.5	8.1	9.4	9.2	9.1	24.5
Alternative 3	-24.7	-1.7	-2.0	-2.1	2.2	7.1	10.8	12.2	11.9	11.6	25.3

Table B-10-18 - Incremental Total Societal Net Benefits (\$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	-9.2	-0.8	-1.0	0.0	2.4	0.2	0.0	-0.5	-0.7	-1.5	-11.2
Alternative 2	-16.2	-1.5	-1.7	-0.4	1.1	-0.2	0.2	-1.6	-1.7	-2.6	-24.7
Alternative 3	-26.8	-2.5	-2.8	-0.8	1.3	0.2	0.1	-2.0	-2.4	-3.3	-38.9

11. Labor Impacts

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	942,950	942,950	942,950	942,950
2021	1,025,320	1,025,320	1,025,320	1,025,320
2022	1,156,870	1,156,870	1,156,870	1,156,870
2023	1,212,784	1,212,282	1,211,596	1,211,004
2024	1,203,695	1,203,156	1,203,949	1,203,497
2025	1,181,447	1,182,765	1,182,354	1,181,461
2026	1,152,125	1,154,177	1,152,906	1,151,558
2027	1,126,667	1,129,435	1,129,449	1,128,146
2028	1,108,778	1,112,896	1,113,770	1,112,935
2029	1,097,013	1,101,985	1,103,346	1,102,859

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	356,143	356,143	356,143	356,143
2021	398,917	398,917	398,917	398,917
2022	466,231	466,231	466,231	466,231
2023	499,538	500,511	500,538	501,170
2024	504,243	504,117	504,396	502,799
2025	502,671	498,818	497,032	493,999
2026	496,070	490,250	486,006	480,811
2027	489,475	482,453	475,703	470,035
2028	487,763	480,380	474,390	468,630
2029	487,308	479,112	473,180	467,716

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	586,807	586,807	586,807	586,807
2021	626,402	626,402	626,402	626,402
2022	690,640	690,640	690,640	690,640
2023	713,246	711,770	711,058	709,834
2024	699,451	699,039	699,552	700,699
2025	678,776	683,948	685,322	687,462
2026	656,054	663,927	666,900	670,747
2027	637,193	646,982	653,746	658,111
2028	621,015	632,516	639,380	644,305
2029	609,706	622,873	630,166	635,142

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	230,372	230,372	230,372	230,372
2021	258,172	258,172	258,172	258,172
2022	302,096	302,096	302,096	302,096
2023	323,748	325,057	325,037	326,029
2024	326,791	327,304	327,605	326,953
2025	325,953	324,120	322,704	320,503
2026	321,777	318,212	315,311	311,740
2027	317,390	313,004	308,520	304,600
2028	316,329	311,577	307,351	303,372
2029	315,985	310,867	306,851	303,143

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	125,770	125,770	125,770	125,770
2021	140,745	140,745	140,745	140,745
2022	164,135	164,135	164,135	164,135
2023	175,790	175,454	175,500	175,141
2024	177,452	176,813	176,791	175,846
2025	176,719	174,698	174,328	173,497
2026	174,293	172,037	170,695	169,071
2027	172,084	169,448	167,183	165,435
2028	171,434	168,803	167,039	165,257
2029	171,323	168,245	166,329	164,573

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	14,023	14,023	14,023	14,023
2021	15,102	15,102	15,102	15,102
2022	16,818	16,818	16,818	16,818
2023	17,510	17,476	17,451	17,416
2024	17,259	17,152	17,129	17,031
2025	16,888	16,835	16,735	16,619
2026	16,413	16,358	16,220	16,092
2027	16,001	15,991	16,019	15,910
2028	15,682	15,692	15,726	15,664
2029	15,462	15,503	15,546	15,493

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	18,404	18,404	18,404	18,404
2021	19,929	19,929	19,929	19,929
2022	22,487	22,487	22,487	22,487
2023	23,626	23,574	23,551	23,503
2024	23,438	23,244	23,237	23,080
2025	23,309	23,137	23,015	23,567
2026	22,832	22,722	22,498	22,921
2027	22,394	22,293	22,087	22,450
2028	22,059	22,141	22,366	22,663
2029	21,845	21,926	22,129	22,385

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	117,262	117,262	117,262	117,262
2021	125,577	125,577	125,577	125,577
2022	139,595	139,595	139,595	139,595
2023	145,695	145,374	145,226	144,932
2024	142,680	141,625	141,695	140,940
2025	138,295	138,181	137,773	136,854
2026	133,733	134,126	133,575	132,836
2027	130,060	131,012	131,157	130,667
2028	127,126	128,868	129,098	128,822
2029	124,993	127,761	128,380	128,360

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	159,873	159,873	159,873	159,873
2021	171,651	171,651	171,651	171,651
2022	192,057	192,057	192,057	192,057
2023	198,983	200,390	200,411	200,192
2024	195,806	195,898	196,232	195,925
2025	190,234	191,376	190,947	190,373
2026	183,919	185,797	185,775	186,329
2027	178,861	180,953	181,875	182,508
2028	174,762	177,055	178,042	178,810
2029	171,885	174,478	175,677	176,417

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	200,151	200,151	200,151	200,151
2021	216,684	216,684	216,684	216,684
2022	241,001	241,001	241,001	241,001
2023	250,640	250,156	249,845	249,572
2024	247,446	249,722	247,859	247,674
2025	242,161	246,174	246,181	246,814
2026	235,051	239,555	240,775	241,756
2027	229,183	233,790	235,440	236,479
2028	224,578	229,227	230,784	231,941
2029	221,640	226,248	227,782	228,944

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	116,010	116,010	116,010	116,010
2021	126,866	126,866	126,866	126,866
2022	144,446	144,446	144,446	144,446
2023	152,245	152,030	152,233	153,353
2024	151,770	150,737	151,751	153,682
2025	150,460	149,274	149,992	150,864
2026	147,557	145,898	146,372	146,668
2027	144,597	143,120	143,614	143,762
2028	142,778	141,347	141,962	142,119
2029	141,580	140,129	140,720	140,835

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	44,182	44,182	44,182	44,182
2021	48,806	48,806	48,806	48,806
2022	56,136	56,136	56,136	56,136
2023	59,566	59,437	59,377	59,256
2024	59,742	59,373	59,319	58,862
2025	59,046	58,564	58,679	58,523
2026	57,950	57,495	57,700	57,457
2027	57,074	56,539	56,493	56,173
2028	56,630	56,050	55,999	55,660
2029	56,403	55,719	55,643	55,297

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	30,441	30,441	30,441	30,441
2021	33,317	33,317	33,317	33,317
2022	37,791	37,791	37,791	37,791
2023	39,793	39,705	39,666	39,585
2024	39,862	39,819	40,176	40,290
2025	39,286	39,157	39,501	40,002
2026	38,409	38,213	38,304	38,640
2027	37,705	37,505	37,536	37,797
2028	37,247	37,050	37,086	37,332
2029	36,957	36,755	36,799	37,026

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	2,498	2,498	2,498	2,498
2021	2,657	2,657	2,657	2,657
2022	2,941	2,941	2,941	2,941
2023	3,040	3,033	3,030	3,024
2024	2,983	2,963	2,965	2,948
2025	2,897	2,897	2,888	2,868
2026	2,802	2,813	2,801	2,785
2027	2,728	2,747	2,749	2,738
2028	2,662	2,685	2,689	2,682
2029	2,616	2,649	2,656	2,652

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	3,620	3,620	3,620	3,620
2021	3,906	3,906	3,906	3,906
2022	4,374	4,374	4,374	4,374
2023	4,569	4,559	4,555	4,545
2024	4,518	4,482	4,481	4,452
2025	4,427	4,397	4,378	4,338
2026	4,307	4,278	4,244	4,201
2027	4,210	4,185	4,157	4,118
2028	4,140	4,120	4,095	4,061
2029	4,093	4,078	4,058	4,027

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,567	1,567	1,567	1,567
2021	1,680	1,680	1,680	1,680
2022	1,867	1,867	1,867	1,867
2023	1,939	1,935	1,933	1,929
2024	1,909	1,895	1,895	1,883
2025	1,862	1,853	1,846	1,831
2026	1,806	1,799	1,787	1,771
2027	1,762	1,758	1,750	1,737
2028	1,728	1,726	1,720	1,710
2029	1,705	1,707	1,702	1,693

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	60,047	60,047	60,047	60,047
2021	66,085	66,085	66,085	66,085
2022	75,544	75,544	75,544	75,544
2023	79,849	79,743	79,700	79,541
2024	79,976	79,606	79,839	79,507
2025	78,984	78,320	78,272	77,830
2026	77,391	76,670	76,287	75,723
2027	76,013	75,251	74,735	74,287
2028	75,250	74,542	74,099	73,663
2029	74,788	74,047	73,653	73,241

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	42,013	42,013	42,013	42,013
2021	45,601	45,601	45,601	45,601
2022	51,440	51,440	51,440	51,440
2023	54,074	54,009	53,939	53,845
2024	53,625	53,774	53,494	53,390
2025	52,703	52,817	52,290	52,012
2026	51,433	51,508	50,778	50,396
2027	50,368	50,461	49,777	49,420
2028	49,603	49,721	49,086	48,774
2029	49,107	49,253	48,671	48,393

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	22,828	22,828	22,828	22,828
2021	25,919	25,919	25,919	25,919
2022	30,678	30,678	30,678	30,678
2023	33,159	33,087	33,053	32,986
2024	33,661	33,332	33,262	32,949
2025	33,645	32,870	32,544	32,023
2026	33,317	32,360	31,687	30,967
2027	33,017	31,967	31,047	30,291
2028	33,080	31,978	31,092	30,329
2029	33,184	31,975	31,099	30,357

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	97,099	97,099	97,099	97,099
2021	107,309	107,309	107,309	107,309
2022	123,468	123,468	123,468	123,468
2023	130,927	130,642	130,511	130,244
2024	131,810	132,475	133,586	133,984
2025	130,218	130,097	130,621	130,448
2026	128,467	128,080	127,841	126,989
2027	126,263	125,661	125,059	124,084
2028	125,195	124,640	124,084	123,069
2029	124,604	123,822	123,102	122,201

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	2,460	2,460	2,460	2,460
2021	2,719	2,719	2,719	2,719
2022	3,128	3,128	3,128	3,128
2023	3,336	3,329	3,325	3,319
2024	3,344	3,314	3,310	3,284
2025	3,319	3,267	3,243	3,202
2026	3,259	3,198	3,150	3,097
2027	3,210	3,151	3,104	3,056
2028	3,187	3,127	3,082	3,035
2029	3,174	3,111	3,067	3,021

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

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	10,472	10,472	10,472	10,472
2021	11,513	11,513	11,513	11,513
2022	13,099	13,099	13,099	13,099
2023	13,835	13,804	13,790	13,762
2024	13,864	13,744	13,718	13,618
2025	13,714	13,550	13,449	13,294
2026	13,479	13,306	13,113	12,929
2027	13,223	13,049	12,848	12,669
2028	13,073	12,926	12,759	12,602
2029	12,975	12,825	12,663	12,516

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

Category	Regulatory Alternative		
	1	2	3
Work Loss Days from Upstream Emissions	-29.4	-32.5	-36.4
Work Loss Days from Tailpipe Emissions	1.3	-0.8	0.7
Total Work Loss Days	-28.1	-33.3	-35.8

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

Category	Regulatory Alternative		
	1	2	3
Work Loss Days from Upstream Emissions	-15.1	-22.4	-28.3
Work Loss Days from Tailpipe Emissions	-2.0	-5.4	-5.3
Total Work Loss Days	-17.2	-27.8	-33.5

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

Category	Regulatory Alternative		
	1	2	3
Work Loss Days from Upstream Emissions	-14.3	-10.1	-8.2
Work Loss Days from Tailpipe Emissions	3.3	4.7	5.9
Total Work Loss Days	-10.9	-5.4	-2.3

12. Compliance Impacts

Table B-12-1 - Compliance Impacts and Cumulative Industry Costs by Model Year for Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Fuel Economy											
Average Required (mpg)	35.4	36.0	36.8	37.4	40.7	44.3	48.1	48.1	48.2	48.2	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	14%	22%	22%	22%	22%	N/A
Average Achieved (mpg)	34.3	35.9	38.0	40.0	42.6	44.7	47.2	48.0	48.7	49.2	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	2.7	6.1	10.8	15.9	20.5	23.9	23.5	23.1	22.2	0.0
Off-Cycle Technology Costs (\$b)	0.0	1.5	2.4	3.4	4.3	5.0	5.3	5.3	5.2	5.1	37.5
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Subtotal Technology Costs (\$b)	0.0	4.2	8.6	14.2	20.3	25.5	29.3	28.9	28.3	27.3	186.7
Total Civil Penalties (\$b)	2.8	0.8	0.5	0.5	1.1	1.7	2.5	1.9	1.2	0.8	13.8
Total Regulatory Costs (\$b)	2.8	5.1	9.4	15.1	21.8	27.7	32.2	31.2	30.0	28.6	204.0
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.06	-0.15	-0.24	-0.32	-0.29	-0.27	-0.24	-1.6

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

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	58.1	58.1	58.1	58.1	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	15%	23%	23%	23%	23%	N/A
Average Achieved (mpg)	41.7	43.4	46.2	48.8	52.6	55.7	58.7	59.6	60.7	61.4	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	1.0	2.7	5.3	7.5	9.8	11.4	11.0	10.9	10.6	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.5	0.8	1.3	1.6	2.1	2.2	2.3	2.2	2.2	15.3
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	0.2
Subtotal Technology Costs (\$b)	0.0	1.5	3.5	6.6	9.1	11.9	13.6	13.3	13.2	12.8	85.7
Total Civil Penalties (\$b)	1.8	0.8	0.4	0.4	0.7	1.0	1.1	0.7	0.3	0.0	7.4
Total Regulatory Costs (\$b)	1.6	2.2	4.0	7.1	9.9	12.9	14.8	14.2	13.8	13.3	93.6
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.03	-0.09	-0.21	-0.31	-0.36	-0.35	-0.36	-1.7

Table B-12-3 - Compliance Impacts and Cumulative Industry Costs by Model Year for Light Truck Fleet, Alternative 2

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	41.5	41.5	41.5	41.5	N/A
Change from Baseline (%)	0%	0%	0%	0%	7%	14%	22%	22%	22%	22%	N/A
Average Achieved (mpg)	30.2	31.5	32.9	34.5	36.3	37.8	39.9	40.6	41.1	41.3	N/A
Total Regulatory Costs											
Technology (non-Off-Cycle, non-AC) Costs (\$b)	0.0	1.6	3.4	5.5	8.5	10.7	12.5	12.5	12.2	11.6	0.0
Off-Cycle Technology Costs (\$b)	0.0	1.0	1.6	2.1	2.6	2.9	3.1	3.0	2.9	2.9	22.2
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	0.3
Subtotal Technology Costs (\$b)	0.0	2.7	5.0	7.6	11.2	13.6	15.7	15.6	15.2	14.5	101.0
Total Civil Penalties (\$b)	0.9	0.1	0.1	0.0	0.4	0.7	1.4	1.1	0.9	0.8	6.4
Total Regulatory Costs (\$b)	1.2	3.0	5.3	8.0	11.9	14.9	17.4	17.0	16.3	15.4	110.4
Sales Impacts											
Sales Change from Baseline (m)	0.00	0.00	0.00	-0.03	-0.06	-0.02	-0.01	0.06	0.08	0.12	0.1

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	39.6	44.9	48.2	51.4
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	43.6	46.6	49.2	51.5
Total Regulatory Costs				
Technology Application Costs (\$b)	10.0	16.6	22.2	28.0
Off-Cycle Technology Costs (\$b)	10.3	5.1	5.1	5.1
A/C Efficiency Technology Costs (\$b)	0.1	0.1	0.1	0.1
Subtotal Technology Costs (\$b)	20.3	21.8	27.4	33.2
Total Civil Penalties (\$b)	0.1	0.3	0.8	1.5
Total Regulatory Costs (\$b)	15.7	22.6	28.6	35.0
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	47.3	53.2	58.1	62.0
Percent Change from Baseline	0%	12%	23%	31%
Average Achieved (mpg)	52.5	56.7	61.4	65.2
Total Regulatory Costs				
Technology Application Costs (\$b)	4.3	7.4	10.6	13.5
Off-Cycle Technology Costs (\$b)	4.6	2.3	2.3	2.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	9.0	9.8	12.9	15.9
Total Civil Penalties (\$b)	0.1	0.0	0.0	0.2
Total Regulatory Costs (\$b)	6.9	10.0	13.3	16.3
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.21	-0.36	-0.50

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	33.9	39.0	41.5	44.3
Percent Change from Baseline	0%	15%	22%	31%
Average Achieved (mpg)	37.2	39.7	41.3	43.0
Total Regulatory Costs				
Technology Application Costs (\$b)	5.7	9.2	11.6	14.5
Off-Cycle Technology Costs (\$b)	5.7	2.8	2.8	2.8
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	11.4	12.1	14.5	17.4
Total Civil Penalties (\$b)	0.0	0.3	0.8	1.3
Total Regulatory Costs (\$b)	8.8	12.6	15.4	18.7
Sales Impacts				
Sales Change from Baseline (m)	0.00	0.09	0.12	0.12

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	46.4	52.2	57.0	60.9
Percent Change from Baseline	0%	12%	23%	31%
Average Achieved (mpg)	52.9	58.3	62.7	66.4
Total Regulatory Costs				
Technology Application Costs (\$b)	1.7	3.5	4.7	5.8
Off-Cycle Technology Costs (\$b)	2.1	1.0	1.0	1.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	3.8	4.5	5.8	6.9
Total Civil Penalties (\$b)	0.1	0.0	0.0	0.1
Total Regulatory Costs (\$b)	2.9	4.6	5.9	7.1
Sales Impacts				
Sales Change from Baseline (m)	0.00	0.00	0.00	0.00

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	48.1	54.1	59.1	63.1
Percent Change from Baseline	0%	12%	23%	31%
Average Achieved (mpg)	52.1	55.4	60.3	64.2
Total Regulatory Costs				
Technology Application Costs (\$b)	2.6	4.0	5.9	7.7
Off-Cycle Technology Costs (\$b)	2.5	1.3	1.3	1.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	5.1	5.2	7.1	9.0
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.1
Total Regulatory Costs (\$b)	4.0	5.4	7.3	9.2
Sales Impacts				
Sales Change from Baseline (m)	0.00	0.00	0.00	0.00

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	42.2	47.7	51.6	54.9
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	49.0	48.7	51.7	54.4
Total Regulatory Costs				
Technology Application Costs (\$b)	0.5	0.5	0.6	0.6
Off-Cycle Technology Costs (\$b)	0.1	0.1	0.1	0.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.7	0.6	0.7	0.7
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.6	0.6	0.7	0.7
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	39.8	45.1	48.6	51.9
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	41.4	44.2	45.9	49.6
Total Regulatory Costs				
Technology Application Costs (\$b)	0.4	0.6	0.7	0.9
Off-Cycle Technology Costs (\$b)	0.4	0.2	0.2	0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.8	0.7	0.9	1.1
Total Civil Penalties (\$b)	0.0	0.0	0.1	0.1
Total Regulatory Costs (\$b)	0.6	0.8	1.0	1.2
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	34.4	39.5	42.2	45.0
Percent Change from Baseline	0%	15%	23%	31%
Average Achieved (mpg)	35.9	38.0	38.3	38.6
Total Regulatory Costs				
Technology Application Costs (\$b)	1.7	2.4	2.5	2.6
Off-Cycle Technology Costs (\$b)	0.9	0.4	0.4	0.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	2.6	2.8	2.9	3.0
Total Civil Penalties (\$b)	0.1	0.2	0.6	1.1
Total Regulatory Costs (\$b)	2.2	3.1	3.6	4.1
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	35.4	40.3	43.1	46.0
Percent Change from Baseline	0%	14%	22%	30%
Average Achieved (mpg)	38.8	41.3	43.8	46.6
Total Regulatory Costs				
Technology Application Costs (\$b)	1.3	2.3	3.0	3.7
Off-Cycle Technology Costs (\$b)	0.7	0.4	0.4	0.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	2.1	2.6	3.3	4.0
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	1.7	2.7	3.4	4.1
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	36.3	41.1	44.1	47.0
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	37.8	42.1	44.9	47.9
Total Regulatory Costs				
Technology Application Costs (\$b)	1.6	3.8	4.8	6.0
Off-Cycle Technology Costs (\$b)	1.9	0.9	0.9	0.9
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	3.5	4.7	5.7	6.9
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	2.6	4.7	5.8	7.0
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	43.0	48.7	52.6	56.1
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	47.9	48.9	53.0	56.6
Total Regulatory Costs				
Technology Application Costs (\$b)	0.5	0.6	1.5	2.2
Off-Cycle Technology Costs (\$b)	1.1	0.6	0.6	0.6
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.6	1.2	2.1	2.8
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	1.1	1.2	2.1	2.7
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

Table B-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	3
Fuel Economy				
Average Required (mpg)	46.0	51.7	56.3	60.1
Percent Change from Baseline	0%	12%	22%	31%
Average Achieved (mpg)	48.0	52.5	57.2	61.0
Total Regulatory Costs				
Technology Application Costs (\$b)	0.4	0.8	1.4	1.8
Off-Cycle Technology Costs (\$b)	0.6	0.3	0.3	0.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.0	1.1	1.7	2.1
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.8	1.2	1.7	2.1
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

Table B-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	3
Fuel Economy				
Average Required (mpg)	43.7	49.4	53.3	56.8
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	46.8	49.7	54.0	57.5
Total Regulatory Costs				
Technology Application Costs (\$b)	0.4	0.6	1.1	1.4
Off-Cycle Technology Costs (\$b)	0.4	0.2	0.2	0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.9	0.8	1.3	1.7
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.6	0.8	1.3	1.6
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	35.9	41.2	44.0	47.0
Percent Change from Baseline	0%	15%	22%	31%
Average Achieved (mpg)	36.8	39.0	39.1	39.2
Total Regulatory Costs				
Technology Application Costs (\$b)	0.1	0.2	0.2	0.2
Off-Cycle Technology Costs (\$b)	0.1	0.0	0.0	0.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.2	0.2	0.2	0.2
Total Civil Penalties (\$b)	0.0	0.0	0.1	0.1
Total Regulatory Costs (\$b)	0.2	0.2	0.3	0.3
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	42.8	48.7	52.4	55.9
Percent Change from Baseline	0%	14%	22%	31%
Average Achieved (mpg)	46.1	49.3	54.0	56.4
Total Regulatory Costs				
Technology Application Costs (\$b)	0.3	0.4	0.6	0.7
Off-Cycle Technology Costs (\$b)	0.2	0.1	0.1	0.1
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.5	0.5	0.7	0.8
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.4	0.5	0.7	0.8
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	45.0	51.2	55.1	58.8
Percent Change from Baseline	0%	14%	23%	31%
Average Achieved (mpg)	46.2	51.7	56.1	59.1
Total Regulatory Costs				
Technology Application Costs (\$b)	0.0	0.1	0.2	0.2
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.1	0.1	0.2	0.2
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.1	0.1	0.2	0.2
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	43.5	49.2	53.3	56.8
Percent Change from Baseline	0%	13%	22%	31%
Average Achieved (mpg)	46.1	50.3	54.8	58.5
Total Regulatory Costs				
Technology Application Costs (\$b)	0.5	0.9	1.7	3.1
Off-Cycle Technology Costs (\$b)	0.7	0.3	0.3	0.3
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.2	1.3	2.0	3.5
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.9	1.4	2.1	3.6
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	41.2	47.1	50.3	53.7
Percent Change from Baseline	0%	14%	22%	30%
Average Achieved (mpg)	50.4	52.5	53.4	54.4
Total Regulatory Costs				
Technology Application Costs (\$b)	0.4	0.9	0.8	0.9
Off-Cycle Technology Costs (\$b)	0.8	0.4	0.4	0.4
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.2	1.3	1.2	1.3
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.9	1.3	1.2	1.4
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	43.8	49.2	53.6	57.3
Percent Change from Baseline	0%	12%	22%	31%
Average Achieved (mpg)	759.4	758.3	757.5	756.9
Total Regulatory Costs				
Technology Application Costs (\$b)	0.0	0.0	0.0	0.0
Off-Cycle Technology Costs (\$b)	0.0	0.0	0.0	0.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.0	0.0	0.0	0.0
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.0	0.0	0.0	0.0
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	41.7	47.2	50.9	54.2
Percent Change from Baseline	0%	13%	22%	30%
Average Achieved (mpg)	47.1	50.9	53.6	55.5
Total Regulatory Costs				
Technology Application Costs (\$b)	0.8	1.8	2.4	2.9
Off-Cycle Technology Costs (\$b)	1.8	0.9	0.9	0.9
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	2.6	2.7	3.2	3.8
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	1.8	2.8	3.3	3.8
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	37.9	43.4	46.4	49.5
Percent Change from Baseline	0%	14%	22%	31%
Average Achieved (mpg)	45.3	46.5	47.6	48.2
Total Regulatory Costs				
Technology Application Costs (\$b)	0.2	0.2	0.2	0.2
Off-Cycle Technology Costs (\$b)	0.1	0.0	0.0	0.0
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	0.2	0.2	0.2	0.2
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.0
Total Regulatory Costs (\$b)	0.2	0.2	0.2	0.3
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

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

Alternative	0 (Baseline)	1	2	3
Fuel Economy				
Average Required (mpg)	41.7	47.4	50.9	54.3
Percent Change from Baseline	0%	14%	22%	30%
Average Achieved (mpg)	48.0	48.6	50.4	51.2
Total Regulatory Costs				
Technology Application Costs (\$b)	0.7	0.7	0.8	0.8
Off-Cycle Technology Costs (\$b)	0.4	0.2	0.2	0.2
A/C Efficiency Technology Costs (\$b)	0.0	0.0	0.0	0.0
Subtotal Technology Costs (\$b)	1.1	0.9	1.0	1.0
Total Civil Penalties (\$b)	0.0	0.0	0.0	0.1
Total Regulatory Costs (\$b)	0.9	0.9	1.0	1.1
Sales Impacts				
Sales Change from Baseline (m)	0.00	-0.12	-0.24	-0.39

13. Powertrain Technology Penetration Rate, by Model Year

**Table B-13-1 - 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	21	22	23	23	23	23
Cylinder Deactivation	8	9	11	12	12	11	11	11	12	12
Dynamic Cylinder Deactivation	3	3	3	3	3	2	2	2	2	2
Non-Hybrid Turbocharged Engines	34	34	36	36	37	37	41	41	42	44
Variable Geometry Turbo	2	2	2	2	2	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	49	48	47	45	43	42	42	42	42
Mild Hybrid Powertrains	1.9	3.1	3.5	3.7	4.6	5.1	5.3	5.4	5.5	5.4
Strong Hybrid Powertrains Total	2.8	3.6	3.6	3.7	4.2	5.0	5.0	5.0	4.9	4.9
Plug-In Hybrid Powertrains	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Battery Electric Vehicles (BEVs)	1.9	2.3	3.0	3.6	4.1	4.7	5.2	5.5	5.7	6.0
BEV 200 Mile Range	0.5	0.7	1.2	1.5	1.9	2.0	2.3	2.6	2.7	3.0
BEV 300 Mile Range	1.1	1.3	1.5	1.8	1.9	2.4	2.6	2.6	2.6	2.7
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	26	24	25	22	21	22	21	21	21
9-Speed Automatic	11	11	6	3	2	1	0	0	0	0
10-Speed Automatic	10	15	26	32	36	37	37	38	38	37
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	25	26	26	27	27	27	27	27	28	28

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

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	10	13	15	17	22	24	24	24	25	25
Cylinder Deactivation	8	9	11	12	12	11	12	12	12	12
Dynamic Cylinder Deactivation	3	3	3	3	3	3	3	3	2	2
Non-Hybrid Turbocharged Engines	34	34	36	35	36	34	38	38	39	40
Variable Geometry Turbo	2	2	2	2	3	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)	50	49	48	47	43	39	33	30	29	28
Mild Hybrid Powertrains	1.9	3.1	3.5	3.5	5.3	6.6	12.1	15.2	16.3	17.0
Strong Hybrid Powertrains Total	2.8	3.6	3.6	3.6	4.6	7.0	7.3	7.5	7.5	7.6
Plug-In Hybrid Powertrains	0.5	0.5	0.5	0.4	0.7	0.6	0.6	0.6	0.6	0.4
Battery Electric Vehicles (BEVs)	1.9	2.3	3.0	4.5	6.2	8.0	10.0	10.2	10.6	11.2
BEV 200 Mile Range	0.5	0.7	1.2	1.7	2.7	3.2	3.4	3.4	3.6	3.8
BEV 300 Mile Range	1.1	1.3	1.5	2.6	3.2	4.5	6.4	6.5	6.8	7.1
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	26	24	23	14	8	6	4	4	3
9-Speed Automatic	11	11	6	3	2	1	0	0	0	0
10-Speed Automatic	10	15	26	32	41	45	47	49	49	49
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	25	26	26	27	27	26	26	26	26	26

**Table B-13-3 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Passenger Car Fleet, Alternative 2**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	17	20	23	25	31	33	33	33	34	34
Cylinder Deactivation	2	2	2	3	3	3	4	4	4	3
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	36	36	40	38	41	40	39	40	39	39
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)	31	31	30	28	26	24	22	19	19	19
Mild Hybrid Powertrains	0.2	0.3	0.7	0.8	2.2	3.8	5.4	8.1	8.4	8.5
Strong Hybrid Powertrains Total	3.4	3.4	3.5	2.9	3.2	4.0	3.9	4.3	4.3	4.3
Plug-In Hybrid Powertrains	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Battery Electric Vehicles (BEVs)	4.1	4.7	5.4	7.8	9.2	11.7	14.5	14.8	15.5	16.1
BEV 200 Mile Range	1.2	1.6	2.0	2.8	4.0	4.9	5.1	5.2	5.4	5.5
BEV 300 Mile Range	2.5	2.6	2.9	4.6	4.8	6.4	9.0	9.1	9.6	10.2
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	2	2	2	2
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	18	14	7	2	0	0	0	0	0	0
7-Speed Automatic	0	0	0	0	0	0	0	0	0	0
8-Speed Automatic	20	20	20	21	14	8	6	5	4	4
9-Speed Automatic	5	5	3	2	1	0	0	0	0	0
10-Speed Automatic	3	6	14	17	26	30	32	32	32	32
DCT Transmissions	4	4	4	4	4	3	3	3	3	3
CVT Transmissions	40	40	40	41	41	39	38	38	39	39

**Table B-13-5 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Domestic Car Fleet, Alternative 2**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	8	10	10	13	21	22	22	22	24	24
Cylinder Deactivation	3	4	5	6	6	6	7	7	7	6
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	42	41	46	44	44	42	43	44	44	44
Variable Geometry Turbo	1	1	1	1	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)	28	28	27	24	23	21	20	17	18	18
Mild Hybrid Powertrains	0.0	0.2	0.2	0.2	0.5	1.0	1.2	4.0	3.9	3.7
Strong Hybrid Powertrains Total	2.1	2.1	2.1	1.4	1.5	3.0	3.0	3.2	3.2	3.2
Plug-In Hybrid Powertrains	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Battery Electric Vehicles (BEVs)	8.3	8.4	9.6	12.3	13.8	16.3	18.3	18.3	18.6	19.7
BEV 200 Mile Range	2.1	2.2	3.1	4.0	5.4	6.3	6.3	6.3	6.6	6.7
BEV 300 Mile Range	5.1	5.2	5.5	7.3	7.4	9.0	11.0	11.0	11.0	12.1
BEV 400 Mile Range	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	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	17	22	24	15	9	8	8	8	7
9-Speed Automatic	5	5	2	0	0	0	0	0	0	0
10-Speed Automatic	6	9	12	16	24	29	29	29	29	29
DCT Transmissions	1	2	1	1	1	1	1	1	1	1
CVT Transmissions	40	41	41	41	41	39	39	39	39	39

**Table B-13-6 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Total)
Imported Car Fleet, Alternative 2**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	24	29	35	35	40	44	43	43	43	43
Cylinder Deactivation	0	0	0	0	0	0	1	1	1	1
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	31	32	33	32	38	37	36	36	35	35
Variable Geometry Turbo	1	1	1	1	3	3	3	3	3	3
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	33	31	28	26	25	22	20	20
Mild Hybrid Powertrains	0.4	0.5	1.2	1.4	3.7	6.4	9.1	11.8	12.5	12.9
Strong Hybrid Powertrains Total	4.5	4.6	4.7	4.3	4.6	4.9	4.8	5.3	5.3	5.3
Plug-In Hybrid Powertrains	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.7
Battery Electric Vehicles (BEVs)	0.4	1.3	1.7	3.8	5.1	7.5	11.1	11.6	12.7	12.8
BEV 200 Mile Range	0.3	1.1	1.1	1.7	2.8	3.6	4.0	4.3	4.4	4.4
BEV 300 Mile Range	0.1	0.3	0.6	2.2	2.3	3.9	7.2	7.4	8.3	8.4
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	3	2	2	2	2	2	2
5-Speed Automatic	0	0	0	0	0	0	0	0	0	0
6-Speed Automatic	19	14	6	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	18	19	13	7	4	3	1	1
9-Speed Automatic	5	4	3	3	1	1	0	0	0	0
10-Speed Automatic	0	3	16	18	27	31	34	35	35	35
DCT Transmissions	6	6	6	6	5	5	5	5	5	5
CVT Transmissions	39	40	40	40	40	40	38	38	38	38

**Table B-13-11 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (GM)
Total Fleet, Alternative 2**

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	19	19	18	17	14	12	12	10	10
Dynamic Cylinder Deactivation	16	16	16	15	15	15	15	15	15	15
Non-Hybrid Turbocharged Engines	41	43	43	43	46	38	47	49	50	50
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	64	63	63	63	49	35	33	33	33
Mild Hybrid Powertrains	0.0	0.8	0.8	0.8	2.8	5.0	15.4	16.9	16.8	16.8
Strong Hybrid Powertrains Total	0.0	4.5	4.4	4.4	6.5	14.6	14.6	15.1	15.1	15.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.2	1.6	1.7	2.1	4.0	7.8	11.7	11.9	12.0	12.0
BEV 200 Mile Range	0.0	0.3	0.3	0.6	2.5	2.7	2.7	2.9	2.9	2.9
BEV 300 Mile Range	1.2	1.3	1.4	1.5	1.5	5.1	9.0	9.0	9.0	9.1
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	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	34	34	22	4	3	0	0	0
9-Speed Automatic	29	28	8	7	4	0	0	0	0	0
10-Speed Automatic	14	18	38	39	53	64	61	63	63	62
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 B-13-12 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Honda)
Total Fleet, Alternative 2**

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	22	22	21	19	18	18	18	18
Dynamic Cylinder Deactivation	0	0	0	0	0	0	0	0	0	0
Non-Hybrid Turbocharged Engines	50	50	63	64	63	63	63	63	63	63
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	40	39	32	30	30	18	18	18
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	3.2	3.2	3.1	14.9	14.9	14.7
Strong Hybrid Powertrains Total	5.1	5.2	5.2	3.6	5.7	4.3	4.3	4.2	4.2	4.2
Plug-In Hybrid Powertrains	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	0.0	0.0	0.0	1.6	2.8	6.3	8.8	8.9	9.1	9.1
BEV 200 Mile Range	0.0	0.0	0.0	1.6	2.3	2.7	2.7	2.7	2.8	2.8
BEV 300 Mile Range	0.0	0.0	0.0	0.0	0.5	3.5	6.1	6.2	6.2	6.3
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	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	5	5	5	0	0	0	0	0
9-Speed Automatic	12	11	3	2	0	0	0	0	0	0
10-Speed Automatic	13	13	21	21	20	23	22	22	22	22
DCT Transmissions	2	2	3	3	3	3	1	1	1	1
CVT Transmissions	60	60	61	61	62	62	62	62	62	62

Table B-13-13 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Hyundai Kia-H) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	46	47	55	62	83	82	77	77	77	77
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	14	10	9	9	9	9
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	25	25	24	24	19	19	18	18
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.3	0.3	10.8	10.8	10.9	11.0
Strong Hybrid Powertrains Total	2.2	2.3	2.4	0.5	0.5	3.7	8.5	8.5	8.5	8.5
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	3.4	3.6	8.1	13.6	13.6	13.7	13.8
BEV 200 Mile Range	0.3	0.3	0.4	1.9	2.2	4.5	4.5	4.5	4.6	4.6
BEV 300 Mile Range	0.5	0.5	0.5	1.5	1.5	3.5	9.0	9.0	9.1	9.2
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	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	59	52	46	46	45	45
DCT Transmissions	3	3	3	3	3	3	3	3	3	3
CVT Transmissions	29	30	31	32	32	32	29	29	29	29

Table B-13-14 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Hyundai Kia-K) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	46	69	69	69	72	84	79	86	86	86
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	4	4	4
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	44	34	34	34	32	32	32
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.4	0.4	1.3	1.3	1.3
Strong Hybrid Powertrains Total	0.9	0.9	0.9	0.9	9.9	9.8	9.0	9.4	9.2	9.2
Plug-In Hybrid Powertrains	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	0.2	0.3	0.3	0.3	2.6	3.5	9.2	9.3	9.4	9.4
BEV 200 Mile Range	0.2	0.3	0.3	0.3	2.1	3.0	3.0	3.0	3.0	3.0
BEV 300 Mile Range	0.0	0.0	0.0	0.0	0.5	0.5	6.1	6.3	6.3	6.4
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	22	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	24	36	36	37	45	44
DCT Transmissions	2	2	2	2	2	2	2	2	2	2
CVT Transmissions	35	36	38	39	38	38	34	34	34	34

Table B-13-17 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Mitsubishi) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	0	0	0	0	78	78	78	78	78
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	2	2	2	2	2
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	0.0	0.0	0.0	0.0	0.0
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	3.9	3.9	3.9	3.9	3.9
BEV 200 Mile Range	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8	2.8	2.8
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	93	93	93	93	93

**Table B-13-18 - Powertrain Technology Penetration Rate (%) by Model Year for Manufacturer (Nissan)
Total Fleet, Alternative 2**

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Non-Hybrid High Compression Engines	0	19	24	30	52	59	59	59	65	65
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	6	6	6
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	0.5	0.8	4.2	4.6	4.6	4.7	4.7
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.1	1.2	1.2	3.7	6.0	8.9	9.5	9.5	9.6	9.6
BEV 200 Mile Range	1.1	1.2	1.2	1.3	2.1	3.9	3.9	3.9	4.0	4.0
BEV 300 Mile Range	0.0	0.0	0.0	2.4	3.9	5.0	5.6	5.6	5.6	5.7
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	87	81	81	81	81	81

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

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	31	28	23	20	14	11	5	4	3	2
Mass Reduction Level 1 (%)	14	15	16	16	20	19	22	21	20	21
Mass Reduction Level 2 (%)	21	21	20	20	13	12	11	10	7	7
Mass Reduction Level 3 (%)	25	28	32	31	33	34	34	36	38	38
Mass Reduction Level 4 (%)	8	8	9	12	19	25	28	29	32	33
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	3,915	3,885	3,865	3,833	3,812	3,795	3,787	3,773	3,767
Diff. from Baseline - Fleet (pounds)	0	0	0	3	23	32	37	40	46	47

Table B-14-3 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Total) Passenger Car Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	33	30	25	23	13	9	5	2	2	1
Mass Reduction Level 1 (%)	13	13	15	15	22	20	22	23	23	24
Mass Reduction Level 2 (%)	20	20	18	19	7	6	6	5	3	3
Mass Reduction Level 3 (%)	29	32	35	31	34	34	31	31	30	29
Mass Reduction Level 4 (%)	5	5	6	12	24	31	36	38	41	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)	3,938	3,915	3,885	3,865	3,833	3,812	3,795	3,787	3,773	3,767
Diff. from Baseline - Fleet (pounds)	0	0	0	3	23	32	37	40	46	47

Table B-14-4 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Total) Light Truck Fleet, Alternative 2

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	3
Mass Reduction Level 1 (%)	14	16	18	18	19	17	21	18	17	18
Mass Reduction Level 2 (%)	22	22	22	22	18	18	15	14	11	10
Mass Reduction Level 3 (%)	23	25	29	30	32	33	36	41	45	45
Mass Reduction Level 4 (%)	11	11	11	12	15	19	21	21	22	23
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	3,915	3,885	3,865	3,833	3,812	3,795	3,787	3,773	3,767
Diff. from Baseline - Fleet (pounds)	0	0	0	3	23	32	37	40	46	47

Table B-14-5 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Total) Domestic Car Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	19	19	19	16	16	12	4	3	2	0
Mass Reduction Level 1 (%)	17	13	10	11	10	6	12	13	14	15
Mass Reduction Level 2 (%)	21	21	22	23	7	7	6	4	2	1
Mass Reduction Level 3 (%)	36	40	40	31	30	30	30	30	28	27
Mass Reduction Level 4 (%)	7	7	10	20	38	46	48	50	54	56
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	3,915	3,885	3,865	3,833	3,812	3,795	3,787	3,773	3,767
Diff. from Baseline - Fleet (pounds)	0	0	0	3	23	32	37	40	46	47

Table B-14-6 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Total) Imported Car Fleet, Alternative 2

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	19	19	32	32	31	32	32	32
Mass Reduction Level 2 (%)	20	19	15	15	7	6	6	6	5	5
Mass Reduction Level 3 (%)	23	25	31	32	38	37	32	31	31	31
Mass Reduction Level 4 (%)	3	3	3	5	12	17	25	28	29	31
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	3,915	3,885	3,865	3,833	3,812	3,795	3,787	3,773	3,767
Diff. from Baseline - Fleet (pounds)	0	0	0	3	23	32	37	40	46	47

Table B-14-7 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (BMW) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	60	55	39	28	20	7	4	3	3	0
Mass Reduction Level 1 (%)	16	15	14	19	22	22	22	10	8	8
Mass Reduction Level 2 (%)	3	3	3	3	3	0	0	0	0	0
Mass Reduction Level 3 (%)	21	26	43	49	54	59	63	75	77	79
Mass Reduction Level 4 (%)	0	0	0	0	0	10	10	11	12	12
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	4,121	4,085	4,062	4,012	4,001	3,974	3,967	3,958
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-5	-8	10	12	10

Table B-14-8 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Daimler) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	39	34	33	33	28	21	2	2	2	2
Mass Reduction Level 1 (%)	8	8	8	8	4	4	23	19	19	19
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	49	55	55	56	65	65	65	65	65	65
Mass Reduction Level 4 (%)	1	1	1	1	1	8	8	12	12	12
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	4,149	4,135	4,125	4,102	4,061	4,026	4,015	4,010	4,008
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	8	5	1	0	-1

Table B-14-9 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (FCA) Total Fleet, Alternative 2

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	37	37	37	37	43	32	24	24
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	1	8	25	32	32	32	41	53	59	56
Mass Reduction Level 4 (%)	7	7	7	7	7	7	7	7	13	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	4,485	4,430	4,402	4,401	4,400	4,368	4,349	4,312	4,306
Diff. from Baseline - Fleet (pounds)	0	0	0	0	0	-2	10	28	48	53

Table B-14-10 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Ford) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	35	35	31	27	22	22	11	10	10	2
Mass Reduction Level 1 (%)	7	7	3	3	9	9	19	21	21	29
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	16	16	20	20	20	20	20	20	20	20
Mass Reduction Level 4 (%)	42	42	46	50	50	50	50	50	50	49
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	4,214	4,196	4,180	4,179	4,164	4,162	4,158	4,145
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-4	8	8	8	19

Table B-14-11 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (GM) Total Fleet, Alternative 2

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	28	29	29	10	8	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	62	62	62	62
Mass Reduction Level 4 (%)	1	1	1	2	4	23	26	28	28	28
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	4,107	4,090	4,080	4,029	4,020	4,012	4,008	4,006
Diff. from Baseline - Fleet (pounds)	0	0	0	0	2	48	52	52	51	50

Table B-14-12 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Honda) Total Fleet, Alternative 2

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	26	25	25	24	24	18	8	4
Mass Reduction Level 3 (%)	65	66	67	50	50	50	48	54	63	68
Mass Reduction Level 4 (%)	0	0	0	18	18	18	21	21	21	22
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	3,450	3,417	3,410	3,406	3,401	3,395	3,382	3,376
Diff. from Baseline - Fleet (pounds)	0	0	0	23	22	18	17	19	26	28

Table B-14-13 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Hyundai Kia-H) Total Fleet, Alternative 2

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	61	61	43	43	41	40
Mass Reduction Level 4 (%)	11	12	12	13	22	22	51	51	53	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)	3,366	3,354	3,330	3,322	3,288	3,287	3,247	3,245	3,237	3,235
Diff. from Baseline - Fleet (pounds)	0	0	0	0	25	21	49	47	49	48

Table B-14-14 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Hyundai Kia-K) Total Fleet, Alternative 2

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	43	30	30	28	28	28
Mass Reduction Level 4 (%)	1	1	1	1	12	25	30	33	33	33
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	3,633	3,626	3,545	3,527	3,517	3,506	3,503	3,501
Diff. from Baseline - Fleet (pounds)	0	0	0	0	61	74	82	87	87	86

Table B-14-15 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (JLR) Total Fleet, Alternative 2

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	13	13	13	13	13
Mass Reduction Level 2 (%)	46	46	46	46	44	44	36	36	36	36
Mass Reduction Level 3 (%)	0	0	0	0	2	2	9	9	9	9
Mass Reduction Level 4 (%)	29	29	29	30	30	30	30	30	30	30
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	4,422	4,420	4,400	4,393	4,393	4,392	4,391
Diff. from Baseline - Fleet (pounds)	0	0	0	0	0	-2	-3	-4	-4	-5

Table B-14-16 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Mazda) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	64	64	63	63	62	19	9	9	9	9
Mass Reduction Level 1 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 2 (%)	2	2	2	2	2	0	0	0	0	0
Mass Reduction Level 3 (%)	30	31	31	32	32	32	39	39	40	23
Mass Reduction Level 4 (%)	3	0	0	0	0	45	48	48	48	64
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	4	4
Avg Curb Weight - Fleet (pounds)	3,548	3,533	3,525	3,519	3,515	3,338	3,301	3,301	3,300	3,279
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	173	191	189	187	205

Table B-14-17 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Mitsubishi) Total Fleet, Alternative 2

Model Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mass Reduction Level 0 (%)	85	84	82	82	81	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 (%)	15	16	18	18	19	100	100	100	100	100
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)	3,153	3,141	3,127	3,117	3,111	2,916	2,915	2,915	2,911	2,909
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	91	87	84	82	80

Table B-14-18 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Nissan) Total Fleet, Alternative 2

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	8	32	33	33	35	41	45
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)	3,604	3,563	3,543	3,521	3,465	3,451	3,450	3,444	3,423	3,411
Diff. from Baseline - Fleet (pounds)	0	0	0	12	58	54	51	54	66	74

Table B-14-19 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Subaru) Total Fleet, Alternative 2

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	6	6	6	6	6
Mass Reduction Level 4 (%)	0	0	1	1	1	1	1	1	1	1
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	3,562	3,559	3,558	3,558	3,558	3,555	3,554
Diff. from Baseline - Fleet (pounds)	0	0	0	0	0	-3	-5	-7	-7	-8

Table B-14-20 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Tesla) Total Fleet, Alternative 2

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	15	15	15	15	15	15
Mass Reduction Level 4 (%)	83	83	84	84	85	85	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	4,320	4,316	4,316	4,315	4,315	4,312	4,311
Diff. from Baseline - Fleet (pounds)	0	0	0	0	-1	-3	-5	-7	-7	-8

Table B-14-21 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Toyota) Total Fleet, Alternative 2

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	8	8	31	31	41	44	45	45
Mass Reduction Level 2 (%)	46	46	46	47	15	14	9	7	0	0
Mass Reduction Level 3 (%)	1	1	1	1	1	1	1	1	1	1
Mass Reduction Level 4 (%)	0	0	0	0	32	33	39	41	47	47
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	3,755	3,738	3,641	3,636	3,606	3,597	3,573	3,569
Diff. from Baseline - Fleet (pounds)	0	0	0	0	87	83	92	95	112	110

Table B-14-22 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (Volvo) Total Fleet, Alternative 2

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	18	18
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	61	60	59	58	58	58	58	81	81	81
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)	4,181	4,176	4,172	4,169	4,167	4,166	4,166	4,099	4,097	4,095
Diff. from Baseline - Fleet (pounds)	0	0	0	0	0	-2	-3	62	63	63

Table B-14-23 - Mass Reduction Penetration Rate and Curb Weights by Model Year for Manufacturer (VWA) Total Fleet, Alternative 2

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	41	35	31	34	30
Mass Reduction Level 2 (%)	0	0	0	0	0	0	0	0	0	0
Mass Reduction Level 3 (%)	5	5	5	5	37	46	52	56	59	62
Mass Reduction Level 4 (%)	0	0	0	0	0	1	5	5	5	5
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	3,818	3,808	3,760	3,705	3,679	3,671	3,656	3,649
Diff. from Baseline - Fleet (pounds)	0	0	0	0	22	1	11	8	11	14

15. Powertrain Technology Penetration Rate, by Alternative

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

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	23	26	25	26
Cylinder Deactivation	12	12	12	12
Dynamic Cylinder Deactivation	2	2	2	2
Non-Hybrid Turbocharged Engines	44	43	40	36
Variable Geometry Turbo	1	1	2	1
Electric Variable Geometry Turbo	0	2	0	1
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	42	34	28	24
Mild Hybrid Powertrains	5.4	11.2	17.0	17.7
Strong Hybrid Powertrains Total	4.9	6.8	7.5	9.2
Plug-In Hybrid Powertrains	0.2	0.4	0.4	0.7
Battery Electric Vehicles (BEVs)	6.0	7.7	11.2	14.1
BEV 200 Mile Range	3.0	3.6	3.8	3.9
BEV 300 Mile Range	2.7	3.8	7.1	10.0
BEV 400 Mile Range	0.3	0.3	0.3	0.3
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	21	9	3	1
9-Speed Automatic	0	0	0	0
10-Speed Automatic	37	46	49	47
DCT Transmissions	0	0	0	0
CVT Transmissions	28	27	26	25

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

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	32	36	34	36
Cylinder Deactivation	3	4	3	3
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	46	42	39	33
Variable Geometry Turbo	1	0	2	0
Electric Variable Geometry Turbo	0	2	0	1
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	25	22	19	16
Mild Hybrid Powertrains	3.7	4.5	8.5	11.8
Strong Hybrid Powertrains Total	3.4	4.2	4.3	4.8
Plug-In Hybrid Powertrains	0.1	0.5	0.5	1.3
Battery Electric Vehicles (BEVs)	8.9	11.3	16.1	19.2
BEV 200 Mile Range	4.2	4.9	5.5	6.0
BEV 300 Mile Range	4.3	5.9	10.2	12.7
BEV 400 Mile Range	0.4	0.4	0.5	0.5
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	2	2	2	2
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	20	12	4	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	21	26	32	34
DCT Transmissions	0	0	0	0
CVT Transmissions	41	41	39	37

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

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	15	17	17	16
Cylinder Deactivation	22	21	20	19
Dynamic Cylinder Deactivation	5	5	5	5
Non-Hybrid Turbocharged Engines	43	45	41	38
Variable Geometry Turbo	1	1	2	1
Electric Variable Geometry Turbo	0	2	0	1
Diesel Engines	0	1	1	1
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	59	45	36	32
Mild Hybrid Powertrains	7.2	17.7	25.0	23.2
Strong Hybrid Powertrains Total	6.5	9.4	10.7	13.3
Plug-In Hybrid Powertrains	0.1	0.1	0.1	0.2
Battery Electric Vehicles (BEVs)	3.1	4.1	6.5	9.4
BEV 200 Mile Range	1.9	2.3	2.2	1.9
BEV 300 Mile Range	1.1	1.7	4.1	7.4
BEV 400 Mile Range	0.1	0.1	0.1	0.1
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	21	6	3	3
9-Speed Automatic	0	0	0	0
10-Speed Automatic	54	65	65	59
DCT Transmissions	0	0	0	0
CVT Transmissions	14	14	14	14

**Table B-15-4 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029
Domestic Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	19	27	24	22
Cylinder Deactivation	6	7	6	6
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	47	45	44	41
Variable Geometry Turbo	1	0	1	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	25	22	18	11
Mild Hybrid Powertrains	0.1	0.6	3.7	9.7
Strong Hybrid Powertrains Total	2.7	3.1	3.2	5.6
Plug-In Hybrid Powertrains	0.3	0.3	0.3	1.5
Battery Electric Vehicles (BEVs)	12.4	15.9	19.7	21.8
BEV 200 Mile Range	4.8	5.9	6.7	6.4
BEV 300 Mile Range	6.6	9.1	12.1	14.5
BEV 400 Mile Range	0.9	0.9	0.9	1.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	24	15	7	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	17	21	29	33
DCT Transmissions	0	0	0	0
CVT Transmissions	42	42	39	36

**Table B-15-5 - Powertrain Technology Penetration Rate (%) for Manufacturer (Total), MY 2029
Imported Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	43	45	43	48
Cylinder Deactivation	0	1	1	1
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	44	39	35	26
Variable Geometry Turbo	1	0	3	0
Electric Variable Geometry Turbo	0	3	0	3
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	25	22	20	20
Mild Hybrid Powertrains	7.0	8.1	12.9	13.8
Strong Hybrid Powertrains Total	3.9	5.1	5.3	4.0
Plug-In Hybrid Powertrains	0.0	0.7	0.7	1.2
Battery Electric Vehicles (BEVs)	5.7	7.1	12.8	16.7
BEV 200 Mile Range	3.6	4.1	4.4	5.7
BEV 300 Mile Range	2.1	3.1	8.4	11.0
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	3	3	2	2
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	17	9	1	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	24	30	35	35
DCT Transmissions	0	0	0	0
CVT Transmissions	41	40	38	37

Table B-15-6 - Powertrain Technology Penetration Rate (%) for Manufacturer (BMW), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	0	0	0	0
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	90	92	89	85
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	74	64	43	39
Mild Hybrid Powertrains	15.5	28.1	46.4	45.7
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	10.2	8.0	11.1	14.9
BEV 200 Mile Range	3.5	3.8	3.7	5.7
BEV 300 Mile Range	6.7	4.2	7.4	9.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	7	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	73	83	80	77
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-7 - Powertrain Technology Penetration Rate (%) for Manufacturer (Daimler), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	0	0	0	0
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	96	91	87	79
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	54	24	24	25
Mild Hybrid Powertrains	40.0	65.4	60.8	51.6
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.5	0.5	0.5	2.0
Battery Electric Vehicles (BEVs)	3.6	8.4	12.8	18.9
BEV 200 Mile Range	2.8	3.0	3.0	3.0
BEV 300 Mile Range	0.1	4.7	9.0	14.9
BEV 400 Mile Range	0.7	0.7	0.7	0.9
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	78	74	69	63
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-8 - Powertrain Technology Penetration Rate (%) for Manufacturer (FCA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	2	2	2	2
Cylinder Deactivation	65	63	62	62
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	8	22	22	22
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	1	1	1	1
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	64	55	55	54
Mild Hybrid Powertrains	10.1	18.2	18.0	18.0
Strong Hybrid Powertrains Total	0.0	0.1	0.2	0.1
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	4.4	5.7	6.7	7.4
BEV 200 Mile Range	2.9	2.9	2.9	2.9
BEV 300 Mile Range	1.4	2.8	3.8	4.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	95	94	92	92
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-9 - Powertrain Technology Penetration Rate (%) for Manufacturer (Ford), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	5	5	5	5
Cylinder Deactivation	7	7	7	7
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	74	70	67	64
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	61	45	21	21
Mild Hybrid Powertrains	12.7	25.6	46.6	43.8
Strong Hybrid Powertrains Total	9.6	9.2	9.4	9.3
Plug-In Hybrid Powertrains	0.7	0.7	0.7	0.7
Battery Electric Vehicles (BEVs)	4.4	8.1	11.0	14.3
BEV 200 Mile Range	3.2	3.1	3.1	3.1
BEV 300 Mile Range	1.2	5.0	7.9	11.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	38	26	16	1
9-Speed Automatic	0	0	0	0
10-Speed Automatic	47	56	62	74
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-10 - Powertrain Technology Penetration Rate (%) for Manufacturer (GM), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	2	2	2	2
Cylinder Deactivation	13	12	10	9
Dynamic Cylinder Deactivation	15	15	15	15
Non-Hybrid Turbocharged Engines	64	62	50	46
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	1	1	2
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	60	38	33	17
Mild Hybrid Powertrains	1.4	15.7	16.8	23.0
Strong Hybrid Powertrains Total	4.3	17.2	15.0	23.2
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.2	6.2	12.0	15.3
BEV 200 Mile Range	2.6	2.9	2.9	3.3
BEV 300 Mile Range	2.7	3.2	9.1	12.0
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	36	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	43	66	62	52
DCT Transmissions	0	0	0	0
CVT Transmissions	10	10	9	9

Table B-15-11 - Powertrain Technology Penetration Rate (%) for Manufacturer (Honda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	8	9	8	8
Cylinder Deactivation	18	18	18	18
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	65	64	63	54
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	35	34	18	18
Mild Hybrid Powertrains	0.0	1.2	14.7	12.4
Strong Hybrid Powertrains Total	3.5	2.8	4.2	9.4
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.0	5.4	9.1	13.0
BEV 200 Mile Range	3.1	3.6	2.8	2.9
BEV 300 Mile Range	1.9	1.8	6.3	10.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	2	2	2	2
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	5	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	20	25	22	17
DCT Transmissions	0	0	0	0
CVT Transmissions	63	62	62	58

Table B-15-12 - Powertrain Technology Penetration Rate (%) for Manufacturer (Hyundai Kia-H), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	82	79	77	72
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	14	11	9	8
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	23	21	18	14
Mild Hybrid Powertrains	0.0	0.1	11.0	14.6
Strong Hybrid Powertrains Total	0.5	2.2	8.5	7.5
Plug-In Hybrid Powertrains	0.0	0.0	0.0	1.2
Battery Electric Vehicles (BEVs)	4.0	8.1	13.8	18.4
BEV 200 Mile Range	2.1	5.0	4.6	3.1
BEV 300 Mile Range	1.9	3.1	9.2	15.4
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	10	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	47	53	45	43
DCT Transmissions	0	0	0	0
CVT Transmissions	34	33	29	27

Table B-15-13 - Powertrain Technology Penetration Rate (%) for Manufacturer (Hyundai Kia-K), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	91	91	86	79
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	6	5	4	4
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	42	40	32	32
Mild Hybrid Powertrains	0.0	0.6	1.3	1.0
Strong Hybrid Powertrains Total	0.8	1.5	9.1	17.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.9	3.6	9.4	12.2
BEV 200 Mile Range	2.5	3.0	3.0	3.0
BEV 300 Mile Range	0.4	0.6	6.4	9.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	32	21	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	21	32	44	35
DCT Transmissions	0	0	0	0
CVT Transmissions	40	40	34	34

Table B-15-14 - Powertrain Technology Penetration Rate (%) for Manufacturer (JLR), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	0	0	0	0
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	95	92	92	92
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	1	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	70	54	52	52
Mild Hybrid Powertrains	25.2	39.2	40.2	40.1
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.7	1.2	1.2	1.2
Battery Electric Vehicles (BEVs)	4.0	6.1	6.3	6.4
BEV 200 Mile Range	2.6	4.3	4.3	4.5
BEV 300 Mile Range	1.4	1.8	1.9	1.9
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	95	93	93	92
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

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

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	68	68	68	66
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	0	0	0	0
Variable Geometry Turbo	27	23	23	20
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	0	0	0	0
Mild Hybrid Powertrains	0.0	0.0	18.9	23.0
Strong Hybrid Powertrains Total	0.0	3.5	3.4	5.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	1.7
Battery Electric Vehicles (BEVs)	5.2	5.0	5.0	7.1
BEV 200 Mile Range	4.1	4.0	4.0	3.9
BEV 300 Mile Range	1.1	1.0	1.0	3.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	84	49	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	11	42	91	86
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

**Table B-15-16 - Powertrain Technology Penetration Rate (%) for Manufacturer (Mitsubishi), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	2	78	78	78
Cylinder Deactivation	0	2	2	2
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	18	18	0	0
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	0	0	2	2
Mild Hybrid Powertrains	0.0	0.0	0.0	9.5
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.6	1.6	3.9	5.7
BEV 200 Mile Range	0.5	0.5	2.8	3.5
BEV 300 Mile Range	1.1	1.1	1.1	2.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	2	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	0	2	2	2
DCT Transmissions	0	0	0	0
CVT Transmissions	95	95	93	91

Table B-15-17 - Powertrain Technology Penetration Rate (%) for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	49	72	65	62
Cylinder Deactivation	3	3	3	3
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	13	12	11	11
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	6	6	6	6
Mild Hybrid Powertrains	0.0	0.0	0.0	5.3
Strong Hybrid Powertrains Total	0.0	0.0	4.7	0.6
Plug-In Hybrid Powertrains	0.0	0.0	0.0	3.5
Battery Electric Vehicles (BEVs)	1.8	4.5	9.6	13.6
BEV 200 Mile Range	1.4	4.0	4.0	4.4
BEV 300 Mile Range	0.5	0.5	5.7	9.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	8	7	4	4
DCT Transmissions	0	0	0	0
CVT Transmissions	89	88	81	78

**Table B-15-18 - Powertrain Technology Penetration Rate (%) for Manufacturer (Subaru), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	47	48	48	48
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	50	23	21	20
Variable Geometry Turbo	0	0	27	0
Electric Variable Geometry Turbo	0	27	0	27
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	68	55	68	55
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.3	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.3	2.3	4.0	4.6
BEV 200 Mile Range	0.1	0.1	1.7	2.4
BEV 300 Mile Range	2.2	2.2	2.2	2.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	6	6	4	4
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	0	0	0	0
DCT Transmissions	0	0	0	0
CVT Transmissions	91	92	91	91

Table B-15-19 - Powertrain Technology Penetration Rate (%) for Manufacturer (Tesla), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	0	0	0	0
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	0	0	0	0
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	0	0	0	0
Mild Hybrid Powertrains	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	100.0	100.0	100.0	100.0
BEV 200 Mile Range	25.3	25.2	25.2	25.1
BEV 300 Mile Range	60.2	59.9	59.8	59.7
BEV 400 Mile Range	14.5	14.8	15.1	15.2
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	0	0	0	0
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-20 - Powertrain Technology Penetration Rate (%) for Manufacturer (Toyota), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	33	38	36	48
Cylinder Deactivation	5	7	6	6
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	38	38	39	23
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	17	18	14	14
Mild Hybrid Powertrains	0.0	0.0	3.0	1.8
Strong Hybrid Powertrains Total	12.6	9.0	9.1	7.2
Plug-In Hybrid Powertrains	0.0	1.4	1.4	1.4
Battery Electric Vehicles (BEVs)	3.6	6.0	8.6	12.3
BEV 200 Mile Range	3.0	3.2	4.6	4.4
BEV 300 Mile Range	0.6	2.7	4.0	7.8
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	1	1	1	1
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	44	30	11	9
9-Speed Automatic	0	0	0	0
10-Speed Automatic	16	30	47	48
DCT Transmissions	0	0	0	0
CVT Transmissions	23	22	22	21

Table B-15-21 - Powertrain Technology Penetration Rate (%) for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	0	0	0	0
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	51	51	48	51
Variable Geometry Turbo	0	0	0	0
Electric Variable Geometry Turbo	6	6	6	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	51	46	36	42
Mild Hybrid Powertrains	0.0	5.1	11.8	8.3
Strong Hybrid Powertrains Total	33.1	32.3	34.2	36.2
Plug-In Hybrid Powertrains	1.8	1.7	1.6	1.6
Battery Electric Vehicles (BEVs)	8.2	9.1	10.5	11.1
BEV 200 Mile Range	2.9	2.8	2.8	2.8
BEV 300 Mile Range	5.3	6.3	7.7	8.4
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	0	0	0	0
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	57	57	53	51
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

Table B-15-22 - Powertrain Technology Penetration Rate (%) for Manufacturer (VWA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Non-Hybrid High Compression Engines	3	4	5	5
Cylinder Deactivation	0	0	0	0
Dynamic Cylinder Deactivation	0	0	0	0
Non-Hybrid Turbocharged Engines	59	59	55	54
Variable Geometry Turbo	9	3	6	5
Electric Variable Geometry Turbo	0	0	0	0
Diesel Engines	0	0	0	0
Compressed Natural Gas	0	0	0	0
12V Stop-Start (non-hybrid)	38	39	41	40
Mild Hybrid Powertrains	29.9	23.0	22.5	20.9
Strong Hybrid Powertrains Total	21.8	27.1	22.6	23.6
Plug-In Hybrid Powertrains	0.2	0.3	0.3	0.5
Battery Electric Vehicles (BEVs)	7.2	7.4	10.7	12.2
BEV 200 Mile Range	4.2	4.2	5.7	5.7
BEV 300 Mile Range	3.0	3.2	5.0	6.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0
Manual Transmissions	3	3	3	3
5-Speed Automatic	0	0	0	0
6-Speed Automatic	0	0	0	0
7-Speed Automatic	0	0	0	0
8-Speed Automatic	0	0	0	0
9-Speed Automatic	0	0	0	0
10-Speed Automatic	41	37	40	39
DCT Transmissions	0	0	0	0
CVT Transmissions	0	0	0	0

16. Mass Reduction Penetration Rate, by Model Year

**Table B-16-1 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	10	4	2	2
Mass Reduction Level 1 (%)	23	21	21	15
Mass Reduction Level 2 (%)	20	9	7	7
Mass Reduction Level 3 (%)	36	42	38	40
Mass Reduction Level 4 (%)	10	24	33	35
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,814	3,779	3,767	3,759
Diff. from Baseline - Fleet (pounds)	0	35	47	55
Avg Curb Weight - Passenger Car (pounds)	3,331	3,279	3,251	3,232
Diff. from Baseline - Passenger Car (pounds)	0	52	81	99
Avg Curb Weight - Light Truck (pounds)	4,305	4,268	4,259	4,252
Diff. from Baseline - Light Trucks (pounds)	0	36	46	53

**Table B-16-2 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Passenger Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	16	5	1	1
Mass Reduction Level 1 (%)	18	22	24	15
Mass Reduction Level 2 (%)	19	4	3	3
Mass Reduction Level 3 (%)	38	44	29	33
Mass Reduction Level 4 (%)	9	26	43	47
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	1
Avg Curb Weight - Fleet (pounds)	3,814	3,779	3,767	3,759
Diff. from Baseline - Fleet (pounds)	0	35	47	55
Avg Curb Weight - Passenger Car (pounds)	3,331	3,279	3,251	3,232
Diff. from Baseline - Passenger Car (pounds)	0	52	81	99
Avg Curb Weight - Light Truck (pounds)	4,305	4,268	4,259	4,252
Diff. from Baseline - Light Trucks (pounds)	0	36	46	53

**Table B-16-3 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Light Truck Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	5	4	3	3
Mass Reduction Level 1 (%)	27	20	18	15
Mass Reduction Level 2 (%)	22	14	10	10
Mass Reduction Level 3 (%)	34	40	45	47
Mass Reduction Level 4 (%)	12	22	23	25
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,814	3,779	3,767	3,759
Diff. from Baseline - Fleet (pounds)	0	35	47	55
Avg Curb Weight - Passenger Car (pounds)	3,331	3,279	3,251	3,232
Diff. from Baseline - Passenger Car (pounds)	0	52	81	99
Avg Curb Weight - Light Truck (pounds)	4,305	4,268	4,259	4,252
Diff. from Baseline - Light Trucks (pounds)	0	36	46	53

**Table B-16-4 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Domestic Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	9	8	0	0
Mass Reduction Level 1 (%)	16	7	15	7
Mass Reduction Level 2 (%)	23	3	1	1
Mass Reduction Level 3 (%)	40	49	27	38
Mass Reduction Level 4 (%)	12	33	56	54
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,814	3,779	3,767	3,759
Diff. from Baseline - Fleet (pounds)	0	35	47	55
Avg Curb Weight - Passenger Car (pounds)	3,331	3,279	3,251	3,232
Diff. from Baseline - Passenger Car (pounds)	0	52	81	99
Avg Curb Weight - Light Truck (pounds)	4,305	4,268	4,259	4,252
Diff. from Baseline - Light Trucks (pounds)	0	36	46	53

**Table B-16-5 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Total), MY 2029
Imported Car Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	22	2	2	2
Mass Reduction Level 1 (%)	21	35	32	23
Mass Reduction Level 2 (%)	14	5	5	5
Mass Reduction Level 3 (%)	36	39	31	29
Mass Reduction Level 4 (%)	6	19	31	40
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	1
Avg Curb Weight - Fleet (pounds)	3,814	3,779	3,767	3,759
Diff. from Baseline - Fleet (pounds)	0	35	47	55
Avg Curb Weight - Passenger Car (pounds)	3,331	3,279	3,251	3,232
Diff. from Baseline - Passenger Car (pounds)	0	52	81	99
Avg Curb Weight - Light Truck (pounds)	4,305	4,268	4,259	4,252
Diff. from Baseline - Light Trucks (pounds)	0	36	46	53

**Table B-16-6 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (BMW), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	22	21	8	9
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	66	72	79	73
Mass Reduction Level 4 (%)	12	6	12	18
Mass Reduction Level 5 (%)	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,968	3,983	3,958	3,952
Diff. from Baseline - Fleet (pounds)	0	-14	10	16
Avg Curb Weight - Passenger Car (pounds)	3,663	3,670	3,660	3,645
Diff. from Baseline - Passenger Car (pounds)	0	-7	3	18
Avg Curb Weight - Light Truck (pounds)	4,682	4,682	4,604	4,604
Diff. from Baseline - Light Trucks (pounds)	0	0	77	77

Table B-16-7 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Daimler), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	2	2	2	2
Mass Reduction Level 1 (%)	18	18	19	19
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	72	65	65	62
Mass Reduction Level 4 (%)	6	12	12	15
Mass Reduction Level 5 (%)	2	2	2	2
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,006	4,002	4,008	4,013
Diff. from Baseline - Fleet (pounds)	0	4	-1	-7
Avg Curb Weight - Passenger Car (pounds)	3,651	3,652	3,652	3,630
Diff. from Baseline - Passenger Car (pounds)	0	-1	-1	21
Avg Curb Weight - Light Truck (pounds)	4,437	4,409	4,409	4,437
Diff. from Baseline - Light Trucks (pounds)	0	28	28	0

**Table B-16-8 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (FCA), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	4	4	4	4
Mass Reduction Level 1 (%)	51	24	24	24
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	38	56	56	56
Mass Reduction Level 4 (%)	7	16	16	16
Mass Reduction Level 5 (%)	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,359	4,305	4,306	4,308
Diff. from Baseline - Fleet (pounds)	0	55	53	51
Avg Curb Weight - Passenger Car (pounds)	3,696	3,582	3,577	3,574
Diff. from Baseline - Passenger Car (pounds)	0	114	119	122
Avg Curb Weight - Light Truck (pounds)	4,493	4,446	4,446	4,446
Diff. from Baseline - Light Trucks (pounds)	0	47	47	47

**Table B-16-9 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Ford), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	23	23	2	2
Mass Reduction Level 1 (%)	8	8	29	6
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	19	20	20	43
Mass Reduction Level 4 (%)	49	49	49	50
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,163	4,170	4,145	4,115
Diff. from Baseline - Fleet (pounds)	0	-6	19	48
Avg Curb Weight - Passenger Car (pounds)	3,532	3,531	3,459	3,387
Diff. from Baseline - Passenger Car (pounds)	0	1	73	145
Avg Curb Weight - Light Truck (pounds)	4,449	4,449	4,439	4,423
Diff. from Baseline - Light Trucks (pounds)	0	0	11	27

**Table B-16-10 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (GM), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	32	12	10	10
Mass Reduction Level 2 (%)	5	1	0	0
Mass Reduction Level 3 (%)	58	58	62	62
Mass Reduction Level 4 (%)	4	28	28	28
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,056	4,001	4,006	4,010
Diff. from Baseline - Fleet (pounds)	0	54	50	46
Avg Curb Weight - Passenger Car (pounds)	3,229	3,148	3,130	3,130
Diff. from Baseline - Passenger Car (pounds)	0	81	100	100
Avg Curb Weight - Light Truck (pounds)	4,533	4,481	4,490	4,490
Diff. from Baseline - Light Trucks (pounds)	0	52	42	43

Table B-16-11 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Honda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	7	7	7	7
Mass Reduction Level 2 (%)	23	23	4	4
Mass Reduction Level 3 (%)	71	70	68	68
Mass Reduction Level 4 (%)	0	0	22	21
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,404	3,414	3,376	3,381
Diff. from Baseline - Fleet (pounds)	0	-10	28	23
Avg Curb Weight - Passenger Car (pounds)	3,095	3,098	3,053	3,054
Diff. from Baseline - Passenger Car (pounds)	0	-2	43	41
Avg Curb Weight - Light Truck (pounds)	3,979	3,979	3,938	3,938
Diff. from Baseline - Light Trucks (pounds)	0	0	41	41

**Table B-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	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	2	0	0	0
Mass Reduction Level 2 (%)	23	6	6	6
Mass Reduction Level 3 (%)	62	50	40	43
Mass Reduction Level 4 (%)	14	44	54	51
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,283	3,242	3,235	3,242
Diff. from Baseline - Fleet (pounds)	0	41	48	41
Avg Curb Weight - Passenger Car (pounds)	3,195	3,147	3,137	3,144
Diff. from Baseline - Passenger Car (pounds)	0	48	57	51
Avg Curb Weight - Light Truck (pounds)	4,184	4,184	4,184	4,184
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0

**Table B-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	3
Mass Reduction Level 0 (%)	23	0	0	0
Mass Reduction Level 1 (%)	32	39	39	17
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	44	49	28	34
Mass Reduction Level 4 (%)	1	13	33	49
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,587	3,522	3,501	3,456
Diff. from Baseline - Fleet (pounds)	0	65	86	132
Avg Curb Weight - Passenger Car (pounds)	3,408	3,354	3,318	3,245
Diff. from Baseline - Passenger Car (pounds)	0	54	90	162
Avg Curb Weight - Light Truck (pounds)	3,989	3,881	3,881	3,881
Diff. from Baseline - Light Trucks (pounds)	0	108	108	108

**Table B-16-14 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (JLR), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	12	12	12	12
Mass Reduction Level 1 (%)	13	13	13	13
Mass Reduction Level 2 (%)	36	36	36	36
Mass Reduction Level 3 (%)	9	9	9	9
Mass Reduction Level 4 (%)	30	30	30	30
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,386	4,389	4,391	4,392
Diff. from Baseline - Fleet (pounds)	0	-3	-5	-6
Avg Curb Weight - Passenger Car (pounds)	3,483	3,483	3,483	3,483
Diff. from Baseline - Passenger Car (pounds)	0	0	0	0
Avg Curb Weight - Light Truck (pounds)	4,445	4,445	4,445	4,445
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0

Table B-16-15 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Mazda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	51	9	9	9
Mass Reduction Level 1 (%)	10	52	0	0
Mass Reduction Level 2 (%)	2	0	0	0
Mass Reduction Level 3 (%)	33	35	23	23
Mass Reduction Level 4 (%)	0	0	64	64
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	4	4	4	3
Avg Curb Weight - Fleet (pounds)	3,484	3,432	3,279	3,281
Diff. from Baseline - Fleet (pounds)	0	52	205	203
Avg Curb Weight - Passenger Car (pounds)	3,254	3,218	3,101	3,102
Diff. from Baseline - Passenger Car (pounds)	0	36	153	152
Avg Curb Weight - Light Truck (pounds)	3,749	3,671	3,475	3,475
Diff. from Baseline - Light Trucks (pounds)	0	78	275	275

Table B-16-16 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Mitsubishi), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	79	80	0	0
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	21	20	100	0
Mass Reduction Level 4 (%)	0	0	0	100
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	2,989	2,998	2,909	2,800
Diff. from Baseline - Fleet (pounds)	0	-9	80	189
Avg Curb Weight - Passenger Car (pounds)	2,705	2,718	2,658	2,560
Diff. from Baseline - Passenger Car (pounds)	0	-13	48	145
Avg Curb Weight - Light Truck (pounds)	3,267	3,267	3,146	3,025
Diff. from Baseline - Light Trucks (pounds)	0	0	121	242

Table B-16-17 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	2	2	2	2
Mass Reduction Level 1 (%)	42	38	39	15
Mass Reduction Level 2 (%)	42	6	6	6
Mass Reduction Level 3 (%)	15	54	9	15
Mass Reduction Level 4 (%)	0	0	45	58
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	4
Avg Curb Weight - Fleet (pounds)	3,486	3,465	3,411	3,348
Diff. from Baseline - Fleet (pounds)	0	21	74	137
Avg Curb Weight - Passenger Car (pounds)	3,232	3,200	3,131	3,078
Diff. from Baseline - Passenger Car (pounds)	0	32	101	154
Avg Curb Weight - Light Truck (pounds)	4,208	4,192	4,166	4,065
Diff. from Baseline - Light Trucks (pounds)	0	15	42	143

Table B-16-18 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Subaru), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0
Mass Reduction Level 2 (%)	93	93	94	94
Mass Reduction Level 3 (%)	6	6	6	6
Mass Reduction Level 4 (%)	1	1	1	1
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,546	3,551	3,554	3,556
Diff. from Baseline - Fleet (pounds)	0	-5	-8	-10
Avg Curb Weight - Passenger Car (pounds)	3,218	3,218	3,218	3,218
Diff. from Baseline - Passenger Car (pounds)	0	0	0	0
Avg Curb Weight - Light Truck (pounds)	3,676	3,676	3,676	3,676
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0

**Table B-16-19 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Tesla), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	0	0	0	0
Mass Reduction Level 1 (%)	0	0	0	0
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	15	15	15	15
Mass Reduction Level 4 (%)	85	85	85	85
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,303	4,308	4,311	4,313
Diff. from Baseline - Fleet (pounds)	0	-5	-8	-10
Avg Curb Weight - Passenger Car (pounds)	4,276	4,279	4,282	4,283
Diff. from Baseline - Passenger Car (pounds)	0	-3	-6	-8
Avg Curb Weight - Light Truck (pounds)	5,553	5,553	5,553	5,553
Diff. from Baseline - Light Trucks (pounds)	0	0	0	0

Table B-16-20 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Toyota), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	35	7	7	7
Mass Reduction Level 1 (%)	17	45	45	44
Mass Reduction Level 2 (%)	47	0	0	0
Mass Reduction Level 3 (%)	1	1	1	1
Mass Reduction Level 4 (%)	0	47	47	49
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,679	3,561	3,569	3,572
Diff. from Baseline - Fleet (pounds)	0	117	110	106
Avg Curb Weight - Passenger Car (pounds)	3,266	3,126	3,127	3,123
Diff. from Baseline - Passenger Car (pounds)	0	140	139	142
Avg Curb Weight - Light Truck (pounds)	4,317	4,206	4,206	4,206
Diff. from Baseline - Light Trucks (pounds)	0	111	111	111

Table B-16-21 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	25	0	0	0
Mass Reduction Level 1 (%)	18	18	18	19
Mass Reduction Level 2 (%)	0	0	0	0
Mass Reduction Level 3 (%)	56	81	81	81
Mass Reduction Level 4 (%)	0	0	0	0
Mass Reduction Level 5 (%)	0	0	0	0
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	4,158	4,091	4,095	4,098
Diff. from Baseline - Fleet (pounds)	0	67	63	60
Avg Curb Weight - Passenger Car (pounds)	3,908	3,731	3,733	3,734
Diff. from Baseline - Passenger Car (pounds)	0	176	175	174
Avg Curb Weight - Light Truck (pounds)	4,265	4,241	4,242	4,243
Diff. from Baseline - Light Trucks (pounds)	0	25	23	22

**Table B-16-22 - Mass Reduction Penetration Rate and Curb Weights for Manufacturer (VWA), MY 2029
Total Fleet by Alternative**

Alternative	0 (Baseline)	1	2	3
Mass Reduction Level 0 (%)	1	1	1	1
Mass Reduction Level 1 (%)	40	30	30	30
Mass Reduction Level 2 (%)	23	0	0	0
Mass Reduction Level 3 (%)	32	66	62	62
Mass Reduction Level 4 (%)	2	2	5	5
Mass Reduction Level 5 (%)	1	1	1	1
Mass Reduction Level 6 (%)	0	0	0	0
Avg Curb Weight - Fleet (pounds)	3,662	3,646	3,649	3,654
Diff. from Baseline - Fleet (pounds)	0	16	14	9
Avg Curb Weight - Passenger Car (pounds)	3,348	3,284	3,278	3,278
Diff. from Baseline - Passenger Car (pounds)	0	63	70	69
Avg Curb Weight - Light Truck (pounds)	3,996	4,010	4,010	4,010
Diff. from Baseline - Light Trucks (pounds)	0	-14	-14	-14

17. Electrification Rates

Table B-17-1 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	5.4	11.2	17.0	17.7
Strong Hybrid Powertrains Total	4.9	6.8	7.5	9.2
Plug-In Hybrid Powertrains	0.2	0.4	0.4	0.7
Battery Electric Vehicles (BEVs)	6.0	7.7	11.2	14.1
BEV 200 Mile Range	3.0	3.6	3.8	3.9
BEV 300 Mile Range	2.7	3.8	7.1	10.0
BEV 400 Mile Range	0.3	0.3	0.3	0.3
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-2 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Passenger Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	3.7	4.5	8.5	11.8
Strong Hybrid Powertrains Total	3.4	4.2	4.3	4.8
Plug-In Hybrid Powertrains	0.1	0.5	0.5	1.3
Battery Electric Vehicles (BEVs)	8.9	11.3	16.1	19.2
BEV 200 Mile Range	4.2	4.9	5.5	6.0
BEV 300 Mile Range	4.3	5.9	10.2	12.7
BEV 400 Mile Range	0.4	0.4	0.5	0.5
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-3 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Light Truck Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	7.2	17.7	25.0	23.2
Strong Hybrid Powertrains Total	6.5	9.4	10.7	13.3
Plug-In Hybrid Powertrains	0.1	0.1	0.1	0.2
Battery Electric Vehicles (BEVs)	3.1	4.1	6.5	9.4
BEV 200 Mile Range	1.9	2.3	2.2	1.9
BEV 300 Mile Range	1.1	1.7	4.1	7.4
BEV 400 Mile Range	0.1	0.1	0.1	0.1
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-4 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Domestic Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.1	0.6	3.7	9.7
Strong Hybrid Powertrains Total	2.7	3.1	3.2	5.6
Plug-In Hybrid Powertrains	0.3	0.3	0.3	1.5
Battery Electric Vehicles (BEVs)	12.4	15.9	19.7	21.8
BEV 200 Mile Range	4.8	5.9	6.7	6.4
BEV 300 Mile Range	6.6	9.1	12.1	14.5
BEV 400 Mile Range	0.9	0.9	0.9	1.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-5 - Electrification Rates (%) for Manufacturer (Total), MY 2029 Imported Car Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	7.0	8.1	12.9	13.8
Strong Hybrid Powertrains Total	3.9	5.1	5.3	4.0
Plug-In Hybrid Powertrains	0.0	0.7	0.7	1.2
Battery Electric Vehicles (BEVs)	5.7	7.1	12.8	16.7
BEV 200 Mile Range	3.6	4.1	4.4	5.7
BEV 300 Mile Range	2.1	3.1	8.4	11.0
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-6 - Electrification Rates (%) for Manufacturer (BMW), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	15.5	28.1	46.4	45.7
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	10.2	8.0	11.1	14.9
BEV 200 Mile Range	3.5	3.8	3.7	5.7
BEV 300 Mile Range	6.7	4.2	7.4	9.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-7 - Electrification Rates (%) for Manufacturer (Daimler), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	40.0	65.4	60.8	51.6
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.5	0.5	0.5	2.0
Battery Electric Vehicles (BEVs)	3.6	8.4	12.8	18.9
BEV 200 Mile Range	2.8	3.0	3.0	3.0
BEV 300 Mile Range	0.1	4.7	9.0	14.9
BEV 400 Mile Range	0.7	0.7	0.7	0.9
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-8 - Electrification Rates (%) for Manufacturer (FCA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	10.1	18.2	18.0	18.0
Strong Hybrid Powertrains Total	0.0	0.1	0.2	0.1
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	4.4	5.7	6.7	7.4
BEV 200 Mile Range	2.9	2.9	2.9	2.9
BEV 300 Mile Range	1.4	2.8	3.8	4.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-9 - Electrification Rates (%) for Manufacturer (Ford), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	12.7	25.6	46.6	43.8
Strong Hybrid Powertrains Total	9.6	9.2	9.4	9.3
Plug-In Hybrid Powertrains	0.7	0.7	0.7	0.7
Battery Electric Vehicles (BEVs)	4.4	8.1	11.0	14.3
BEV 200 Mile Range	3.2	3.1	3.1	3.1
BEV 300 Mile Range	1.2	5.0	7.9	11.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-10 - Electrification Rates (%) for Manufacturer (GM), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	1.4	15.7	16.8	23.0
Strong Hybrid Powertrains Total	4.3	17.2	15.0	23.2
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.2	6.2	12.0	15.3
BEV 200 Mile Range	2.6	2.9	2.9	3.3
BEV 300 Mile Range	2.7	3.2	9.1	12.0
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-11 - Electrification Rates (%) for Manufacturer (Honda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	1.2	14.7	12.4
Strong Hybrid Powertrains Total	3.5	2.8	4.2	9.4
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	5.0	5.4	9.1	13.0
BEV 200 Mile Range	3.1	3.6	2.8	2.9
BEV 300 Mile Range	1.9	1.8	6.3	10.1
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-12 - Electrification Rates (%) for Manufacturer (Hyundai Kia-H), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.1	11.0	14.6
Strong Hybrid Powertrains Total	0.5	2.2	8.5	7.5
Plug-In Hybrid Powertrains	0.0	0.0	0.0	1.2
Battery Electric Vehicles (BEVs)	4.0	8.1	13.8	18.4
BEV 200 Mile Range	2.1	5.0	4.6	3.1
BEV 300 Mile Range	1.9	3.1	9.2	15.4
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-13 - Electrification Rates (%) for Manufacturer (Hyundai Kia-K), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.6	1.3	1.0
Strong Hybrid Powertrains Total	0.8	1.5	9.1	17.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.9	3.6	9.4	12.2
BEV 200 Mile Range	2.5	3.0	3.0	3.0
BEV 300 Mile Range	0.4	0.6	6.4	9.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-14 - Electrification Rates (%) for Manufacturer (JLR), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	25.2	39.2	40.2	40.1
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.7	1.2	1.2	1.2
Battery Electric Vehicles (BEVs)	4.0	6.1	6.3	6.4
BEV 200 Mile Range	2.6	4.3	4.3	4.5
BEV 300 Mile Range	1.4	1.8	1.9	1.9
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-15 - Electrification Rates (%) for Manufacturer (Mazda), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	18.9	23.0
Strong Hybrid Powertrains Total	0.0	3.5	3.4	5.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	1.7
Battery Electric Vehicles (BEVs)	5.2	5.0	5.0	7.1
BEV 200 Mile Range	4.1	4.0	4.0	3.9
BEV 300 Mile Range	1.1	1.0	1.0	3.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-16 - Electrification Rates (%) for Manufacturer (Mitsubishi), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	0.0	9.5
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	1.6	1.6	3.9	5.7
BEV 200 Mile Range	0.5	0.5	2.8	3.5
BEV 300 Mile Range	1.1	1.1	1.1	2.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-17 - Electrification Rates (%) for Manufacturer (Nissan), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	0.0	5.3
Strong Hybrid Powertrains Total	0.0	0.0	4.7	0.6
Plug-In Hybrid Powertrains	0.0	0.0	0.0	3.5
Battery Electric Vehicles (BEVs)	1.8	4.5	9.6	13.6
BEV 200 Mile Range	1.4	4.0	4.0	4.4
BEV 300 Mile Range	0.5	0.5	5.7	9.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-18 - Electrification Rates (%) for Manufacturer (Subaru), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.3	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	2.3	2.3	4.0	4.6
BEV 200 Mile Range	0.1	0.1	1.7	2.4
BEV 300 Mile Range	2.2	2.2	2.2	2.2
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-19 - Electrification Rates (%) for Manufacturer (Tesla), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	0.0	0.0
Strong Hybrid Powertrains Total	0.0	0.0	0.0	0.0
Plug-In Hybrid Powertrains	0.0	0.0	0.0	0.0
Battery Electric Vehicles (BEVs)	100.0	100.0	100.0	100.0
BEV 200 Mile Range	25.3	25.2	25.2	25.1
BEV 300 Mile Range	60.2	59.9	59.8	59.7
BEV 400 Mile Range	14.5	14.8	15.1	15.2
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-20 - Electrification Rates (%) for Manufacturer (Toyota), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	0.0	3.0	1.8
Strong Hybrid Powertrains Total	12.6	9.0	9.1	7.2
Plug-In Hybrid Powertrains	0.0	1.4	1.4	1.4
Battery Electric Vehicles (BEVs)	3.6	6.0	8.6	12.3
BEV 200 Mile Range	3.0	3.2	4.6	4.4
BEV 300 Mile Range	0.6	2.7	4.0	7.8
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-21 - Electrification Rates (%) for Manufacturer (Volvo), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	0.0	5.1	11.8	8.3
Strong Hybrid Powertrains Total	33.1	32.3	34.2	36.2
Plug-In Hybrid Powertrains	1.8	1.7	1.6	1.6
Battery Electric Vehicles (BEVs)	8.2	9.1	10.5	11.1
BEV 200 Mile Range	2.9	2.8	2.8	2.8
BEV 300 Mile Range	5.3	6.3	7.7	8.4
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

Table B-17-22 - Electrification Rates (%) for Manufacturer (VWA), MY 2029 Total Fleet by Alternative

Alternative	0 (Baseline)	1	2	3
Strong Hybrid	29.9	23.0	22.5	20.9
Strong Hybrid Powertrains Total	21.8	27.1	22.6	23.6
Plug-In Hybrid Powertrains	0.2	0.3	0.3	0.5
Battery Electric Vehicles (BEVs)	7.2	7.4	10.7	12.2
BEV 200 Mile Range	4.2	4.2	5.7	5.7
BEV 300 Mile Range	3.0	3.2	5.0	6.5
BEV 400 Mile Range	0.0	0.0	0.0	0.0
BEV 500 Mile Range	0.0	0.0	0.0	0.0
Fuel Cell Vehicles (FCVs)	0.0	0.0	0.0	0.0

18. Required and Achieved CAFE Levels, Comparison

Table B-18-1 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2

Model Year	Total		
	Required	Achieved	Difference
2020	35.4	34.3	-1.1
2021	36.0	35.9	-0.2
2022	36.8	38.0	1.2
2023	37.4	40.0	2.6
2024	40.7	42.6	1.9
2025	44.3	44.7	0.4
2026	48.1	47.2	-0.9
2027	48.1	48.0	-0.2
2028	48.2	48.7	0.5
2029	48.2	49.2	0.9

Table B-18-2 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2

Model Year	Total		
	Required	Achieved	Difference
2020	43.3	41.7	-1.6
2021	43.9	43.4	-0.5
2022	44.6	46.2	1.6
2023	45.2	48.8	3.5
2024	49.2	52.6	3.4
2025	53.4	55.7	2.3
2026	58.1	58.7	0.6
2027	58.1	59.6	1.5
2028	58.1	60.7	2.6
2029	58.1	61.4	3.3

Table B-18-3 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2

Model Year	Total		
	Required	Achieved	Difference
2020	31.0	30.2	-0.8
2021	31.5	31.5	0.0
2022	31.9	32.9	1.0
2023	32.4	34.5	2.1
2024	35.1	36.3	1.1
2025	38.2	37.8	-0.4
2026	41.5	39.9	-1.6
2027	41.5	40.6	-0.9
2028	41.5	41.1	-0.5
2029	41.5	41.3	-0.2

Table B-18-4 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2, 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	34.6	-3.1	35.6	31.5	-4.1	31.3	28.4	-2.9	31.8	31.6	-0.2
2021	38.4	36.3	-2.1	36.3	33.5	-2.8	31.7	29.1	-2.6	32.4	33.0	0.6
2022	39.2	39.3	0.1	37.0	34.7	-2.3	32.3	31.2	-1.1	33.0	35.1	2.2
2023	39.9	41.3	1.5	37.6	36.5	-1.1	32.8	33.3	0.5	33.6	38.7	5.2
2024	43.5	43.2	-0.3	41.0	37.9	-3.1	35.7	33.7	-2.0	36.4	39.9	3.5
2025	47.3	46.5	-0.8	44.6	39.6	-5.1	38.8	33.9	-4.9	39.6	40.3	0.7
2026	51.4	48.1	-3.3	48.5	40.9	-7.6	42.2	35.0	-7.2	43.0	42.7	-0.4
2027	51.4	51.4	0.0	48.5	41.4	-7.1	42.2	35.7	-6.5	43.0	43.3	0.3
2028	51.5	51.5	0.0	48.6	45.5	-3.1	42.2	36.9	-5.3	43.1	43.5	0.4
2029	51.6	51.7	0.1	48.6	45.9	-2.7	42.2	38.3	-3.9	43.1	43.8	0.7

Table B-18-5 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2, 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	40.3	1.8	41.6	37.7	-3.9	38.9	36.3	-2.6
2021	33.2	32.4	-0.8	39.3	41.3	2.0	42.3	39.0	-3.3	39.7	40.6	0.9
2022	33.9	33.9	0.0	40.1	43.9	3.9	43.1	42.1	-0.9	40.5	41.4	0.9
2023	34.4	34.4	0.0	40.8	45.0	4.3	43.8	44.0	0.2	41.3	41.9	0.6
2024	37.2	37.1	-0.1	44.4	46.7	2.3	47.6	47.8	0.1	45.0	48.2	3.2
2025	40.5	40.5	0.0	48.3	49.3	1.0	51.8	50.7	-1.0	48.9	50.2	1.3
2026	44.0	44.0	0.0	52.5	50.8	-1.7	56.2	56.4	0.1	53.1	52.4	-0.8
2027	44.0	44.7	0.7	52.5	52.1	-0.4	56.2	56.9	0.6	53.1	53.6	0.5
2028	44.1	44.8	0.8	52.6	52.8	0.3	56.3	57.1	0.9	53.2	53.9	0.7
2029	44.1	44.9	0.8	52.6	53.0	0.3	56.3	57.2	1.0	53.3	54.0	0.7

Table B-18-6 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2, 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	36.4	-2.3	40.7	38.7	-2.0	39.2	37.6	-1.6
2021	33.1	30.1	-3.1	39.3	37.7	-1.6	41.3	39.4	-1.9	39.9	40.1	0.2
2022	33.7	31.6	-2.0	40.0	38.7	-1.3	42.1	39.8	-2.3	40.6	42.3	1.7
2023	34.2	33.6	-0.6	40.7	43.7	3.0	42.7	40.1	-2.6	41.3	44.9	3.5
2024	37.3	35.3	-1.9	44.3	44.6	0.2	46.6	40.3	-6.3	45.0	48.5	3.5
2025	40.5	35.9	-4.6	48.2	50.8	2.6	50.6	55.9	5.3	48.9	51.7	2.7
2026	44.0	37.4	-6.6	52.3	53.7	1.4	55.0	56.0	1.0	53.2	52.8	-0.4
2027	44.0	38.3	-5.6	52.3	53.7	1.4	55.0	56.0	1.0	53.2	53.2	0.1
2028	44.0	38.4	-5.6	52.4	53.8	1.4	55.1	56.0	1.0	53.2	54.5	1.3
2029	44.0	39.1	-4.9	52.4	54.0	1.6	55.1	56.1	1.0	53.3	54.8	1.5

Table B-18-7 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2, 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	38.7	1.6	40.5	720.6	680.1	37.1	36.7	-0.5	34.3	33.1	-1.2
2021	37.7	39.9	2.2	40.4	747.7	707.3	37.9	38.1	0.2	34.9	33.2	-1.6
2022	38.3	42.4	4.1	41.1	750.3	709.2	38.6	40.1	1.5	35.5	33.4	-2.0
2023	39.0	46.3	7.3	41.8	755.3	713.5	39.3	42.1	2.8	36.1	41.0	5.0
2024	42.5	49.2	6.7	45.4	756.2	710.8	42.9	47.5	4.6	39.2	41.2	2.0
2025	46.2	50.8	4.6	49.3	756.4	707.1	46.7	48.1	1.4	42.7	42.7	0.0
2026	50.2	53.1	2.9	53.6	756.6	703.0	50.7	51.9	1.1	46.3	43.7	-2.6
2027	50.2	53.3	3.0	53.6	756.6	703.0	50.7	52.4	1.6	46.3	47.5	1.2
2028	50.3	53.3	3.0	53.6	757.2	703.6	50.8	53.2	2.4	46.3	47.6	1.2
2029	50.3	53.4	3.1	53.6	757.5	703.9	50.9	53.6	2.7	46.4	47.6	1.2

Table B-18-8 - Required and Achieved CAFE Levels (mpg) for Total Fleet for Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	37.1	33.1	-4.0	35.4	34.3	-1.1
2021	37.9	34.9	-3.0	36.0	35.9	-0.2
2022	38.7	36.8	-1.9	36.8	38.0	1.2
2023	39.4	38.0	-1.4	37.4	40.0	2.6
2024	43.0	40.7	-2.3	40.7	42.6	1.9
2025	46.7	45.9	-0.8	44.3	44.7	0.4
2026	50.8	48.3	-2.5	48.1	47.2	-0.9
2027	50.8	49.2	-1.6	48.1	48.0	-0.2
2028	50.9	50.2	-0.6	48.2	48.7	0.5
2029	50.9	50.4	-0.5	48.2	49.2	0.9

**Table B-18-9 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2,
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	36.6	-5.9	41.4	33.9	-7.5	41.6	30.7	-10.9	42.2	36.9	-5.3
2021	43.1	38.4	-4.7	42.0	36.9	-5.1	42.0	34.5	-7.5	42.8	37.3	-5.5
2022	43.8	42.2	-1.6	42.7	38.7	-4.0	42.5	35.0	-7.5	43.5	42.9	-0.6
2023	44.4	44.4	0.0	43.3	39.4	-3.9	43.0	36.7	-6.3	44.1	57.5	13.4
2024	48.3	47.3	-1.0	47.1	42.5	-4.6	46.8	37.4	-9.4	47.9	57.4	9.4
2025	52.5	52.5	0.0	51.2	44.0	-7.2	50.8	37.5	-13.3	52.2	59.2	7.1
2026	57.1	55.2	-1.9	55.6	44.3	-11.3	55.2	39.8	-15.5	56.7	61.1	4.4
2027	57.1	57.1	0.0	55.6	44.9	-10.7	55.2	41.2	-14.0	56.7	61.3	4.6
2028	57.1	57.1	0.0	55.6	54.8	-0.8	55.1	43.5	-11.7	56.7	61.2	4.5
2029	57.1	57.3	0.2	55.6	55.6	0.0	55.1	54.0	-1.2	56.7	61.4	4.7

**Table B-18-10 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2,
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	40.0	-3.9	43.6	45.0	1.4	43.3	39.1	-4.3	44.0	41.4	-2.6
2021	44.5	41.2	-3.3	44.3	45.9	1.6	44.0	40.6	-3.5	44.7	45.8	1.1
2022	45.2	43.6	-1.6	45.0	48.4	3.4	44.7	44.3	-0.5	45.4	47.0	1.6
2023	45.8	45.2	-0.6	45.6	50.2	4.6	45.5	45.8	0.3	46.1	47.2	1.1
2024	49.8	49.2	-0.6	49.6	51.5	1.9	49.4	50.3	0.9	50.1	51.2	1.1
2025	54.2	53.9	-0.3	53.9	54.1	0.2	53.7	53.9	0.2	54.5	54.5	0.0
2026	58.9	58.5	-0.4	58.6	57.1	-1.5	58.3	58.5	0.2	59.2	58.3	-0.9
2027	58.9	60.2	1.3	58.6	57.9	-0.7	58.3	59.1	0.8	59.2	59.2	0.0
2028	58.9	60.3	1.4	58.6	58.6	0.0	58.3	59.4	1.0	59.2	59.6	0.4
2029	58.9	60.3	1.4	58.6	58.7	0.1	58.3	59.5	1.1	59.2	59.7	0.5

**Table B-18-11 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2,
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	38.6	-5.4	46.5	42.3	-4.2	43.2	41.7	-1.5
2021	42.7	36.9	-5.8	44.6	41.3	-3.3	47.2	44.0	-3.2	43.9	43.3	-0.6
2022	43.3	37.0	-6.3	45.2	43.1	-2.1	48.0	44.6	-3.4	44.5	45.4	1.0
2023	44.0	38.7	-5.3	45.9	48.3	2.3	48.8	45.0	-3.8	45.1	48.3	3.1
2024	47.8	47.8	0.0	49.9	49.6	-0.3	53.1	45.3	-7.8	49.1	53.3	4.2
2025	52.0	47.8	-4.2	54.3	56.8	2.5	57.7	64.5	6.8	53.4	57.9	4.5
2026	56.5	47.8	-8.7	59.0	59.3	0.3	62.7	64.6	1.9	58.0	58.1	0.1
2027	56.5	51.0	-5.5	59.0	59.3	0.3	62.7	64.6	1.9	58.0	58.5	0.5
2028	56.5	51.3	-5.2	59.0	59.4	0.4	62.8	64.7	1.9	58.0	60.1	2.1
2029	56.5	55.6	-0.9	59.0	59.9	0.9	62.8	64.8	2.0	58.0	60.1	2.1

**Table B-18-12 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2,
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	725.7	684.8	43.6	46.0	2.4	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	35.8	-5.7
2022	46.2	44.3	-1.9	41.4	754.7	713.3	45.0	49.1	4.2	42.2	36.0	-6.2
2023	46.9	46.0	-0.9	42.1	756.0	713.9	45.6	49.8	4.1	42.8	40.0	-2.7
2024	51.0	50.9	-0.1	45.7	756.9	711.2	49.7	56.1	6.4	46.5	40.3	-6.2
2025	55.5	51.2	-4.3	49.7	757.1	707.4	54.0	57.1	3.2	50.5	42.5	-8.0
2026	60.3	60.3	0.0	54.0	757.3	703.3	58.6	58.7	0.1	54.9	45.4	-9.5
2027	60.3	60.3	0.0	54.0	757.3	703.3	58.6	59.8	1.2	54.9	54.9	0.0
2028	60.3	60.3	0.0	54.0	757.9	703.9	58.6	60.2	1.6	54.9	55.0	0.1
2029	60.3	60.3	0.0	54.0	758.2	704.2	58.6	60.2	1.6	54.9	55.0	0.1

**Table B-18-13 - Required and Achieved CAFE Levels (mpg) for Passenger Car Fleet for Alternative 2,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	43.6	37.6	-6.0	43.3	41.7	-1.6
2021	44.3	38.6	-5.7	43.9	43.4	-0.5
2022	45.0	40.7	-4.3	44.6	46.2	1.6
2023	45.7	42.4	-3.3	45.2	48.8	3.5
2024	49.7	47.8	-1.9	49.2	52.6	3.4
2025	54.0	51.9	-2.1	53.4	55.7	2.3
2026	58.7	56.2	-2.5	58.1	58.7	0.6
2027	58.7	56.4	-2.3	58.1	59.6	1.5
2028	58.7	59.0	0.2	58.1	60.7	2.6
2029	58.7	59.2	0.5	58.1	61.4	3.3

Table B-18-14 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2, 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	31.7	0.0	31.7	29.7	-2.0	30.1	28.1	-2.0	29.2	30.0	0.8
2021	32.2	33.1	0.9	32.2	30.8	-1.4	30.5	28.4	-2.1	29.7	31.6	1.9
2022	32.6	34.8	2.2	32.6	31.4	-1.2	31.0	30.6	-0.4	30.1	32.8	2.7
2023	33.1	36.3	3.2	33.1	33.9	0.8	31.5	32.8	1.3	30.6	34.2	3.6
2024	36.0	36.6	0.6	36.0	33.9	-2.1	34.2	33.1	-1.1	33.1	35.4	2.3
2025	39.2	37.6	-1.6	39.2	35.7	-3.5	37.2	33.3	-3.9	36.0	35.6	-0.4
2026	42.6	37.9	-4.7	42.6	37.7	-4.9	40.4	34.2	-6.2	39.1	37.9	-1.2
2027	42.6	42.5	-0.1	42.6	38.2	-4.4	40.4	34.8	-5.6	39.1	38.6	-0.5
2028	42.6	42.6	0.0	42.6	38.3	-4.3	40.4	35.9	-4.5	39.1	38.7	-0.4
2029	42.6	42.6	0.0	42.6	38.4	-4.2	40.4	36.3	-4.1	39.1	39.0	-0.1

**Table B-18-15 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2, 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	35.3	2.0	31.3	29.1	-2.2	32.8	30.3	-2.5
2021	29.5	29.3	-0.2	33.8	36.0	2.2	31.7	29.3	-2.4	33.3	34.0	0.7
2022	30.0	30.4	0.4	34.3	38.5	4.2	32.2	29.3	-2.9	33.9	34.1	0.2
2023	30.4	30.5	0.1	34.8	38.6	3.8	32.7	32.2	-0.5	34.4	34.4	0.0
2024	32.7	32.7	0.0	37.8	40.4	2.6	35.6	32.4	-3.2	37.4	43.1	5.7
2025	35.6	35.7	0.1	41.1	42.9	1.8	38.6	32.5	-6.1	40.6	43.3	2.7
2026	38.7	38.8	0.1	44.7	42.9	-1.8	42.0	42.0	0.0	44.1	43.5	-0.6
2027	38.7	39.2	0.5	44.7	44.6	-0.1	42.0	42.0	0.0	44.1	45.1	1.0
2028	38.7	39.3	0.6	44.7	45.2	0.5	42.0	42.0	0.0	44.1	45.1	1.0
2029	38.7	39.3	0.6	44.7	45.3	0.6	42.0	42.0	0.0	44.1	45.1	1.0

Table B-18-16 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2, 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	34.5	-0.3	36.8	36.1	-0.7	32.5	30.9	-1.6
2021	32.8	29.8	-3.0	35.3	34.8	-0.5	37.3	36.2	-1.1	33.0	34.3	1.3
2022	33.3	31.4	-1.9	35.8	35.1	-0.7	37.9	36.3	-1.6	33.5	36.1	2.6
2023	33.8	33.4	-0.4	36.4	39.8	3.4	38.4	36.5	-1.9	34.0	38.0	4.0
2024	36.8	34.8	-2.0	39.6	40.2	0.6	41.8	36.5	-5.3	37.0	39.2	2.2
2025	40.0	35.4	-4.6	43.0	45.6	2.6	45.4	49.8	4.4	40.2	40.3	0.1
2026	43.4	36.9	-6.5	46.7	48.8	2.1	49.4	49.8	0.4	43.7	42.5	-1.2
2027	43.4	37.8	-5.6	46.7	48.8	2.1	49.4	49.8	0.4	43.7	43.1	-0.6
2028	43.4	37.8	-5.6	46.7	48.8	2.1	49.4	49.8	0.4	43.7	43.7	0.0
2029	43.4	38.4	-5.0	46.7	48.8	2.1	49.4	49.8	0.4	43.7	44.2	0.5

Table B-18-17 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2, 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	38.8	3.4	30.6	588.5	557.9	31.8	29.8	-2.0	32.5	32.3	-0.2
2021	35.9	39.8	3.9	31.1	617.1	586.0	32.3	31.0	-1.3	33.0	32.4	-0.6
2022	36.4	41.9	5.5	31.6	617.1	585.5	32.7	32.4	-0.3	33.5	32.6	-0.9
2023	37.0	46.4	9.4	32.0	728.3	696.3	33.2	34.9	1.7	34.0	41.4	7.4
2024	40.2	48.7	8.5	34.8	728.3	693.5	36.1	39.2	3.1	36.9	41.6	4.7
2025	43.7	50.7	7.0	37.8	728.3	690.5	39.3	39.4	0.1	40.2	42.7	2.5
2026	47.5	51.0	3.5	41.1	728.3	687.2	42.7	44.6	1.9	43.6	43.0	-0.6
2027	47.5	51.2	3.7	41.1	728.3	687.2	42.7	44.6	1.9	43.6	45.1	1.5
2028	47.5	51.2	3.7	41.1	728.3	687.2	42.7	45.6	2.9	43.6	45.1	1.5
2029	47.5	51.3	3.8	41.1	728.3	687.2	42.7	46.3	3.6	43.6	45.1	1.5

Table B-18-18 - Required and Achieved CAFE Levels (mpg) for Light Truck Fleet for Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	33.5	30.5	-3.0	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	32.9	1.0
2023	35.1	34.8	-0.3	32.4	34.5	2.1
2024	38.2	35.8	-2.4	35.1	36.3	1.1
2025	41.5	41.4	-0.1	38.2	37.8	-0.4
2026	45.1	42.6	-2.5	41.5	39.9	-1.6
2027	45.1	43.9	-1.2	41.5	40.6	-0.9
2028	45.1	44.0	-1.1	41.5	41.1	-0.5
2029	45.1	44.0	-1.1	41.5	41.3	-0.2

**Table B-18-19 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2,
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	34.0	-7.3	42.5	37.2	-5.3
2022	0.0	0.0	0.0	0.0	0.0	0.0	41.8	34.1	-7.7	43.2	43.2	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	42.3	35.9	-6.4	43.8	54.4	10.6
2024	0.0	0.0	0.0	0.0	0.0	0.0	46.0	36.3	-9.7	47.6	54.3	6.7
2025	0.0	0.0	0.0	0.0	0.0	0.0	49.9	36.4	-13.5	51.8	56.1	4.3
2026	0.0	0.0	0.0	0.0	0.0	0.0	54.3	38.6	-15.7	56.3	57.9	1.6
2027	0.0	0.0	0.0	0.0	0.0	0.0	54.3	38.6	-15.7	56.3	58.1	1.8
2028	0.0	0.0	0.0	0.0	0.0	0.0	54.2	41.0	-13.2	56.3	58.0	1.7
2029	0.0	0.0	0.0	0.0	0.0	0.0	54.2	52.7	-1.5	56.3	58.2	1.9

**Table B-18-20 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2,
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	39.8	-3.1	43.2	44.7	1.5	47.3	52.4	5.1	0.0	0.0	0.0
2021	43.5	40.3	-3.2	43.9	45.7	1.8	48.0	52.5	4.5	0.0	0.0	0.0
2022	44.2	42.2	-2.0	44.6	47.8	3.2	48.7	53.0	4.3	0.0	0.0	0.0
2023	44.8	44.0	-0.8	45.2	50.0	4.8	49.5	64.5	15.0	0.0	0.0	0.0
2024	48.7	48.7	0.0	49.2	51.5	2.3	53.8	64.9	11.1	0.0	0.0	0.0
2025	53.0	54.5	1.5	53.5	53.3	-0.2	58.4	65.2	6.8	0.0	0.0	0.0
2026	57.6	59.1	1.5	58.1	56.9	-1.2	63.5	65.4	1.9	0.0	0.0	0.0
2027	57.6	59.3	1.7	58.1	57.7	-0.4	63.5	65.9	2.4	0.0	0.0	0.0
2028	57.6	59.4	1.8	58.1	58.1	0.0	63.5	65.9	2.4	0.0	0.0	0.0
2029	57.6	59.4	1.8	58.1	58.2	0.1	63.5	65.9	2.4	0.0	0.0	0.0

**Table B-18-21 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2,
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	38.5	-6.5	0.0	0.0	0.0	43.0	43.2	0.2
2021	0.0	0.0	0.0	45.7	38.9	-6.8	0.0	0.0	0.0	43.7	43.7	0.0
2022	0.0	0.0	0.0	46.4	39.2	-7.2	0.0	0.0	0.0	44.3	45.6	1.3
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	51.9	3.0
2025	0.0	0.0	0.0	55.6	63.3	7.7	0.0	0.0	0.0	53.2	57.7	4.5
2026	0.0	0.0	0.0	60.5	63.5	3.0	0.0	0.0	0.0	57.8	57.9	0.1
2027	0.0	0.0	0.0	60.5	63.5	3.0	0.0	0.0	0.0	57.8	58.2	0.4
2028	0.0	0.0	0.0	60.5	63.5	3.0	0.0	0.0	0.0	57.8	60.2	2.4
2029	0.0	0.0	0.0	60.5	63.5	3.0	0.0	0.0	0.0	57.8	60.2	2.4

**Table B-18-22 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2,
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	725.7	684.8	42.1	43.8	1.7	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	754.7	713.3	43.4	46.0	2.6	42.3	36.4	-5.9
2023	0.0	0.0	0.0	42.1	756.0	713.9	44.1	46.9	2.8	42.9	40.6	-2.3
2024	0.0	0.0	0.0	45.7	756.9	711.2	47.9	53.5	5.6	46.7	40.9	-5.8
2025	0.0	0.0	0.0	49.7	757.1	707.4	52.1	55.6	3.5	50.7	44.1	-6.6
2026	0.0	0.0	0.0	54.0	757.3	703.3	56.6	56.0	-0.6	55.1	44.2	-10.9
2027	0.0	0.0	0.0	54.0	757.3	703.3	56.6	58.0	1.4	55.1	55.1	0.0
2028	0.0	0.0	0.0	54.0	757.9	703.9	56.6	58.1	1.5	55.1	55.1	0.0
2029	0.0	0.0	0.0	54.0	758.2	704.2	56.6	58.1	1.5	55.1	55.1	0.0

**Table B-18-23 - Required and Achieved CAFE Levels (mpg) for Domestic Car Fleet for Alternative 2,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	41.2	33.9	-7.3	42.5	43.2	0.7
2021	41.9	34.5	-7.4	43.1	44.4	1.4
2022	42.7	34.8	-7.9	43.7	47.0	3.3
2023	43.4	35.7	-7.7	44.4	50.3	6.0
2024	47.2	41.3	-5.9	48.2	53.7	5.5
2025	51.3	41.4	-9.9	52.5	57.2	4.7
2026	55.8	44.2	-11.6	57.0	59.7	2.7
2027	55.8	44.2	-11.6	57.0	60.3	3.3
2028	55.8	55.8	0.0	57.0	61.4	4.4
2029	55.8	55.9	0.1	57.0	62.7	5.7

**Table B-18-24 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2,
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	36.6	-5.9	41.4	33.9	-7.5	44.8	34.4	-10.4	48.0	38.8	-9.2
2021	43.1	38.4	-4.7	42.0	36.9	-5.1	45.5	36.8	-8.7	48.7	38.8	-9.9
2022	43.8	42.2	-1.6	42.7	38.7	-4.0	46.1	40.0	-6.1	49.5	39.0	-10.5
2023	44.4	44.4	0.0	43.3	39.4	-3.9	46.7	40.9	-5.8	50.2	1517.4	1467.2
2024	48.3	47.3	-1.0	47.1	42.5	-4.6	50.8	43.5	-7.3	54.6	1517.4	1462.8
2025	52.5	52.5	0.0	51.2	44.0	-7.2	55.2	43.7	-11.5	59.3	1517.4	1458.1
2026	57.1	55.2	-1.9	55.6	44.3	-11.3	60.0	46.2	-13.8	64.5	1517.4	1452.9
2027	57.1	57.1	0.0	55.6	44.9	-10.7	60.0	59.9	-0.1	64.5	1517.4	1452.9
2028	57.1	57.1	0.0	55.6	54.8	-0.8	59.9	60.5	0.6	64.5	1517.4	1452.9
2029	57.1	57.3	0.2	55.6	55.6	0.0	59.9	60.8	0.9	64.5	1517.4	1452.9

**Table B-18-25 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2,
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	40.4	-6.4	45.4	46.4	1.0	43.2	38.7	-4.5	44.0	41.4	-2.6
2021	47.5	43.7	-3.8	46.1	46.9	0.8	43.9	40.2	-3.7	44.7	45.8	1.1
2022	48.3	48.3	0.0	46.8	51.0	4.2	44.6	44.0	-0.6	45.4	47.0	1.6
2023	49.1	49.0	-0.1	47.4	51.3	3.9	45.3	45.2	-0.1	46.1	47.2	1.1
2024	53.3	50.8	-2.5	51.6	51.7	0.1	49.2	49.8	0.6	50.1	51.2	1.1
2025	58.0	52.2	-5.8	56.0	57.9	1.9	53.5	53.5	0.0	54.5	54.5	0.0
2026	63.0	56.9	-6.1	60.9	57.9	-3.0	58.1	58.2	0.1	59.2	58.3	-0.9
2027	63.0	63.0	0.0	60.9	58.8	-2.1	58.1	58.8	0.7	59.2	59.2	0.0
2028	63.0	63.1	0.1	60.9	60.9	0.0	58.1	59.1	1.0	59.2	59.6	0.4
2029	63.0	63.1	0.1	60.9	60.9	0.0	58.1	59.2	1.1	59.2	59.7	0.5

**Table B-18-26 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2,
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	38.6	-5.2	46.5	42.3	-4.2	43.6	38.2	-5.4
2021	42.7	36.9	-5.8	44.4	41.6	-2.8	47.2	44.0	-3.2	44.3	42.2	-2.1
2022	43.3	37.0	-6.3	45.1	43.7	-1.4	48.0	44.6	-3.4	45.0	45.0	0.0
2023	44.0	38.7	-5.3	45.8	48.8	3.0	48.8	45.0	-3.8	45.6	53.0	7.4
2024	47.8	47.8	0.0	49.8	50.3	0.5	53.1	45.3	-7.8	49.6	58.1	8.5
2025	52.0	47.8	-4.2	54.1	56.1	2.0	57.7	64.5	6.8	53.9	58.5	4.6
2026	56.5	47.8	-8.7	58.8	58.8	0.0	62.7	64.6	1.9	58.6	58.9	0.3
2027	56.5	51.0	-5.5	58.8	58.8	0.0	62.7	64.6	1.9	58.6	59.4	0.8
2028	56.5	51.3	-5.2	58.8	58.9	0.1	62.8	64.7	1.9	58.6	59.6	1.0
2029	56.5	55.6	-0.9	58.8	59.5	0.7	62.8	64.8	2.0	58.6	59.7	1.1

**Table B-18-27 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2,
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	46.9	2.7	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	35.3	-6.1
2022	46.2	44.3	-1.9	0.0	0.0	0.0	45.6	50.5	4.9	42.0	35.5	-6.5
2023	46.9	46.0	-0.9	0.0	0.0	0.0	46.3	51.0	4.7	42.6	39.4	-3.2
2024	51.0	50.9	-0.1	0.0	0.0	0.0	50.4	57.2	6.8	46.3	39.7	-6.6
2025	55.5	51.2	-4.3	0.0	0.0	0.0	54.8	57.8	3.0	50.3	40.9	-9.4
2026	60.3	60.3	0.0	0.0	0.0	0.0	59.5	59.9	0.4	54.7	46.9	-7.8
2027	60.3	60.3	0.0	0.0	0.0	0.0	59.5	60.6	1.1	54.7	54.7	0.0
2028	60.3	60.3	0.0	0.0	0.0	0.0	59.5	61.1	1.6	54.7	54.9	0.2
2029	60.3	60.3	0.0	0.0	0.0	0.0	59.5	61.1	1.6	54.7	54.9	0.2

**Table B-18-28 - Required and Achieved CAFE Levels (mpg) for Imported Car Fleet for Alternative 2,
Part 5 of 5**

Model Year	VWA			Total		
	Required	Achieved	Difference	Required	Achieved	Difference
2020	44.1	38.4	-5.7	44.0	40.4	-3.6
2021	44.8	39.5	-5.3	44.6	42.5	-2.1
2022	45.5	42.1	-3.4	45.3	45.5	0.2
2023	46.2	44.0	-2.2	46.0	47.4	1.4
2024	50.2	49.3	-0.9	50.0	51.5	1.5
2025	54.5	54.5	0.0	54.4	54.5	0.1
2026	59.3	59.3	0.0	59.1	57.7	-1.3
2027	59.3	59.5	0.2	59.1	59.0	-0.1
2028	59.3	59.6	0.3	59.1	60.1	1.0
2029	59.3	59.9	0.6	59.1	60.3	1.2

19. Regulatory Costs, Comparison

Table B-19-1 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	2.8	2.8	0.0
2021	5.1	5.1	0.0
2022	9.4	9.4	0.0
2023	12.6	15.1	2.5
2024	14.7	21.8	7.1
2025	16.6	27.7	11.1
2026	17.2	32.2	15.0
2027	16.8	31.2	14.5
2028	16.1	30.0	13.9
2029	15.7	28.6	12.9

Table B-19-2 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	1.6	1.6	0.0
2021	2.2	2.2	0.0
2022	4.0	4.0	0.0
2023	5.1	7.1	2.0
2024	6.0	9.9	3.9
2025	7.2	12.9	5.7
2026	7.5	14.8	7.3
2027	7.3	14.2	6.9
2028	7.0	13.8	6.7
2029	6.9	13.3	6.4

Table B-19-3 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	1.2	1.2	0.0
2021	3.0	3.0	0.0
2022	5.3	5.3	0.0
2023	7.5	8.0	0.5
2024	8.7	11.9	3.2
2025	9.4	14.9	5.4
2026	9.7	17.4	7.7
2027	9.5	17.0	7.6
2028	9.1	16.3	7.2
2029	8.8	15.4	6.6

**Table B-19-4 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2,
Part 1 of 5**

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.2	0.2	0.0	0.2	0.2	0.0	0.5	0.5	0.0	0.9	0.9	0.0
2022	0.3	0.3	0.0	0.4	0.4	0.0	1.4	1.4	0.0	1.7	1.7	0.0
2023	0.3	0.3	0.0	0.4	0.4	0.0	2.4	2.4	0.0	2.1	3.5	1.5
2024	0.4	0.4	0.1	0.4	0.6	0.1	2.4	2.7	0.2	2.3	3.6	1.3
2025	0.6	0.6	0.0	0.6	0.8	0.3	2.4	3.1	0.7	2.2	3.5	1.3
2026	0.7	0.7	0.0	0.6	1.0	0.4	2.4	3.8	1.4	2.1	3.9	1.8
2027	0.7	0.7	0.1	0.6	1.0	0.4	2.3	3.7	1.4	2.0	3.8	1.8
2028	0.6	0.7	0.1	0.6	1.0	0.4	2.3	3.6	1.3	1.8	3.6	1.7
2029	0.6	0.7	0.1	0.6	1.0	0.4	2.2	3.6	1.3	1.7	3.4	1.6

**Table B-19-5 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2,
Part 2 of 5**

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	0.7	0.7	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.2	0.2	0.0
2021	1.4	1.4	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.3	0.3	0.0
2022	1.8	1.8	0.0	0.4	0.4	0.0	0.5	0.5	0.0	0.3	0.3	0.0
2023	2.1	2.1	0.0	0.5	0.7	0.2	0.6	0.6	0.0	0.4	0.4	0.0
2024	2.3	3.4	1.1	0.6	1.1	0.5	0.7	0.9	0.2	0.6	1.0	0.4
2025	2.8	5.8	3.0	1.1	2.0	0.8	0.7	1.3	0.6	0.7	1.1	0.5
2026	2.8	6.9	4.1	1.3	2.2	0.9	0.8	2.0	1.2	0.7	1.4	0.8
2027	2.7	6.5	3.8	1.2	2.2	1.1	0.8	1.9	1.1	0.7	1.4	0.7
2028	2.6	6.1	3.5	1.1	2.2	1.1	0.8	1.8	1.1	0.7	1.4	0.7
2029	2.6	5.8	3.2	1.1	2.1	1.0	0.8	1.7	1.0	0.6	1.3	0.7

**Table B-19-6 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2,
Part 3 of 5**

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.1	0.0	0.5	0.5	0.0	0.1	0.1	0.0	0.6	1.1	0.6
2024	0.1	0.2	0.0	0.5	0.5	0.0	0.1	0.1	0.1	0.8	1.7	0.9
2025	0.2	0.3	0.1	0.5	0.7	0.2	0.1	0.2	0.1	0.9	2.3	1.3
2026	0.2	0.3	0.1	0.5	0.8	0.3	0.1	0.2	0.1	1.0	2.3	1.3
2027	0.2	0.3	0.1	0.5	0.8	0.3	0.1	0.2	0.1	0.9	2.2	1.3
2028	0.2	0.3	0.1	0.5	0.7	0.3	0.1	0.2	0.1	0.9	2.2	1.3
2029	0.2	0.3	0.1	0.4	0.7	0.3	0.1	0.2	0.1	0.9	2.1	1.2

**Table B-19-7 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2,
Part 4 of 5**

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.3	0.3	0.0	0.0	0.0	0.0
2022	0.4	0.4	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0
2023	0.8	0.9	0.2	0.0	0.0	0.0	1.0	1.2	0.2	0.2	0.2	0.0
2024	0.8	1.2	0.3	0.0	0.0	0.0	1.5	3.3	1.8	0.2	0.2	0.0
2025	0.9	1.3	0.4	0.0	0.0	0.0	1.6	3.4	1.8	0.2	0.2	0.0
2026	1.0	1.3	0.4	0.0	0.0	0.0	2.0	3.8	1.8	0.2	0.3	0.0
2027	1.0	1.3	0.4	0.0	0.0	0.0	1.9	3.6	1.8	0.2	0.3	0.0
2028	0.9	1.3	0.3	0.0	0.0	0.0	1.8	3.6	1.7	0.2	0.3	0.0
2029	0.9	1.2	0.3	0.0	0.0	0.0	1.8	3.3	1.5	0.2	0.2	0.0

**Table B-19-8 - Regulatory Costs (\$b) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2,
Part 5 of 5**

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	0.2	0.2	0.0	2.8	2.8	0.0
2021	0.2	0.2	0.0	5.1	5.1	0.0
2022	0.4	0.4	0.0	9.4	9.4	0.0
2023	0.5	0.5	0.0	12.6	15.1	2.5
2024	0.7	0.8	0.2	14.7	21.8	7.1
2025	1.0	1.1	0.0	16.6	27.7	11.1
2026	1.0	1.2	0.2	17.2	32.2	15.0
2027	1.0	1.2	0.2	16.8	31.2	14.5
2028	0.9	1.1	0.1	16.1	30.0	13.9
2029	0.9	1.0	0.1	15.7	28.6	12.9

Table B-19-9 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.0	0.2	0.2	0.0
2022	0.2	0.2	0.0	0.3	0.3	0.0	0.2	0.2	0.0	0.6	0.6	0.0
2023	0.2	0.2	0.0	0.3	0.3	0.0	0.3	0.3	0.0	0.8	2.2	1.5
2024	0.3	0.3	0.1	0.3	0.4	0.1	0.4	0.5	0.1	0.7	2.0	1.3
2025	0.4	0.5	0.0	0.3	0.5	0.2	0.4	0.6	0.2	0.7	2.0	1.3
2026	0.6	0.6	0.0	0.3	0.6	0.3	0.4	0.8	0.4	0.7	1.8	1.2
2027	0.5	0.5	0.0	0.3	0.6	0.2	0.4	0.7	0.4	0.6	1.7	1.1
2028	0.5	0.5	0.0	0.3	0.7	0.3	0.4	0.7	0.3	0.6	1.5	1.0
2029	0.5	0.5	0.0	0.3	0.6	0.3	0.5	0.9	0.5	0.6	1.4	0.9

Table B-19-10 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.3	0.3	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.1	0.1	0.0
2022	0.5	0.5	0.0	0.2	0.2	0.0	0.4	0.4	0.0	0.2	0.2	0.0
2023	0.7	0.7	0.0	0.3	0.5	0.2	0.5	0.5	0.0	0.2	0.2	0.0
2024	0.8	1.1	0.3	0.4	0.6	0.3	0.7	0.8	0.2	0.3	0.4	0.1
2025	1.1	1.8	0.6	0.7	1.1	0.4	0.7	1.3	0.6	0.4	0.5	0.2
2026	1.1	2.1	1.1	0.9	1.4	0.5	0.7	1.7	1.1	0.4	0.9	0.5
2027	1.0	2.0	1.0	0.8	1.4	0.6	0.7	1.7	1.0	0.4	0.8	0.5
2028	1.0	1.9	0.9	0.8	1.4	0.6	0.7	1.6	0.9	0.4	0.8	0.4
2029	0.9	1.8	0.9	0.7	1.3	0.5	0.6	1.5	0.9	0.4	0.8	0.4

Table B-19-11 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0
2023	0.0	0.0	0.0	0.4	0.4	0.0	0.1	0.1	0.0	0.3	0.7	0.4
2024	0.0	0.0	0.0	0.4	0.4	0.0	0.1	0.1	0.0	0.5	1.2	0.7
2025	0.0	0.0	0.0	0.4	0.5	0.1	0.1	0.1	0.1	0.6	1.7	1.1
2026	0.0	0.0	0.0	0.4	0.5	0.1	0.1	0.1	0.1	0.6	1.6	1.0
2027	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.6	1.5	0.9
2028	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.1	0.6	1.5	1.0
2029	0.0	0.0	0.0	0.3	0.5	0.1	0.0	0.1	0.1	0.6	1.5	0.9

Table B-19-12 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.2	0.2	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
2023	0.2	0.2	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0
2024	0.2	0.4	0.1	0.0	0.0	0.0	0.6	1.2	0.6	0.0	0.0	0.0
2025	0.2	0.4	0.2	0.0	0.0	0.0	0.7	1.4	0.6	0.0	0.0	0.0
2026	0.2	0.5	0.2	0.0	0.0	0.0	0.8	1.5	0.7	0.0	0.1	0.0
2027	0.2	0.4	0.2	0.0	0.0	0.0	0.8	1.5	0.7	0.0	0.1	0.0
2028	0.2	0.4	0.2	0.0	0.0	0.0	0.8	1.5	0.7	0.0	0.1	0.0
2029	0.2	0.4	0.2	0.0	0.0	0.0	0.8	1.4	0.6	0.0	0.1	0.0

Table B-19-13 - Regulatory Costs (\$b) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	0.1	0.1	0.0	1.6	1.6	0.0
2021	0.1	0.1	0.0	2.2	2.2	0.0
2022	0.2	0.2	0.0	4.0	4.0	0.0
2023	0.2	0.2	0.0	5.1	7.1	2.0
2024	0.3	0.4	0.1	6.0	9.9	3.9
2025	0.4	0.5	0.1	7.2	12.9	5.7
2026	0.4	0.6	0.2	7.5	14.8	7.3
2027	0.4	0.5	0.1	7.3	14.2	6.9
2028	0.4	0.5	0.1	7.0	13.8	6.7
2029	0.4	0.5	0.1	6.9	13.3	6.4

Table B-19-14 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.7	0.7	0.0
2022	0.1	0.1	0.0	0.1	0.1	0.0	1.2	1.2	0.0	1.1	1.1	0.0
2023	0.1	0.1	0.0	0.1	0.1	0.0	2.1	2.1	0.0	1.3	1.3	0.0
2024	0.1	0.1	0.0	0.1	0.2	0.0	2.1	2.2	0.2	1.6	1.6	0.0
2025	0.1	0.1	0.0	0.2	0.3	0.1	2.0	2.5	0.5	1.5	1.5	0.0
2026	0.1	0.1	0.0	0.3	0.4	0.2	2.0	3.1	1.1	1.4	2.1	0.7
2027	0.1	0.2	0.1	0.3	0.5	0.2	2.0	3.0	1.0	1.3	2.1	0.8
2028	0.1	0.2	0.1	0.3	0.4	0.1	1.9	2.9	1.0	1.3	2.0	0.8
2029	0.1	0.2	0.1	0.3	0.4	0.1	1.8	2.7	0.9	1.2	1.9	0.8

Table B-19-15 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2021	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
2022	1.2	1.2	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	0.2	0.2	0.0	0.1	0.1	0.0	0.2	0.2	0.0
2024	1.5	2.3	0.8	0.3	0.5	0.2	0.1	0.1	0.0	0.3	0.6	0.3
2025	1.7	4.0	2.4	0.4	0.8	0.4	0.1	0.1	0.0	0.3	0.6	0.3
2026	1.7	4.8	3.0	0.4	0.8	0.4	0.1	0.3	0.1	0.3	0.6	0.3
2027	1.7	4.5	2.8	0.4	0.9	0.5	0.1	0.3	0.1	0.3	0.6	0.3
2028	1.6	4.2	2.6	0.3	0.9	0.5	0.1	0.2	0.1	0.3	0.6	0.3
2029	1.7	4.0	2.3	0.3	0.8	0.5	0.1	0.2	0.1	0.3	0.5	0.3

Table B-19-16 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.1
2024	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.3	0.5	0.2
2025	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.6	0.2
2026	0.2	0.3	0.1	0.1	0.3	0.1	0.0	0.1	0.1	0.4	0.7	0.3
2027	0.2	0.3	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.7	0.3
2028	0.2	0.3	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.7	0.3
2029	0.2	0.3	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.6	0.3

Table B-19-17 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	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	0.5	0.5	0.0	0.0	0.0	0.0
2023	0.5	0.7	0.2	0.0	0.0	0.0	0.5	0.7	0.2	0.2	0.2	0.0
2024	0.6	0.8	0.2	0.0	0.0	0.0	0.8	2.1	1.2	0.2	0.2	0.0
2025	0.7	0.9	0.2	0.0	0.0	0.0	0.9	2.0	1.1	0.2	0.2	0.0
2026	0.7	0.9	0.1	0.0	0.0	0.0	1.2	2.3	1.1	0.2	0.2	0.0
2027	0.7	0.9	0.1	0.0	0.0	0.0	1.1	2.2	1.1	0.2	0.2	0.0
2028	0.7	0.8	0.1	0.0	0.0	0.0	1.1	2.1	1.0	0.2	0.2	0.0
2029	0.7	0.8	0.1	0.0	0.0	0.0	1.0	1.9	0.9	0.2	0.2	0.0

Table B-19-18 - Regulatory Costs (\$b) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	0.1	0.1	0.0	1.2	1.2	0.0
2021	0.1	0.1	0.0	3.0	3.0	0.0
2022	0.2	0.2	0.0	5.3	5.3	0.0
2023	0.3	0.3	0.0	7.5	8.0	0.5
2024	0.4	0.4	0.0	8.7	11.9	3.2
2025	0.6	0.6	-0.1	9.4	14.9	5.4
2026	0.6	0.6	0.0	9.7	17.4	7.7
2027	0.6	0.6	0.0	9.5	17.0	7.6
2028	0.6	0.6	0.0	9.1	16.3	7.2
2029	0.5	0.5	0.0	8.8	15.4	6.6

20. Vehicle Price Increase

Table B-20-1 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	203	203	0
2021	348	348	0
2022	566	565	0
2023	726	873	147
2024	855	1,281	426
2025	987	1,673	686
2026	1,052	2,006	953
2027	1,044	1,982	938
2028	1,021	1,933	912
2029	1,003	1,858	855

Table B-20-2 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	265	265	0
2021	328	328	0
2022	524	524	0
2023	622	871	249
2024	726	1,214	488
2025	879	1,620	741
2026	936	1,916	980
2027	918	1,873	955
2028	893	1,824	931
2029	874	1,762	888

Table B-20-3 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2

Model Year	Total		
	Alternative 0 (Baseline)	Alternative 2	Difference
2020	155	155	0
2021	365	365	0
2022	601	601	0
2023	819	875	56
2024	973	1,342	369
2025	1,089	1,721	633
2026	1,164	2,089	925
2027	1,167	2,083	916
2028	1,150	2,036	887
2029	1,134	1,950	815

Table B-20-4 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	70	70	0	437	437	0	380	380	0	137	137	0
2021	611	611	0	436	436	0	317	317	0	501	501	0
2022	740	740	0	794	794	0	810	809	-1	840	840	0
2023	835	821	-15	887	887	0	1,318	1,317	-1	993	1,702	708
2024	955	1,133	179	915	1,216	301	1,361	1,503	142	1,129	1,779	650
2025	1,437	1,485	48	1,210	1,845	634	1,377	1,780	403	1,122	1,783	661
2026	1,810	1,891	81	1,367	2,376	1,009	1,414	2,270	857	1,083	2,051	968
2027	1,744	2,021	277	1,441	2,408	967	1,425	2,251	826	1,038	2,014	975
2028	1,664	1,927	264	1,424	2,431	1,007	1,441	2,259	818	996	1,927	931
2029	1,586	1,841	254	1,410	2,321	911	1,422	2,258	836	952	1,846	895

Table B-20-5 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	290	290	0	0	0	0	562	562	0	269	269	0
2021	546	546	0	95	95	0	396	396	0	409	409	0
2022	638	638	0	254	254	0	505	505	0	443	443	0
2023	737	737	0	310	410	100	622	622	0	475	474	-2
2024	837	1,233	396	377	669	292	759	949	190	774	1,254	480
2025	1,025	2,137	1,113	673	1,193	520	777	1,430	652	831	1,442	611
2026	1,053	2,628	1,575	778	1,373	595	848	2,198	1,350	851	1,906	1,055
2027	1,042	2,529	1,486	742	1,438	696	888	2,171	1,283	899	1,944	1,046
2028	1,020	2,427	1,407	714	1,423	709	861	2,084	1,224	872	1,888	1,016
2029	1,041	2,314	1,273	678	1,350	672	844	1,985	1,141	845	1,806	961

Table B-20-6 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	96	96	0	342	342	0	209	209	0	97	97	0
2021	84	84	0	1,009	1,009	0	119	119	0	291	291	0
2022	468	468	0	1,173	1,173	0	300	300	0	384	384	0
2023	734	734	0	1,406	1,411	5	582	582	0	444	856	412
2024	905	1,213	308	1,462	1,538	76	685	1,076	390	620	1,291	671
2025	1,001	1,633	632	1,597	2,356	759	643	1,774	1,131	716	1,741	1,025
2026	1,082	2,066	984	1,635	2,599	964	633	1,738	1,105	758	1,832	1,074
2027	1,191	2,056	865	1,606	2,540	934	615	1,697	1,082	749	1,789	1,040
2028	1,168	1,997	829	1,571	2,482	911	601	1,660	1,060	748	1,800	1,052
2029	1,148	1,945	797	1,529	2,451	922	585	1,623	1,038	737	1,743	1,006

Table B-20-7 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	28	28	0	0	0	0	49	49	0	170	170	0
2021	185	185	0	35	35	0	131	131	0	249	249	0
2022	471	471	0	49	49	0	346	346	0	312	312	0
2023	803	986	183	49	49	0	423	506	83	1,661	1,610	-51
2024	910	1,253	342	48	48	0	645	1,431	786	1,653	1,718	65
2025	1,024	1,487	463	50	50	0	704	1,503	800	1,768	1,959	190
2026	1,087	1,536	450	49	49	0	884	1,748	864	1,780	2,124	344
2027	1,111	1,546	435	48	49	0	861	1,710	849	1,924	2,267	343
2028	1,083	1,507	424	48	48	0	849	1,691	842	1,840	2,167	326
2029	1,057	1,468	411	47	47	0	857	1,597	741	1,745	2,053	308

Table B-20-8 - Comparison of Average Vehicle Price Increase (dollars) for Total Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	405	405	0	203	203	0
2021	406	406	0	348	348	0
2022	814	814	0	566	565	0
2023	895	895	0	726	873	147
2024	1,173	1,463	290	855	1,281	426
2025	1,911	2,009	98	987	1,673	686
2026	1,951	2,342	391	1,052	2,006	953
2027	1,893	2,252	359	1,044	1,982	938
2028	1,825	2,111	286	1,021	1,933	912
2029	1,746	2,013	267	1,003	1,858	855

Table B-20-9 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	92	92	0	665	665	0	941	941	0	284	284	0
2021	708	708	0	777	777	0	666	666	0	447	447	0
2022	865	865	0	1,189	1,189	0	927	924	-3	1,034	1,034	0
2023	907	895	-12	1,171	1,171	0	1,184	1,184	0	1,259	3,693	2,434
2024	1,058	1,322	264	1,237	1,615	378	1,333	1,626	294	1,190	3,390	2,201
2025	1,666	1,768	102	1,337	2,109	772	1,393	2,105	712	1,184	3,416	2,233
2026	2,193	2,287	94	1,416	2,619	1,203	1,431	2,867	1,436	1,143	3,250	2,106
2027	2,104	2,186	82	1,456	2,604	1,148	1,428	2,879	1,451	1,086	3,035	1,949
2028	1,991	2,070	79	1,426	2,986	1,560	1,567	2,860	1,293	1,037	2,817	1,780
2029	1,886	1,973	87	1,374	2,787	1,413	1,702	3,676	1,974	982	2,605	1,624

Table B-20-10 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	413	413	0	0	0	0	592	592	0	291	291	0
2021	396	396	0	113	113	0	409	409	0	345	345	0
2022	565	565	0	252	252	0	536	536	0	379	379	0
2023	714	713	0	297	459	162	620	620	0	410	408	-2
2024	814	1,146	332	340	590	249	763	969	206	608	727	119
2025	1,172	1,862	690	664	1,090	426	775	1,488	713	676	1,010	334
2026	1,134	2,313	1,179	844	1,417	573	773	2,102	1,328	689	1,705	1,015
2027	1,092	2,256	1,163	800	1,413	613	822	2,081	1,259	741	1,727	987
2028	1,050	2,140	1,091	767	1,383	616	796	1,994	1,198	719	1,677	958
2029	1,010	2,016	1,006	724	1,300	576	782	1,892	1,111	695	1,585	890

Table B-20-11 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	141	141	0	573	573	0	348	348	0	99	99	0
2021	16	16	0	1,981	1,981	0	183	183	0	213	213	0
2022	63	63	0	2,163	2,163	0	443	443	0	282	282	0
2023	459	459	0	2,283	2,293	10	822	822	0	343	764	421
2024	1,056	1,696	640	2,290	2,427	138	931	1,334	402	513	1,218	705
2025	1,005	2,030	1,025	2,463	3,281	818	827	1,916	1,089	599	1,800	1,201
2026	962	2,282	1,319	2,423	3,399	976	812	1,862	1,050	630	1,759	1,128
2027	1,289	2,338	1,049	2,349	3,292	944	782	1,797	1,015	620	1,699	1,079
2028	1,317	2,253	936	2,270	3,184	914	757	1,737	980	614	1,728	1,115
2029	1,269	2,334	1,065	2,181	3,131	950	731	1,675	945	607	1,656	1,049

Table B-20-12 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	88	88	0	0	0	0	34	34	0	327	327	0
2021	207	207	0	34	34	0	70	70	0	369	369	0
2022	798	798	0	49	49	0	230	230	0	429	429	0
2023	909	909	0	48	48	0	328	328	1	672	672	0
2024	866	1,514	648	47	47	0	484	910	426	783	965	182
2025	932	1,833	901	49	49	0	546	1,056	510	1,059	1,404	345
2026	1,009	2,098	1,089	49	49	0	618	1,188	570	1,191	1,898	707
2027	978	2,014	1,036	48	48	0	597	1,195	598	1,211	2,416	1,205
2028	950	1,940	990	47	47	0	579	1,179	600	1,173	2,295	1,122
2029	921	1,863	941	46	46	0	613	1,144	531	1,131	2,171	1,040

Table B-20-13 - Comparison of Average Vehicle Price Increase (dollars) for Passenger Car Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	501	501	0	265	265	0
2021	269	269	0	328	328	0
2022	772	772	0	524	524	0
2023	904	904	0	622	871	249
2024	1,103	1,601	498	726	1,214	488
2025	1,490	1,892	403	879	1,620	741
2026	1,567	2,354	786	936	1,916	980
2027	1,503	2,151	648	918	1,873	955
2028	1,448	2,024	575	893	1,824	931
2029	1,375	1,905	530	874	1,762	888

Table B-20-14 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 1 of 5

Model Year	BMW			Daimler			FCA			Ford		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	33	33	0	233	233	0	291	291	0	83	83	0
2021	438	438	0	115	115	0	258	258	0	521	521	0
2022	499	499	0	396	396	0	790	789	-1	763	763	0
2023	691	670	-20	589	589	0	1,342	1,341	-1	886	893	7
2024	740	742	2	566	784	219	1,366	1,480	114	1,103	1,110	7
2025	946	895	-50	1,068	1,557	489	1,374	1,719	345	1,096	1,103	7
2026	969	1,060	91	1,310	2,109	799	1,410	2,159	749	1,057	1,549	492
2027	939	1,675	735	1,423	2,193	770	1,424	2,134	710	1,018	1,586	568
2028	914	1,621	707	1,421	1,812	391	1,416	2,145	730	978	1,549	571
2029	887	1,554	667	1,453	1,793	340	1,365	1,987	622	938	1,521	583

Table B-20-15 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 2 of 5

Model Year	GM			Honda			Hyundai Kia-H			Hyundai Kia-K		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	231	231	0	0	0	0	312	312	0	233	233	0
2021	621	621	0	69	69	0	290	290	0	519	519	0
2022	676	676	0	257	257	0	231	231	0	562	562	0
2023	750	750	0	330	330	0	638	638	0	599	599	0
2024	850	1,280	430	438	801	363	720	760	40	1,102	2,293	1,191
2025	944	2,286	1,342	689	1,366	676	801	879	78	1,146	2,296	1,150
2026	1,009	2,799	1,790	664	1,300	636	1,577	3,113	1,536	1,190	2,308	1,117
2027	1,015	2,677	1,662	639	1,480	841	1,543	3,033	1,489	1,235	2,378	1,143
2028	1,004	2,584	1,581	617	1,491	874	1,514	2,958	1,444	1,207	2,321	1,113
2029	1,059	2,479	1,420	594	1,437	843	1,483	2,882	1,399	1,179	2,264	1,085

Table B-20-16 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 3 of 5

Model Year	JLR			Mazda			Mitsubishi			Nissan		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	94	94	0	127	127	0	91	91	0	92	92	0
2021	87	87	0	67	67	0	63	63	0	472	472	0
2022	489	489	0	171	171	0	172	172	0	634	634	0
2023	749	749	0	492	492	0	363	363	0	703	1,091	388
2024	896	1,186	290	580	594	13	457	837	380	900	1,482	582
2025	1,000	1,610	610	656	1,370	714	471	1,642	1,171	1,029	1,587	559
2026	1,089	2,054	965	767	1,742	975	463	1,622	1,159	1,106	2,024	918
2027	1,185	2,040	855	778	1,735	957	456	1,605	1,149	1,105	2,026	922
2028	1,158	1,982	824	778	1,719	941	449	1,588	1,140	1,126	1,991	865
2029	1,140	1,921	781	779	1,706	928	442	1,574	1,131	1,106	1,977	871

Table B-20-17 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 4 of 5

Model Year	Subaru			Tesla			Toyota			Volvo		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	12	12	0	0	0	0	67	67	0	117	117	0
2021	178	178	0	63	63	0	205	205	0	207	207	0
2022	369	369	0	67	67	0	495	495	0	268	268	0
2023	768	1,011	244	82	82	0	551	744	193	2,041	1,971	-70
2024	925	1,163	238	81	81	0	868	2,148	1,279	1,997	2,014	18
2025	1,056	1,367	311	79	79	0	927	2,123	1,196	2,054	2,178	124
2026	1,115	1,341	226	78	78	0	1,272	2,530	1,257	2,022	2,215	193
2027	1,161	1,384	222	77	77	0	1,251	2,427	1,176	2,221	2,207	-13
2028	1,135	1,353	218	75	75	0	1,260	2,421	1,161	2,123	2,115	-8
2029	1,111	1,325	215	74	74	0	1,234	2,250	1,016	2,009	2,006	-4

Table B-20-18 - Comparison of Average Vehicle Price Increase (dollars) for Light Truck Fleet Between Alternative 0 (Baseline) and Alternative 2, Part 5 of 5

Model Year	VWA			Total		
	Alternative 0 (Baseline)	Alternative 2	Difference	Alternative 0 (Baseline)	Alternative 2	Difference
2020	336	336	0	155	155	0
2021	512	512	0	365	365	0
2022	848	848	0	601	601	0
2023	887	887	0	819	875	56
2024	1,238	1,336	99	973	1,342	369
2025	2,314	2,117	-197	1,089	1,721	633
2026	2,328	2,331	2	1,164	2,089	925
2027	2,285	2,346	61	1,167	2,083	916
2028	2,215	2,195	-20	1,150	2,036	887
2029	2,139	2,118	-21	1,134	1,950	815

21. Technology Costs, Price Increase, Sales, and Labor Utilization

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	203	203	0	0%	13.6	13.6	0.0	0.0%	943	943	0.0	0.0%
2021	3	3	0	0%	348	348	0	0%	14.7	14.7	0.0	0.0%	1,025	1,025	0.0	0.0%
2022	6	6	0	0%	566	565	0	0%	16.6	16.6	0.0	0.0%	1,157	1,157	0.0	0.0%
2023	8	11	3	30%	726	873	147	20%	17.3	17.3	-0.1	-0.3%	1,213	1,212	-1.2	-0.1%
2024	10	16	6	67%	855	1,281	426	50%	17.2	17.0	-0.1	-0.9%	1,204	1,204	0.3	0.0%
2025	11	20	10	91%	987	1,673	686	70%	16.8	16.6	-0.2	-1.4%	1,181	1,182	0.9	0.1%
2026	11	24	13	116%	1,052	2,006	953	91%	16.4	16.1	-0.3	-1.9%	1,152	1,153	0.8	0.1%
2027	11	23	13	121%	1,044	1,982	938	90%	16.0	15.7	-0.3	-1.8%	1,127	1,129	2.8	0.2%
2028	10	23	13	125%	1,021	1,933	912	89%	15.8	15.5	-0.3	-1.7%	1,109	1,114	5.0	0.5%
2029	10	22	12	123%	1,003	1,858	855	85%	15.7	15.4	-0.2	-1.6%	1,097	1,103	6.3	0.6%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	265	265	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%	6.6	6.6	0.0	0.0%	399	399	0.0	0.0%
2022	3	3	0	0%	524	524	0	0%	7.7	7.7	0.0	0.0%	466	466	0.0	0.0%
2023	3	5	2	61%	622	871	249	40%	8.2	8.2	0.0	-0.3%	500	501	1.0	0.2%
2024	4	7	4	91%	726	1,214	488	67%	8.2	8.1	-0.1	-1.1%	504	504	0.2	0.0%
2025	5	10	5	111%	879	1,620	741	84%	8.2	8.0	-0.2	-2.6%	503	497	-5.6	-1.1%
2026	5	11	7	135%	936	1,916	980	105%	8.0	7.7	-0.3	-3.8%	496	486	-10.1	-2.0%
2027	5	11	6	140%	918	1,873	955	104%	7.9	7.6	-0.4	-4.5%	489	476	-13.8	-2.8%
2028	4	11	6	147%	893	1,824	931	104%	7.9	7.5	-0.4	-4.5%	488	474	-13.4	-2.7%
2029	4	11	6	145%	874	1,762	888	102%	7.9	7.5	-0.4	-4.6%	487	473	-14.1	-2.9%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	155	155	0	0%	7.7	7.7	0.0	0.0%	587	587	0.0	0.0%
2021	2	2	0	0%	365	365	0	0%	8.1	8.1	0.0	0.0%	626	626	0.0	0.0%
2022	3	3	0	0%	601	601	0	0%	8.9	8.9	0.0	0.0%	691	691	0.0	0.0%
2023	5	5	0	10%	819	875	56	7%	9.1	9.1	0.0	-0.3%	713	711	-2.2	-0.3%
2024	6	8	3	50%	973	1,342	369	38%	8.9	8.9	-0.1	-0.7%	699	700	0.1	0.0%
2025	6	11	5	75%	1,089	1,721	633	58%	8.7	8.6	0.0	-0.3%	679	685	6.5	1.0%
2026	6	13	6	101%	1,164	2,089	925	79%	8.4	8.3	0.0	-0.1%	656	667	10.8	1.7%
2027	6	13	6	107%	1,167	2,083	916	79%	8.1	8.2	0.1	0.7%	637	654	16.6	2.6%
2028	6	12	6	109%	1,150	2,036	887	77%	7.9	8.0	0.1	1.1%	621	639	18.4	3.0%
2029	6	12	6	105%	1,134	1,950	815	72%	7.8	7.9	0.1	1.6%	610	630	20.5	3.4%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	70	70	0	0%	0.3	0.3	0.0	0.0%	14	14	0.0	0.0%
2021	0	0	0	0%	611	611	0	0%	0.3	0.3	0.0	0.0%	15	15	0.0	0.0%
2022	0	0	0	0%	740	740	0	0%	0.4	0.4	0.0	0.0%	17	17	0.0	0.0%
2023	0	0	0	-2%	835	821	-15	-2%	0.4	0.4	0.0	-0.3%	18	17	-0.1	-0.3%
2024	0	0	0	13%	955	1,133	179	19%	0.4	0.4	0.0	-1.0%	17	17	-0.1	-0.8%
2025	0	0	0	2%	1,437	1,485	48	3%	0.4	0.4	0.0	-2.1%	17	17	-0.2	-0.9%
2026	1	1	0	-8%	1,810	1,891	81	4%	0.4	0.4	0.0	-3.1%	16	16	-0.2	-1.2%
2027	1	1	0	14%	1,744	2,021	277	16%	0.4	0.4	0.0	-3.5%	16	16	0.0	0.1%
2028	1	1	0	14%	1,664	1,927	264	16%	0.4	0.4	0.0	-3.5%	16	16	0.0	0.3%
2029	1	1	0	14%	1,586	1,841	254	16%	0.4	0.4	0.0	-3.5%	15	16	0.1	0.5%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	437	437	0	0%	0.4	0.4	0.0	0.0%	18	18	0.0	0.0%
2021	0	0	0	0%	436	436	0	0%	0.4	0.4	0.0	0.0%	20	20	0.0	0.0%
2022	0	0	0	0%	794	794	0	0%	0.4	0.4	0.0	0.0%	22	22	0.0	0.0%
2023	0	0	0	0%	887	887	0	0%	0.5	0.5	0.0	-0.3%	24	24	-0.1	-0.3%
2024	0	0	0	-4%	915	1,216	301	33%	0.5	0.5	0.0	-0.9%	23	23	-0.2	-0.9%
2025	0	0	0	-1%	1,210	1,845	634	52%	0.5	0.5	0.0	-1.7%	23	23	-0.3	-1.3%
2026	0	0	0	4%	1,367	2,376	1,009	74%	0.4	0.4	0.0	-2.3%	23	22	-0.3	-1.5%
2027	0	0	0	5%	1,441	2,408	967	67%	0.4	0.4	0.0	-2.4%	22	22	-0.3	-1.4%
2028	0	1	0	74%	1,424	2,431	1,007	71%	0.4	0.4	0.0	-2.3%	22	22	0.3	1.4%
2029	0	1	0	74%	1,410	2,321	911	65%	0.4	0.4	0.0	-2.2%	22	22	0.3	1.3%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	380	380	0	0%	1.5	1.5	0.0	0.0%	117	117	0.0	0.0%
2021	0	0	0	0%	317	317	0	0%	1.6	1.6	0.0	0.0%	126	126	0.0	0.0%
2022	1	1	0	0%	810	809	-1	0%	1.8	1.8	0.0	0.0%	140	140	0.0	0.0%
2023	2	2	0	0%	1,318	1,317	-1	0%	1.8	1.8	0.0	-0.3%	146	145	-0.5	-0.3%
2024	2	2	0	-1%	1,361	1,503	142	10%	1.8	1.8	0.0	-0.7%	143	142	-1.0	-0.7%
2025	2	2	0	-1%	1,377	1,780	403	29%	1.7	1.7	0.0	-0.6%	138	138	-0.5	-0.4%
2026	2	2	0	5%	1,414	2,270	857	61%	1.7	1.7	0.0	-0.6%	134	134	-0.2	-0.1%
2027	2	2	0	14%	1,425	2,251	826	58%	1.6	1.6	0.0	0.0%	130	131	1.1	0.8%
2028	2	2	0	25%	1,441	2,259	818	57%	1.6	1.6	0.0	0.3%	127	129	2.0	1.6%
2029	2	2	1	44%	1,422	2,258	836	59%	1.6	1.6	0.0	0.7%	125	128	3.4	2.7%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	501	501	0	0%	1.8	1.8	0.0	0.0%	172	172	0.0	0.0%
2022	1	1	0	0%	840	840	0	0%	2.0	2.0	0.0	0.0%	192	192	0.0	0.0%
2023	2	3	1	87%	993	1,702	708	71%	2.1	2.1	0.0	-0.3%	199	200	1.4	0.7%
2024	2	3	1	72%	1,129	1,779	650	58%	2.0	2.0	0.0	-0.8%	196	196	0.4	0.2%
2025	2	3	1	73%	1,122	1,783	661	59%	2.0	2.0	0.0	-0.9%	190	191	0.7	0.4%
2026	2	3	2	112%	1,083	2,051	968	89%	1.9	1.9	0.0	-1.1%	184	186	1.9	1.0%
2027	2	3	2	119%	1,038	2,014	975	94%	1.9	1.9	0.0	-0.6%	179	182	3.0	1.7%
2028	1	3	2	120%	996	1,927	931	93%	1.9	1.8	0.0	-0.4%	175	178	3.3	1.9%
2029	1	3	2	122%	952	1,846	895	94%	1.8	1.8	0.0	-0.1%	172	176	3.8	2.2%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	290	290	0	0%	2.3	2.3	0.0	0.0%	200	200	0.0	0.0%
2021	1	1	0	0%	546	546	0	0%	2.5	2.5	0.0	0.0%	217	217	0.0	0.0%
2022	1	1	0	0%	638	638	0	0%	2.7	2.7	0.0	0.0%	241	241	0.0	0.0%
2023	1	1	0	0%	737	737	0	0%	2.9	2.8	0.0	-0.3%	251	250	-0.8	-0.3%
2024	1	2	1	76%	837	1,233	396	47%	2.8	2.8	0.0	-0.8%	247	248	0.4	0.2%
2025	2	5	3	170%	1,025	2,137	1,113	109%	2.7	2.7	0.0	-0.8%	242	246	4.0	1.7%
2026	2	6	4	231%	1,053	2,628	1,575	149%	2.7	2.6	0.0	-1.0%	235	241	5.7	2.4%
2027	2	5	4	231%	1,042	2,529	1,486	143%	2.6	2.6	0.0	-0.5%	229	235	6.3	2.7%
2028	2	5	4	224%	1,020	2,427	1,407	138%	2.5	2.5	0.0	-0.3%	225	231	6.2	2.8%
2029	2	5	3	196%	1,041	2,314	1,273	122%	2.5	2.5	0.0	0.0%	222	228	6.1	2.8%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	95	95	0	0%	1.4	1.4	0.0	0.0%	127	127	0.0	0.0%
2022	0	0	0	0%	254	254	0	0%	1.6	1.6	0.0	0.0%	144	144	0.0	0.0%
2023	0	0	0	82%	310	410	100	32%	1.7	1.7	0.0	-0.3%	152	152	0.0	0.0%
2024	0	1	0	212%	377	669	292	77%	1.7	1.7	0.0	-1.0%	152	152	0.0	0.0%
2025	0	1	1	175%	673	1,193	520	77%	1.7	1.6	0.0	-1.9%	150	150	-0.5	-0.3%
2026	1	2	1	142%	778	1,373	595	76%	1.6	1.6	0.0	-2.8%	148	146	-1.2	-0.8%
2027	1	2	1	180%	742	1,438	696	94%	1.6	1.6	0.0	-3.0%	145	144	-1.0	-0.7%
2028	1	2	1	197%	714	1,423	709	99%	1.6	1.5	0.0	-3.0%	143	142	-0.8	-0.6%
2029	0	2	1	205%	678	1,350	672	99%	1.6	1.5	0.0	-3.0%	142	141	-0.9	-0.6%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	562	562	0	0%	0.7	0.7	0.0	0.0%	44	44	0.0	0.0%
2021	0	0	0	0%	396	396	0	0%	0.8	0.8	0.0	0.0%	49	49	0.0	0.0%
2022	0	0	0	0%	505	505	0	0%	0.9	0.9	0.0	0.0%	56	56	0.0	0.0%
2023	0	0	0	0%	622	622	0	0%	1.0	1.0	0.0	-0.3%	60	59	-0.2	-0.3%
2024	1	1	0	29%	759	949	190	25%	1.0	1.0	0.0	-0.9%	60	59	-0.4	-0.7%
2025	0	1	1	115%	777	1,430	652	84%	1.0	0.9	0.0	-1.9%	59	59	-0.4	-0.6%
2026	1	2	1	239%	848	2,198	1,350	159%	0.9	0.9	0.0	-2.7%	58	58	-0.2	-0.4%
2027	0	2	1	237%	888	2,171	1,283	145%	0.9	0.9	0.0	-2.9%	57	56	-0.6	-1.0%
2028	0	2	1	237%	861	2,084	1,224	142%	0.9	0.9	0.0	-2.8%	57	56	-0.6	-1.1%
2029	0	1	1	227%	844	1,985	1,141	135%	0.9	0.9	0.0	-2.8%	56	56	-0.8	-1.3%

**Table B-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**

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	269	269	0	0%	0.6	0.6	0.0	0.0%	30	30	0.0	0.0%
2021	0	0	0	0%	409	409	0	0%	0.7	0.7	0.0	0.0%	33	33	0.0	0.0%
2022	0	0	0	0%	443	443	0	0%	0.8	0.8	0.0	0.0%	38	38	0.0	0.0%
2023	0	0	0	-1%	475	474	-2	0%	0.8	0.8	0.0	-0.3%	40	40	-0.1	-0.3%
2024	0	1	0	79%	774	1,254	480	62%	0.8	0.8	0.0	-1.0%	40	40	0.3	0.8%
2025	0	1	0	97%	831	1,442	611	74%	0.8	0.8	0.0	-2.2%	39	40	0.2	0.5%
2026	0	1	1	174%	851	1,906	1,055	124%	0.8	0.8	0.0	-3.1%	38	38	-0.1	-0.3%
2027	0	1	1	171%	899	1,944	1,046	116%	0.8	0.7	0.0	-3.5%	38	38	-0.2	-0.4%
2028	0	1	1	173%	872	1,888	1,016	117%	0.8	0.7	0.0	-3.5%	37	37	-0.2	-0.4%
2029	0	1	1	170%	845	1,806	961	114%	0.8	0.7	0.0	-3.5%	37	37	-0.2	-0.4%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	84	84	0	0%	0.1	0.1	0.0	0.0%	3	3	0.0	0.0%
2022	0	0	0	0%	468	468	0	0%	0.2	0.2	0.0	0.0%	3	3	0.0	0.0%
2023	0	0	0	0%	734	734	0	0%	0.2	0.2	0.0	-0.3%	3	3	0.0	-0.3%
2024	0	0	0	10%	905	1,213	308	34%	0.2	0.2	0.0	-0.7%	3	3	0.0	-0.6%
2025	0	0	0	11%	1,001	1,633	632	63%	0.2	0.2	0.0	-0.5%	3	3	0.0	-0.3%
2026	0	0	0	28%	1,082	2,066	984	91%	0.2	0.2	0.0	-0.4%	3	3	0.0	0.0%
2027	0	0	0	26%	1,191	2,056	865	73%	0.1	0.1	0.0	0.3%	3	3	0.0	0.8%
2028	0	0	0	25%	1,168	1,997	829	71%	0.1	0.1	0.0	0.6%	3	3	0.0	1.0%
2029	0	0	0	35%	1,148	1,945	797	69%	0.1	0.1	0.0	1.0%	3	3	0.0	1.5%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	342	342	0	0%	0.3	0.3	0.0	0.0%	4	4	0.0	0.0%
2021	0	0	0	0%	1,009	1,009	0	0%	0.3	0.3	0.0	0.0%	4	4	0.0	0.0%
2022	0	0	0	0%	1,173	1,173	0	0%	0.3	0.3	0.0	0.0%	4	4	0.0	0.0%
2023	0	0	0	0%	1,406	1,411	5	0%	0.3	0.3	0.0	-0.3%	5	5	0.0	-0.3%
2024	0	0	0	4%	1,462	1,538	76	5%	0.3	0.3	0.0	-0.8%	5	4	0.0	-0.8%
2025	0	1	0	60%	1,597	2,356	759	48%	0.3	0.3	0.0	-1.2%	4	4	0.0	-1.1%
2026	0	1	0	77%	1,635	2,599	964	59%	0.3	0.3	0.0	-1.6%	4	4	-0.1	-1.5%
2027	0	1	0	77%	1,606	2,540	934	58%	0.3	0.3	0.0	-1.4%	4	4	-0.1	-1.2%
2028	0	1	0	78%	1,571	2,482	911	58%	0.3	0.3	0.0	-1.3%	4	4	0.0	-1.1%
2029	0	1	0	82%	1,529	2,451	922	60%	0.3	0.3	0.0	-1.1%	4	4	0.0	-0.9%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	209	209	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2021	0	0	0	0%	119	119	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2022	0	0	0	0%	300	300	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2023	0	0	0	0%	582	582	0	0%	0.1	0.1	0.0	-0.3%	2	2	0.0	-0.3%
2024	0	0	0	-1%	685	1,076	390	57%	0.1	0.1	0.0	-0.8%	2	2	0.0	-0.8%
2025	0	0	0	283%	643	1,774	1,131	176%	0.1	0.1	0.0	-0.9%	2	2	0.0	-0.8%
2026	0	0	0	285%	633	1,738	1,105	175%	0.1	0.1	0.0	-1.1%	2	2	0.0	-1.1%
2027	0	0	0	292%	615	1,697	1,082	176%	0.1	0.1	0.0	-0.7%	2	2	0.0	-0.7%
2028	0	0	0	295%	601	1,660	1,060	176%	0.1	0.1	0.0	-0.5%	2	2	0.0	-0.5%
2029	0	0	0	300%	585	1,623	1,038	178%	0.1	0.1	0.0	-0.2%	2	2	0.0	-0.2%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	97	97	0	0%	1.0	1.0	0.0	0.0%	60	60	0.0	0.0%
2021	0	0	0	0%	291	291	0	0%	1.1	1.1	0.0	0.0%	66	66	0.0	0.0%
2022	0	0	0	0%	384	384	0	0%	1.3	1.3	0.0	0.0%	76	76	0.0	0.0%
2023	0	1	1	152%	444	856	412	93%	1.3	1.3	0.0	-0.3%	80	80	-0.1	-0.2%
2024	1	1	1	167%	620	1,291	671	108%	1.3	1.3	0.0	-0.9%	80	80	-0.1	-0.2%
2025	1	2	1	249%	716	1,741	1,025	143%	1.3	1.3	0.0	-1.8%	79	78	-0.7	-0.9%
2026	1	2	1	262%	758	1,832	1,074	142%	1.3	1.3	0.0	-2.5%	77	76	-1.1	-1.4%
2027	0	2	1	258%	749	1,789	1,040	139%	1.3	1.2	0.0	-2.7%	76	75	-1.3	-1.7%
2028	0	2	1	257%	748	1,800	1,052	141%	1.3	1.2	0.0	-2.6%	75	74	-1.2	-1.5%
2029	0	2	1	250%	737	1,743	1,006	137%	1.2	1.2	0.0	-2.6%	75	74	-1.1	-1.5%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	185	185	0	0%	0.8	0.8	0.0	0.0%	46	46	0.0	0.0%
2022	0	0	0	0%	471	471	0	0%	0.9	0.9	0.0	0.0%	51	51	0.0	0.0%
2023	0	1	0	35%	803	986	183	23%	0.9	0.9	0.0	-0.3%	54	54	-0.1	-0.2%
2024	1	1	0	61%	910	1,253	342	38%	0.9	0.9	0.0	-0.8%	54	53	-0.1	-0.2%
2025	1	1	0	56%	1,024	1,487	463	45%	0.9	0.9	0.0	-1.1%	53	52	-0.4	-0.8%
2026	1	1	0	75%	1,087	1,536	450	41%	0.9	0.9	0.0	-1.5%	51	51	-0.7	-1.3%
2027	0	1	0	76%	1,111	1,546	435	39%	0.9	0.9	0.0	-1.2%	50	50	-0.6	-1.2%
2028	0	1	0	76%	1,083	1,507	424	39%	0.8	0.8	0.0	-1.1%	50	49	-0.5	-1.0%
2029	0	1	0	77%	1,057	1,468	411	39%	0.8	0.8	0.0	-0.8%	49	49	-0.4	-0.9%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	35	35	0	0%	0.2	0.2	0.0	0.0%	26	26	0.0	0.0%
2022	0	0	0	0%	49	49	0	0%	0.3	0.3	0.0	0.0%	31	31	0.0	0.0%
2023	0	0	0	0%	49	49	0	0%	0.3	0.3	0.0	-0.3%	33	33	-0.1	-0.3%
2024	0	0	0	0%	48	48	0	0%	0.3	0.3	0.0	-1.2%	34	33	-0.4	-1.2%
2025	0	0	0	0%	50	50	0	0%	0.3	0.3	0.0	-3.3%	34	33	-1.1	-3.3%
2026	0	0	0	0%	49	49	0	0%	0.3	0.3	0.0	-4.9%	33	32	-1.6	-4.9%
2027	0	0	0	0%	48	49	0	0%	0.3	0.3	0.0	-6.0%	33	31	-2.0	-6.0%
2028	0	0	0	0%	48	48	0	0%	0.3	0.3	0.0	-6.0%	33	31	-2.0	-6.0%
2029	0	0	0	0%	47	47	0	0%	0.3	0.3	0.0	-6.3%	33	31	-2.1	-6.3%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	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%	131	131	0	0%	1.9	1.9	0.0	0.0%	107	107	0.0	0.0%
2022	0	0	0	0%	346	346	0	0%	2.2	2.2	0.0	0.0%	123	123	0.0	0.0%
2023	1	1	0	36%	423	506	83	20%	2.3	2.3	0.0	-0.3%	131	131	-0.4	-0.3%
2024	1	3	2	246%	645	1,431	786	122%	2.3	2.3	0.0	-0.9%	132	134	1.8	1.3%
2025	1	3	2	244%	704	1,503	800	114%	2.3	2.2	0.0	-1.8%	130	131	0.4	0.3%
2026	1	3	2	210%	884	1,748	864	98%	2.2	2.2	-0.1	-2.6%	128	128	-0.6	-0.5%
2027	1	3	2	217%	861	1,710	849	99%	2.2	2.1	-0.1	-2.8%	126	125	-1.2	-1.0%
2028	1	3	2	217%	849	1,691	842	99%	2.2	2.1	-0.1	-2.7%	125	124	-1.1	-0.9%
2029	1	2	2	182%	857	1,597	741	86%	2.1	2.1	-0.1	-2.7%	125	123	-1.5	-1.2%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	170	170	0	0%	0.1	0.1	0.0	0.0%	2	2	0.0	0.0%
2021	0	0	0	0%	249	249	0	0%	0.1	0.1	0.0	0.0%	3	3	0.0	0.0%
2022	0	0	0	0%	312	312	0	0%	0.1	0.1	0.0	0.0%	3	3	0.0	0.0%
2023	0	0	0	-4%	1,661	1,610	-51	-3%	0.1	0.1	0.0	-0.3%	3	3	0.0	-0.3%
2024	0	0	0	-4%	1,653	1,718	65	4%	0.1	0.1	0.0	-0.8%	3	3	0.0	-1.0%
2025	0	0	0	-3%	1,768	1,959	190	11%	0.1	0.1	0.0	-1.2%	3	3	-0.1	-2.3%
2026	0	0	0	2%	1,780	2,124	344	19%	0.1	0.1	0.0	-1.6%	3	3	-0.1	-3.3%
2027	0	0	0	21%	1,924	2,267	343	18%	0.1	0.1	0.0	-1.3%	3	3	-0.1	-3.3%
2028	0	0	0	21%	1,840	2,167	326	18%	0.1	0.1	0.0	-1.2%	3	3	-0.1	-3.3%
2029	0	0	0	21%	1,745	2,053	308	18%	0.1	0.1	0.0	-1.0%	3	3	-0.1	-3.4%

Table B-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

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	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent	Alternative 0 (Baseline)	Alternative 2	Absolute	Percent
2020	0	0	0	0%	405	405	0	0%	0.4	0.4	0.0	0.0%	10	10	0.0	0.0%
2021	0	0	0	0%	406	406	0	0%	0.5	0.5	0.0	0.0%	12	12	0.0	0.0%
2022	0	0	0	0%	814	814	0	0%	0.5	0.5	0.0	0.0%	13	13	0.0	0.0%
2023	0	0	0	0%	895	895	0	0%	0.6	0.6	0.0	-0.3%	14	14	0.0	-0.3%
2024	0	0	0	7%	1,173	1,463	290	25%	0.6	0.6	0.0	-0.9%	14	14	-0.1	-1.1%
2025	1	1	0	0%	1,911	2,009	98	5%	0.5	0.5	0.0	-1.8%	14	13	-0.3	-1.9%
2026	1	1	0	6%	1,951	2,342	391	20%	0.5	0.5	0.0	-2.6%	13	13	-0.4	-2.7%
2027	1	1	0	10%	1,893	2,252	359	19%	0.5	0.5	0.0	-2.8%	13	13	-0.4	-2.8%
2028	1	1	0	13%	1,825	2,111	286	16%	0.5	0.5	0.0	-2.7%	13	13	-0.3	-2.4%
2029	1	1	0	13%	1,746	2,013	267	15%	0.5	0.5	0.0	-2.7%	13	13	-0.3	-2.4%

22. CAFE Compliance Credits

Table B-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	-9	-1	4	6	20	27	28	28	28
Daimler	-17	-13	-12	-8	-3	2	2	5	5	5
FCA	-49	-46	-26	3	1	-7	-2	5	14	19
Ford	-14	-3	35	68	76	66	58	58	57	57
GM	-50	-31	-7	-4	8	20	19	22	25	37
Honda	21	26	60	59	56	69	80	79	81	81
Hyundai Kia-H	-29	-27	-6	4	21	17	15	17	18	20
Hyundai Kia-K	-15	6	8	6	22	24	20	23	23	23
JLR	-5	-5	-3	-1	0	0	0	1	1	1
Mazda	-7	-5	-4	9	9	10	10	10	9	9
Mitsubishi	-3	-3	-3	-4	-5	2	1	1	1	2
Nissan	-15	0	18	19	34	33	27	26	29	29
Subaru	9	15	34	59	73	79	76	76	74	73
Tesla	1,335	1,575	1,868	2,029	2,061	2,061	2,041	2,024	2,029	2,037
Toyota	6	18	50	62	69	60	84	96	104	126
Volvo	-2	-2	-3	6	6	7	6	8	8	8
VWA	-18	-16	-11	-9	2	26	30	31	31	31

Table B-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	-9	-1	5	-4	3	2	4	4	5
Daimler	-17	-13	-12	-8	-20	-19	-20	-17	-6	-3
FCA	-49	-46	-26	3	-63	-81	-81	-67	-45	-22
Ford	-14	-3	35	118	52	36	31	30	30	30
GM	-50	-31	-7	-3	-8	18	18	27	28	29
Honda	21	26	60	63	0	2	-8	1	3	3
Hyundai Kia-H	-29	-27	-6	4	0	-2	2	7	7	8
Hyundai Kia-K	-15	6	8	6	6	3	-6	2	2	2
JLR	-5	-5	-3	-1	-5	-6	-6	-4	-4	-3
Mazda	-7	-5	-4	9	-3	3	2	2	2	2
Mitsubishi	-3	-3	-3	-4	-10	3	1	1	1	1
Nissan	-15	0	18	33	17	14	0	1	12	13
Subaru	9	15	34	66	52	51	43	44	43	43
Tesla	1,335	1,575	1,868	2,025	2,031	1,999	1,965	1,942	1,944	1,945
Toyota	6	18	50	71	43	19	34	43	55	77
Volvo	-2	-2	-3	6	1	1	0	3	3	3
VWA	-18	-16	-11	-9	-16	2	2	3	6	6

Table B-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	-9	-1	4	-2	-2	-10	0	0	0
Daimler	-17	-13	-12	-8	-16	-25	-36	-33	-10	-8
FCA	-49	-46	-26	3	-42	-93	-128	-111	-89	-58
Ford	-14	-3	35	610	553	485	442	444	435	434
GM	-50	-31	-7	-4	-6	-2	-2	20	22	22
Honda	21	26	60	73	36	13	-26	-8	3	4
Hyundai Kia-H	-29	-27	-6	4	6	-3	1	6	8	9
Hyundai Kia-K	-15	6	8	6	21	7	-6	2	4	5
JLR	-5	-5	-3	-1	-3	-7	-10	-8	-8	-7
Mazda	-7	-5	-4	9	0	8	4	4	4	4
Mitsubishi	-3	-3	-3	-4	-9	7	1	1	1	1
Nissan	-15	0	18	47	50	43	-3	2	18	20
Subaru	9	15	34	64	58	37	23	23	23	23
Tesla	1,335	1,575	1,868	2,023	2,028	1,974	1,911	1,872	1,876	1,878
Toyota	6	18	50	72	116	42	19	32	45	50
Volvo	-2	-2	-3	6	2	-1	-4	1	1	1
VWA	-18	-16	-11	-9	-11	-4	-11	-7	-2	-2

Table B-22-4 - 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	-9	-1	4	-6	-4	-17	-4	-2	-1
Daimler	-17	-13	-12	-8	-20	-24	-40	-37	-17	-10
FCA	-49	-46	-26	2	-55	-121	-174	-155	-132	-95
Ford	-14	-3	35	613	550	457	432	437	429	426
GM	-50	-31	-7	1	-9	-2	-12	21	23	23
Honda	21	26	60	94	66	26	-31	-11	6	7
Hyundai Kia-H	-29	-27	-6	5	1	-5	0	4	7	8
Hyundai Kia-K	-15	6	8	6	26	16	-6	1	5	5
JLR	-5	-5	-3	-1	-4	-9	-14	-12	-12	-11
Mazda	-7	-5	-4	9	-2	7	1	1	1	2
Mitsubishi	-3	-3	-3	-4	-10	8	0	0	0	0
Nissan	-15	0	18	48	37	44	-16	0	18	23
Subaru	9	15	34	66	55	23	4	6	6	5
Tesla	1,335	1,575	1,868	2,019	2,006	1,935	1,856	1,815	1,819	1,822
Toyota	6	18	50	72	127	34	-22	2	14	28
Volvo	-2	-2	-3	7	1	-2	-8	-2	-2	-2
VWA	-18	-16	-11	-9	-16	-14	-23	-18	-12	-11

23. Consumer Impacts

Table B-23-1 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Total Fleet, Alternative 2 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	147	426	686	953	938	912	855
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	15	46	78	110	112	110	106
Increase in Insurance Cost	0	0	0	17	51	88	123	126	124	119
Increase in Taxes/Fees	0	0	0	8	24	41	57	58	57	55
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	188	548	896	1,251	1,242	1,209	1,140
Fuel Savings	61	66	70	-58	-407	-649	-951	-1,044	-1,139	-1,128
Mobility Benefit	0	1	1	10	48	72	102	121	137	144
Refueling Benefit	3	3	3	16	46	61	66	58	55	60
Total Consumer Benefit	-64	-68	-72	52	408	660	987	1,106	1,222	1,211
Net Consumer Benefit	-64	-68	-72	-136	-140	-237	-265	-135	12	72
Payback	0.0	0.0	0.0	0.9	2.0	2.0	2.0	2.0	1.5	1.0

Table B-23-2 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Passenger Car Fleet, Alternative 2 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	249	488	741	980	955	931	888
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	26	51	77	101	98	95	90
Increase in Insurance Cost	0	0	0	29	57	86	113	110	107	101
Increase in Taxes/Fees	0	0	0	14	26	40	53	51	49	47
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	318	624	948	1,254	1,220	1,188	1,131
Fuel Savings	48	51	54	-137	-492	-763	-997	-1,076	-1,184	-1,198
Mobility Benefit	1	1	2	7	48	74	92	105	116	116
Refueling Benefit	3	3	3	31	52	76	83	74	77	84
Total Consumer Benefit	-49	-53	-55	113	487	761	1,006	1,107	1,223	1,231
Net Consumer Benefit	-49	-53	-55	-206	-137	-187	-248	-113	34	100
Payback	0.0	0.0	0.0	2.0	2.0	2.0	2.0	3.0	2.0	1.0

Table B-23-3 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Light Truck Fleet, Alternative 2 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	56	369	633	925	916	887	815
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	6	39	66	97	96	93	85
Increase in Insurance Cost	0	0	0	7	43	75	109	108	104	96
Increase in Taxes/Fees	0	0	0	3	20	35	50	50	48	44
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	72	473	812	1,189	1,177	1,138	1,046
Fuel Savings	72	78	84	13	-341	-617	-1,024	-1,179	-1,276	-1,262
Mobility Benefit	0	0	1	12	48	70	112	137	157	170
Refueling Benefit	3	3	4	2	40	47	50	42	32	34
Total Consumer Benefit	-75	-81	-87	-3	349	640	1,086	1,274	1,402	1,398
Net Consumer Benefit	-75	-81	-87	-75	-124	-172	-102	97	263	352
Payback	0.0	0.0	0.0	0.0	2.0	2.0	2.0	1.0	1.0	1.0

Table B-23-4 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Total Fleet, Alternative 2 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	147	426	686	953	938	912	855
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	14	42	72	101	103	101	97
Increase in Insurance Cost	0	0	0	14	43	73	103	105	103	99
Increase in Taxes/Fees	0	0	0	8	24	41	57	58	57	55
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	184	536	875	1,222	1,211	1,179	1,111
Fuel Savings	39	43	47	-49	-315	-502	-735	-807	-882	-874
Mobility Benefit	0	0	1	7	36	54	78	93	105	110
Refueling Benefit	2	2	2	12	36	48	52	46	43	47
Total Consumer Benefit	-41	-45	-49	44	316	509	761	854	944	937
Net Consumer Benefit	-41	-45	-49	-140	-220	-366	-461	-357	-236	-174
Payback	0.0	0.0	-0.5	1.9	3.0	4.9	7.8	4.4	3.0	2.0

Table B-23-5 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Passenger Car Fleet, Alternative 2 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	249	488	741	980	955	931	888
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	24	47	70	93	90	87	83
Increase in Insurance Cost	0	0	0	24	48	72	94	91	89	84
Increase in Taxes/Fees	0	0	0	14	26	40	53	51	49	47
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	311	610	927	1,227	1,193	1,162	1,106
Fuel Savings	31	34	37	-108	-382	-592	-774	-836	-921	-933
Mobility Benefit	0	1	1	5	36	57	71	81	90	90
Refueling Benefit	2	2	2	24	41	60	65	58	61	66
Total Consumer Benefit	-32	-35	-38	89	378	589	779	859	950	957
Net Consumer Benefit	-32	-35	-38	-223	-232	-338	-447	-334	-213	-149
Payback	0.0	0.0	0.0	3.0	4.0	7.0	12.0	6.0	4.0	3.0

Table B-23-6 - Average Impacts to Consumers Relative to Alternative 0 (Baseline) for the Light Truck Fleet, Alternative 2 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	56	369	633	925	916	887	815
Implicit Opportunity Cost	0	0	0	0	0	0	0	0	0	0
Increase in Financing Cost	0	0	0	5	36	61	89	88	85	78
Increase in Insurance Cost	0	0	0	5	36	62	91	90	87	80
Increase in Taxes/Fees	0	0	0	3	20	35	50	50	48	44
Lost Consumer Surplus	0	0	0	0	1	4	7	7	6	5
Total Consumer Cost	0	0	0	70	462	794	1,162	1,151	1,113	1,023
Fuel Savings	45	51	56	3	-263	-473	-785	-903	-977	-968
Mobility Benefit	0	0	1	9	36	53	85	104	120	130
Refueling Benefit	2	2	3	1	31	36	39	33	25	28
Total Consumer Benefit	-47	-52	-58	5	268	490	830	974	1,072	1,071
Net Consumer Benefit	-47	-52	-58	-65	-194	-304	-332	-177	-41	48
Payback	0.0	0.0	-1.0	1.0	2.0	3.0	4.0	3.0	2.0	1.0

24. Environmental Impacts

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.16	-0.10	-0.02
VOC Upstream	-1.30	-2.29	-3.15
NOx Upstream	-0.33	-0.25	-0.14
SO2 Upstream	-0.06	0.20	0.46
PM Upstream	-0.03	-0.02	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-0.93	-3.25	-5.42
VOC Tailpipe	-0.02	-0.07	-0.11
NOx Tailpipe	-0.02	-0.08	-0.13
SO2 Tailpipe	-0.03	-0.05	-0.07
PM Tailpipe	0.00	-0.01	-0.01
Fleetwide Change in Total Emissions			
CO Total	-1.10	-3.35	-5.44
VOC Total	-1.31	-2.36	-3.26
NOx Total	-0.35	-0.32	-0.26

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.08	-0.07	-0.08
VOC Upstream	-0.77	-1.44	-1.92
NOx Upstream	-0.16	-0.17	-0.19
SO2 Upstream	0.00	0.12	0.19
PM Upstream	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-1.30	-3.13	-4.46
VOC Tailpipe	-0.03	-0.07	-0.10
NOx Tailpipe	-0.03	-0.07	-0.10
SO2 Tailpipe	-0.02	-0.03	-0.04
PM Tailpipe	0.00	-0.01	-0.01
Fleetwide Change in Total Emissions			
CO Total	-1.38	-3.21	-4.53
VOC Total	-0.80	-1.51	-2.02
NOx Total	-0.19	-0.24	-0.30

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.09	-0.03	0.05
VOC Upstream	-0.53	-0.86	-1.23
NOx Upstream	-0.17	-0.08	0.06
SO2 Upstream	-0.06	0.09	0.27
PM Upstream	-0.01	-0.01	0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	0.37	-0.12	-0.96
VOC Tailpipe	0.01	0.00	-0.02
NOx Tailpipe	0.01	0.00	-0.02
SO2 Tailpipe	-0.01	-0.02	-0.03
PM Tailpipe	0.00	0.00	0.00
Fleetwide Change in Total Emissions			
CO Total	0.28	-0.15	-0.91
VOC Total	-0.51	-0.85	-1.24
NOx Total	-0.17	-0.08	0.03

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.12	-0.07	0.00
VOC Upstream	-1.02	-1.81	-2.48
NOx Upstream	-0.25	-0.19	-0.09
SO2 Upstream	-0.05	0.15	0.35
PM Upstream	-0.02	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-1.08	-3.78	-6.27
VOC Tailpipe	-0.04	-0.14	-0.24
NOx Tailpipe	-0.02	-0.08	-0.14
SO2 Tailpipe	-0.02	-0.04	-0.05
PM Tailpipe	0.00	-0.01	-0.02
Fleetwide Change in Total Emissions			
CO Total	-1.20	-3.84	-6.27
VOC Total	-1.06	-1.95	-2.72
NOx Total	-0.28	-0.27	-0.23

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.06	-0.05	-0.05
VOC Upstream	-0.61	-1.14	-1.52
NOx Upstream	-0.12	-0.14	-0.15
SO2 Upstream	0.00	0.08	0.13
PM Upstream	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-1.52	-3.68	-5.21
VOC Tailpipe	-0.06	-0.14	-0.20
NOx Tailpipe	-0.03	-0.08	-0.11
SO2 Tailpipe	-0.01	-0.02	-0.03
PM Tailpipe	0.00	-0.01	-0.01
Fleetwide Change in Total Emissions			
CO Total	-1.58	-3.73	-5.27
VOC Total	-0.67	-1.28	-1.71
NOx Total	-0.16	-0.22	-0.26

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.07	-0.01	0.06
VOC Upstream	-0.41	-0.68	-0.97
NOx Upstream	-0.13	-0.05	0.06
SO2 Upstream	-0.05	0.07	0.22
PM Upstream	-0.01	0.00	0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	0.44	-0.10	-1.06
VOC Tailpipe	0.02	0.00	-0.04
NOx Tailpipe	0.01	0.00	-0.03
SO2 Tailpipe	-0.01	-0.01	-0.02
PM Tailpipe	0.00	0.00	0.00
Fleetwide Change in Total Emissions			
CO Total	0.38	-0.11	-1.00
VOC Total	-0.39	-0.68	-1.01
NOx Total	-0.12	-0.05	0.03

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.09	-0.06	-0.02
VOC Upstream	-0.72	-1.28	-1.76
NOx Upstream	-0.19	-0.16	-0.11
SO2 Upstream	-0.04	0.07	0.19
PM Upstream	-0.02	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-1.13	-3.90	-6.49
VOC Tailpipe	-0.03	-0.13	-0.22
NOx Tailpipe	-0.02	-0.06	-0.11
SO2 Tailpipe	-0.01	-0.03	-0.04
PM Tailpipe	0.00	-0.01	-0.02
Fleetwide Change in Total Emissions			
CO Total	-1.22	-3.96	-6.51
VOC Total	-0.76	-1.41	-1.97
NOx Total	-0.20	-0.22	-0.22

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.04	-0.04	-0.05
VOC Upstream	-0.42	-0.79	-1.05
NOx Upstream	-0.09	-0.11	-0.13
SO2 Upstream	-0.01	0.04	0.07
PM Upstream	-0.01	-0.01	-0.01
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	-1.56	-3.75	-5.33
VOC Tailpipe	-0.05	-0.12	-0.18
NOx Tailpipe	-0.03	-0.06	-0.09
SO2 Tailpipe	-0.01	-0.02	-0.02
PM Tailpipe	0.00	-0.01	-0.01
Fleetwide Change in Total Emissions			
CO Total	-1.60	-3.79	-5.38
VOC Total	-0.47	-0.91	-1.22
NOx Total	-0.12	-0.17	-0.21

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-0.05	-0.02	0.03
VOC Upstream	-0.30	-0.49	-0.71
NOx Upstream	-0.10	-0.05	0.02
SO2 Upstream	-0.04	0.03	0.13
PM Upstream	-0.01	0.00	0.00
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	0.43	-0.15	-1.16
VOC Tailpipe	0.02	0.00	-0.04
NOx Tailpipe	0.01	0.00	-0.02
SO2 Tailpipe	-0.01	-0.01	-0.01
PM Tailpipe	0.00	0.00	0.00
Fleetwide Change in Total Emissions			
CO Total	0.38	-0.17	-1.13
VOC Total	-0.28	-0.50	-0.75
NOx Total	-0.09	-0.05	-0.01

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-8.10	-1.86	3.75
VOC Upstream	-88.60	-140.90	-193.56
NOx Upstream	-17.35	-8.46	-0.66
SO2 Upstream	0.49	17.54	33.63
PM Upstream	-1.40	-0.59	0.12
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	229.17	292.97	497.18
VOC Tailpipe	27.45	44.09	72.93
NOx Tailpipe	21.33	35.70	59.10
SO2 Tailpipe	-1.90	-3.10	-4.28
PM Tailpipe	0.29	0.19	0.33
Fleetwide Change in Total Emissions			
CO Total	221.07	291.11	500.93
VOC Total	-61.14	-96.82	-120.63
NOx Total	3.98	27.24	58.43

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-4.51	1.14	7.04
VOC Upstream	-39.45	-54.19	-81.10
NOx Upstream	-9.30	-0.04	9.20
SO2 Upstream	-1.15	9.58	22.38
PM Upstream	-0.76	0.05	0.86
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	202.12	301.73	426.93
VOC Tailpipe	18.07	29.64	46.11
NOx Tailpipe	15.06	25.58	40.87
SO2 Tailpipe	-0.84	-1.21	-1.83
PM Tailpipe	0.36	0.46	0.55
Fleetwide Change in Total Emissions			
CO Total	197.61	302.86	433.97
VOC Total	-21.38	-24.56	-34.99
NOx Total	5.75	25.54	50.07

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	-3.58	-3.00	-3.29
VOC Upstream	-49.14	-86.71	-112.46
NOx Upstream	-8.04	-8.42	-9.86
SO2 Upstream	1.65	7.96	11.25
PM Upstream	-0.64	-0.64	-0.74
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	27.05	-8.76	70.25
VOC Tailpipe	9.38	14.45	26.82
NOx Tailpipe	6.27	10.12	18.23
SO2 Tailpipe	-1.06	-1.88	-2.45
PM Tailpipe	-0.07	-0.27	-0.22
Fleetwide Change in Total Emissions			
CO Total	23.47	-11.75	66.96
VOC Total	-39.76	-72.26	-85.64
NOx Total	-1.77	1.70	8.37

Table B-24-13 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2030, by Alternative (1,000 metric tons)

Alternative	1	2	3
Fleetwide Change in Upstream Emissions			
CO Upstream	6.0	6.1	6.2
VOC Upstream	20.8	19.8	19.0
NOx Upstream	11.4	11.4	11.5
SO2 Upstream	6.3	6.5	6.8
PM Upstream	0.9	1.0	1.0
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	60.2	57.8	55.7
VOC Tailpipe	1.3	1.2	1.2
NOx Tailpipe	1.3	1.3	1.2
SO2 Tailpipe	0.4	0.4	0.4
PM Tailpipe	0.2	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	66.2	63.9	61.9
VOC Total	22.1	21.1	20.1
NOx Total	12.7	12.7	12.8

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	2.6	2.6	2.6
VOC Upstream	8.2	7.5	7.1
NOx Upstream	4.9	4.9	4.8
SO2 Upstream	2.8	2.9	3.0
PM Upstream	0.4	0.4	0.4
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	27.6	25.8	24.4
VOC Tailpipe	0.6	0.6	0.5
NOx Tailpipe	0.6	0.6	0.6
SO2 Tailpipe	0.2	0.1	0.1
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	30.2	28.4	27.1
VOC Total	8.8	8.1	7.6
NOx Total	5.5	5.4	5.4

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	3.4	3.5	3.6
VOC Upstream	12.6	12.3	11.9
NOx Upstream	6.5	6.6	6.7
SO2 Upstream	3.4	3.6	3.8
PM Upstream	0.5	0.5	0.6
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	32.5	32.1	31.2
VOC Tailpipe	0.7	0.7	0.7
NOx Tailpipe	0.7	0.7	0.7
SO2 Tailpipe	0.3	0.3	0.2
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	36.0	35.6	34.8
VOC Total	13.3	13.0	12.6
NOx Total	7.2	7.3	7.4

Table B-24-16 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2035, by Alternative (1,000 metric tons)

Alternative	1	2	3
Fleetwide Change in Upstream Emissions			
CO Upstream	4.8	4.9	4.9
VOC Upstream	16.6	15.8	15.1
NOx Upstream	9.0	9.0	9.1
SO2 Upstream	4.9	5.1	5.3
PM Upstream	0.8	0.8	0.8
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	70.8	68.1	65.6
VOC Tailpipe	2.9	2.8	2.7
NOx Tailpipe	1.6	1.6	1.5
SO2 Tailpipe	0.3	0.3	0.3
PM Tailpipe	0.2	0.2	0.2
Fleetwide Change in Total Emissions			
CO Total	75.6	73.0	70.5
VOC Total	19.5	18.6	17.9
NOx Total	10.6	10.6	10.7

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	2.1	2.1	2.1
VOC Upstream	6.6	6.0	5.7
NOx Upstream	3.9	3.8	3.8
SO2 Upstream	2.2	2.3	2.4
PM Upstream	0.3	0.3	0.3
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	32.9	30.7	29.2
VOC Tailpipe	1.3	1.2	1.1
NOx Tailpipe	0.7	0.7	0.7
SO2 Tailpipe	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	34.9	32.8	31.3
VOC Total	7.9	7.3	6.8
NOx Total	4.6	4.5	4.5

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	2.7	2.8	2.9
VOC Upstream	10.0	9.8	9.5
NOx Upstream	5.1	5.2	5.3
SO2 Upstream	2.7	2.8	3.0
PM Upstream	0.4	0.4	0.4
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	37.9	37.4	36.4
VOC Tailpipe	1.6	1.6	1.6
NOx Tailpipe	0.9	0.9	0.9
SO2 Tailpipe	0.2	0.2	0.2
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	40.7	40.2	39.3
VOC Total	11.7	11.4	11.0
NOx Total	6.0	6.1	6.2

Table B-24-19 - Total Criteria Emissions from the MY 2029 Total Fleet in Calendar Year 2040, by Alternative (1,000 metric tons)

Alternative	1	2	3
Fleetwide Change in Upstream Emissions			
CO Upstream	3.4	3.4	3.4
VOC Upstream	11.7	11.1	10.6
NOx Upstream	6.2	6.2	6.3
SO2 Upstream	3.4	3.5	3.6
PM Upstream	0.5	0.5	0.5
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	71.5	68.7	66.2
VOC Tailpipe	2.5	2.4	2.3
NOx Tailpipe	1.3	1.3	1.2
SO2 Tailpipe	0.2	0.2	0.2
PM Tailpipe	0.2	0.2	0.2
Fleetwide Change in Total Emissions			
CO Total	74.9	72.1	69.6
VOC Total	14.2	13.5	13.0
NOx Total	7.5	7.5	7.5

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	1.4	1.4	1.4
VOC Upstream	4.5	4.1	3.9
NOx Upstream	2.6	2.6	2.6
SO2 Upstream	1.5	1.5	1.6
PM Upstream	0.2	0.2	0.2
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	33.0	30.8	29.2
VOC Tailpipe	1.1	1.0	1.0
NOx Tailpipe	0.6	0.5	0.5
SO2 Tailpipe	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	34.4	32.2	30.6
VOC Total	5.6	5.2	4.9
NOx Total	3.2	3.1	3.1

Table B-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	3
Fleetwide Change in Upstream Emissions			
CO Upstream	1.9	2.0	2.0
VOC Upstream	7.1	7.0	6.7
NOx Upstream	3.6	3.7	3.7
SO2 Upstream	1.9	2.0	2.1
PM Upstream	0.3	0.3	0.3
Fleetwide Change in Tailpipe Emissions			
CO Tailpipe	38.5	37.9	36.9
VOC Tailpipe	1.4	1.4	1.4
NOx Tailpipe	0.8	0.7	0.7
SO2 Tailpipe	0.1	0.1	0.1
PM Tailpipe	0.1	0.1	0.1
Fleetwide Change in Total Emissions			
CO Total	40.5	39.9	39.0
VOC Total	8.6	8.3	8.1
NOx Total	4.4	4.4	4.4

25. Electrification Costs

Table B-25-1 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Total Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	0.2	0.4	0.5
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.1	0.1
Total Electrification Costs (\$b)	0.2	0.4	0.4

Table B-25-2 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Passenger Car Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	0.4	0.6	0.6
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.1	0.1	0.1
Total Electrification Costs (\$b)	0.3	0.5	0.5

Table B-25-3 - Incremental Electrification Costs for Manufacturer (Total), MY 2029 Light Truck Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	-0.2	-0.1	-0.1
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.0
Total Electrification Costs (\$b)	-0.2	-0.1	-0.1

Table B-25-4 - Total Electrification Costs for Manufacturer (Total), MY 2029 Total Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	0.4	0.7	0.7
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.1	0.1	0.1
Total Electrification Costs (\$b)	0.3	0.5	0.6

Table B-25-5 - Total Electrification Costs for Manufacturer (Total), MY 2029 Passenger Car Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	0.4	0.6	0.6
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.1	0.1	0.1
Total Electrification Costs (\$b)	0.3	0.5	0.5

Table B-25-6 - Total Electrification Costs for Manufacturer (Total), MY 2029 Light Truck Fleet

	Alternative		
	1	2	3
Retrievable Electrification Costs (\$b)	0.0	0.1	0.1
Electrification Tax Credits (\$b)	0.0	0.0	0.0
Irretrievable Electrification Costs (\$b)	0.0	0.0	0.0
Total Electrification Costs (\$b)	0.0	0.1	0.1

26. Fleet Characteristics

Table B-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	-0.7	-2.4	-2.4	-2.5	-2.2	-2.0	-1.7	-13.8	-1.4
Light Truck Share (%)	59%	58%	56%	55%	55%	54%	54%	54%	53%	53%	N/A	55%
Pass. Car Share (%)	41%	42%	44%	45%	45%	46%	46%	46%	47%	47%	N/A	45%
VMT from Rebound (b)	0.0	0.1	0.1	1.9	9.6	12.6	15.7	16.6	18.5	19.2	94.4	9.4
Fuel Volume - Total (b gallons)	0.2	0.3	0.3	-0.9	-4.4	-5.0	-5.8	-5.8	-6.0	-5.7	-32.6	-3.3
Fuel Volume - Lt. Truck (b gallons)	0.2	0.2	0.2	-0.3	-2.5	-2.3	-2.8	-2.7	-2.7	-2.3	-14.9	-1.5
Fuel Volume - Pass. Car (b gallons)	0.1	0.1	0.1	-0.6	-1.9	-2.7	-3.0	-3.1	-3.2	-3.4	-17.7	-1.8
Changes in Fatalities by Source												
Fatalities from Rebound Miles	0	1	1	10	51	65	80	84	94	97	482	48
Fatalities from Curb Weight Change	0	0	0	0	12	8	12	14	15	15	75	7
Total Changes in Fatalities	41	46	54	26	-28	-8	10	32	58	77	309	31
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.0	0.1	0.8	4.0	5.2	6.5	6.9	7.7	7.9	39	4
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.0	1.0	0.7	1.0	1.2	1.3	1.3	6.4	0.6
Total Change in Injuries (thousands)	2.9	3.3	4.0	1.8	-2.6	-1.2	0.3	2.2	4.3	6.0	20.9	2.1
Property Damage from Rebound Miles (thousands)	0.1	0.1	0.2	3.1	15.3	20.0	24.9	26.4	29.2	30.3	149.5	15.0
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	0.0	3.8	2.6	3.9	4.6	4.8	5.0	24.6	2.5
Total Property Damaged Vehicles (thousands)	10.8	12.5	15.1	6.8	-10.3	-4.7	0.9	8.2	16.5	22.7	78.5	7.9

Table B-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	-1.0	-2.6	-3.9	-5.2	-4.7	-4.2	-3.7	-25.4	-2.5
Light Truck Share (%)	59%	58%	56%	55%	55%	55%	54%	54%	54%	54%	N/A	55%
Pass. Car Share (%)	41%	42%	44%	45%	45%	45%	46%	46%	46%	46%	N/A	45%
VMT from Rebound (b)	0.1	0.1	0.3	2.1	10.3	15.4	20.1	23.0	25.4	26.0	122.8	12.3
Fuel Volume - Total (b gallons)	0.4	0.5	0.6	-1.0	-4.6	-7.1	-9.8	-10.0	-10.3	-9.9	-51.2	-5.1
Fuel Volume - Lt. Truck (b gallons)	0.3	0.3	0.4	-0.2	-2.1	-2.9	-4.3	-4.1	-4.1	-3.6	-20.3	-2.0
Fuel Volume - Pass. Car (b gallons)	0.1	0.2	0.2	-0.8	-2.5	-4.2	-5.5	-5.9	-6.2	-6.2	-30.8	-3.1
Changes in Fatalities by Source												
Fatalities from Rebound Miles	1	1	2	11	53	77	101	115	127	129	616	62
Fatalities from Curb Weight Change	0	0	0	3	17	13	20	23	23	24	123	12
Total Changes in Fatalities	74	83	97	56	19	-35	-80	-26	16	51	253	25
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.0	0.1	0.1	0.9	4.3	6.4	8.4	9.6	10.6	10.8	51	5
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.3	1.5	1.2	1.7	2.0	2.0	2.0	10.7	1.1
Total Change in Injuries (thousands)	5.1	6.0	7.2	4.1	1.2	-3.4	-7.0	-2.6	1.0	4.0	15.5	1.5
Property Damage from Rebound Miles (thousands)	0.1	0.2	0.4	3.5	16.5	24.4	32.0	36.6	40.4	41.1	195.3	19.5
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	1.1	5.7	4.5	6.5	7.6	7.7	7.8	40.9	4.1
Total Property Damaged Vehicles (thousands)	19.3	22.4	27.0	15.2	4.1	-13.2	-27.1	-10.3	3.8	15.3	56.5	5.7

Table B-26-3 - 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)	0.0	0.0	-0.1	-1.7	-4.6	-6.8	-8.4	-7.7	-6.9	-6.1	-42.2	-4.2
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)	0.1	0.2	0.4	3.6	14.0	19.1	23.7	26.9	29.5	30.2	148.0	14.8
Fuel Volume - Total (b gallons)	0.7	0.8	1.0	-1.2	-6.7	-10.4	-13.6	-13.8	-13.9	-13.4	-70.7	-7.1
Fuel Volume - Lt. Truck (b gallons)	0.5	0.5	0.6	-0.3	-3.4	-4.7	-6.3	-6.0	-5.8	-5.2	-30.0	-3.0
Fuel Volume - Pass. Car (b gallons)	0.2	0.3	0.3	-1.0	-3.3	-5.7	-7.3	-7.8	-8.1	-8.2	-40.6	-4.1
Changes in Fatalities by Source												
Fatalities from Rebound Miles	1	2	3	19	73	96	119	135	147	150	743	74
Fatalities from Curb Weight Change	0	0	0	4	20	16	24	26	26	26	143	14
Total Changes in Fatalities	123	137	160	95	-11	-118	-180	-112	-49	0	45	5
Changes in Non-Fatal Safety Impacts												
Injuries from Rebound Miles (thousands)	0.1	0.1	0.2	1.5	5.9	7.9	9.9	11.2	12.2	12.5	62	6
Injuries from Curb Weight (thousands)	0.0	0.0	0.0	0.4	1.7	1.4	2.1	2.3	2.3	2.3	12.4	1.2
Total Change in Injuries (thousands)	8.5	9.8	11.9	6.9	-1.6	-10.3	-15.4	-9.7	-4.2	0.1	-4.0	-0.4
Property Damage from Rebound Miles (thousands)	0.2	0.4	0.7	5.9	22.6	30.3	37.9	42.8	46.8	47.8	235.4	23.5
Property Damage from Curb Weight (thousands)	0.0	0.0	0.0	1.4	6.6	5.5	7.9	8.6	8.7	8.7	47.4	4.7
Total Property Damaged Vehicles (thousands)	31.9	37.0	44.7	25.6	-6.6	-40.0	-59.1	-37.2	-16.1	0.4	-19.3	-1.9

27. Liquid Fuel and Electricity Consumption

Table B-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	1176.8	0.3	0.3	-0.9	-4.4	-5.0	-5.8	-5.8	-6.0	-5.7	1143.9
Alternative 2	1178.9	0.5	0.6	-1.0	-4.6	-7.1	-9.8	-10.0	-10.3	-9.9	1127.3
Alternative 3	1182.2	0.8	1.0	-1.2	-6.7	-10.4	-13.6	-13.8	-13.9	-13.4	1110.8

Table B-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	465.4	0.1	0.1	-0.6	-1.9	-2.7	-3.0	-3.1	-3.2	-3.4	447.7
Alternative 2	466.4	0.2	0.2	-0.8	-2.5	-4.2	-5.5	-5.9	-6.2	-6.2	435.4
Alternative 3	467.8	0.3	0.3	-1.0	-3.3	-5.7	-7.3	-7.8	-8.1	-8.2	426.9

Table B-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	711.4	0.2	0.2	-0.3	-2.5	-2.3	-2.8	-2.7	-2.7	-2.3	696.3
Alternative 2	712.6	0.3	0.4	-0.2	-2.1	-2.9	-4.3	-4.1	-4.1	-3.6	692.0
Alternative 3	714.4	0.5	0.6	-0.3	-3.4	-4.7	-6.3	-6.0	-5.8	-5.2	683.9

Table B-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	38.3	0.1	0.1	5.3	15.3	16.3	17.0	17.5	17.2	15.0	142.2
Alternative 2	38.4	0.1	0.1	9.1	21.7	31.4	45.7	45.7	46.7	45.0	283.9
Alternative 3	38.5	0.1	0.2	10.1	30.1	51.4	71.4	72.6	73.7	72.9	421.1

Table B-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	33.4	0.0	0.1	5.1	8.8	9.6	9.7	9.5	10.0	11.3	97.4
Alternative 2	33.4	0.1	0.1	8.5	12.4	16.5	23.5	23.5	25.5	27.2	170.7
Alternative 3	33.5	0.1	0.2	8.9	13.8	23.6	31.1	32.2	34.4	38.0	215.8

Table B-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	5.0	0.0	0.0	0.2	6.5	6.7	7.4	8.0	7.2	3.7	44.7
Alternative 2	5.0	0.0	0.0	0.6	9.3	14.9	22.2	22.2	21.2	17.8	113.2
Alternative 3	5.0	0.0	0.1	1.2	16.4	27.8	40.3	40.4	39.2	34.9	205.3

28. Vehicle-Mass-Related Fatality Impacts

Table B-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	3
Fatalities	1,062	1,601	2,262
Fatality Costs (\$ Billion, 3% Discount Rate)	8.0	12.6	18.3
Fatality Costs (\$ Billion, 7% Discount Rate)	5.4	8.5	12.7
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	5.2	7.4	9.6
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	3.5	5.1	6.9
Total Crash Costs (\$ Billion, 3% Discount Rate)	13.2	19.9	27.9
Total Crash Costs (\$ Billion, 7% Discount Rate)	8.9	13.6	19.6

Table B-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	3
Fatalities	-95	-153	-138
Fatality Costs (\$ Billion, 3% Discount Rate)	-0.1	0.0	0.8
Fatality Costs (\$ Billion, 7% Discount Rate)	0.4	0.8	1.7
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	-1.6	-2.8	-3.7
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	-0.8	-1.3	-1.7
Total Crash Costs (\$ Billion, 3% Discount Rate)	-1.7	-2.7	-2.9
Total Crash Costs (\$ Billion, 7% Discount Rate)	-0.4	-0.5	0.0

Table B-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	3
Fatalities	1,156	1,755	2,401
Fatality Costs (\$ Billion, 3% Discount Rate)	8.1	12.5	17.5
Fatality Costs (\$ Billion, 7% Discount Rate)	4.9	7.7	11.0
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	6.8	10.2	13.3
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	4.3	6.4	8.5
Total Crash Costs (\$ Billion, 3% Discount Rate)	15.0	22.7	30.8
Total Crash Costs (\$ Billion, 7% Discount Rate)	9.3	14.2	19.6

Table B-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	3
Fatalities	863	1,156	1,310
Fatality Costs (\$ Billion, 3% Discount Rate)	4.8	6.4	7.3
Fatality Costs (\$ Billion, 7% Discount Rate)	2.1	2.8	3.2
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	5.4	7.6	9.0
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	2.3	3.3	3.9
Total Crash Costs (\$ Billion, 3% Discount Rate)	10.2	14.1	16.3
Total Crash Costs (\$ Billion, 7% Discount Rate)	4.4	6.1	7.0

Table B-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	3
Fatalities	-900	-1,455	-1,968
Fatality Costs (\$ Billion, 3% Discount Rate)	-4.9	-8.0	-10.8
Fatality Costs (\$ Billion, 7% Discount Rate)	-2.1	-3.4	-4.6
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	-5.8	-9.1	-12.2
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	-2.5	-3.9	-5.2
Total Crash Costs (\$ Billion, 3% Discount Rate)	-10.8	-17.1	-23.1
Total Crash Costs (\$ Billion, 7% Discount Rate)	-4.6	-7.3	-9.8

Table B-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	3
Fatalities	1,763	2,611	3,278
Fatality Costs (\$ Billion, 3% Discount Rate)	9.7	14.5	18.2
Fatality Costs (\$ Billion, 7% Discount Rate)	4.2	6.2	7.8
Non-Fatal Crash Costs (\$ Billion, 3% Discount Rate)	11.3	16.8	21.2
Non-Fatal Crash Costs (\$ Billion, 7% Discount Rate)	4.8	7.2	9.1
Total Crash Costs (\$ Billion, 3% Discount Rate)	21.0	31.2	39.3
Total Crash Costs (\$ Billion, 7% Discount Rate)	9.0	13.4	16.8

Table B-28-8 - 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	349	19	22	10	-16	-74	-93	-100	-100	-111	-95
Light Trucks	445	28	32	17	-11	66	102	132	158	188	1156
Total	794	46	54	26	-28	-8	10	32	58	77	1062

Table B-28-9 - 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	625	34	40	23	6	-96	-173	-208	-199	-207	-153
Light Trucks	797	49	57	33	13	61	92	182	214	257	1755
Total	1422	83	97	56	19	-35	-80	-26	16	51	1601

Table B-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	1024	55	66	42	-18	-160	-265	-302	-289	-291	-138
Light Trucks	1316	82	94	53	7	42	85	191	240	291	2401
Total	2340	137	160	95	-11	-118	-180	-112	-49	0	2262

Table B-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	2.9	0.1	0.2	0.1	-0.1	-0.5	-0.6	-0.7	-0.6	-0.7	-0.1
Light Trucks	3.5	0.2	0.2	0.1	-0.1	0.5	0.7	0.9	1.0	1.2	8.1
Total	6.4	0.3	0.4	0.2	-0.2	-0.1	0.0	0.2	0.4	0.5	8.0

Table B-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	5.1	0.3	0.3	0.2	0.0	-0.7	-1.2	-1.4	-1.3	-1.3	0.0
Light Trucks	6.2	0.4	0.4	0.2	0.1	0.4	0.6	1.2	1.4	1.6	12.5
Total	11.3	0.6	0.7	0.4	0.1	-0.3	-0.6	-0.2	0.1	0.3	12.6

Table B-28-13 - 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	8.4	0.4	0.5	0.3	-0.1	-1.1	-1.8	-2.0	-1.9	-1.8	0.8
Light Trucks	10.3	0.6	0.7	0.4	0.0	0.3	0.6	1.3	1.5	1.8	17.5
Total	18.6	1.0	1.2	0.7	-0.1	-0.8	-1.2	-0.8	-0.3	0.0	18.3

Table B-28-14 - 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	2.1	0.1	0.1	0.0	-0.1	-0.3	-0.4	-0.4	-0.4	-0.4	0.4
Light Trucks	2.4	0.1	0.1	0.1	-0.1	0.3	0.4	0.5	0.5	0.6	4.9
Total	4.5	0.2	0.2	0.1	-0.1	-0.1	0.0	0.1	0.2	0.2	5.4

Table B-28-15 - 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	3.6	0.2	0.2	0.1	0.0	-0.4	-0.7	-0.8	-0.7	-0.7	0.8
Light Trucks	4.2	0.2	0.3	0.1	0.0	0.2	0.4	0.7	0.7	0.8	7.7
Total	7.9	0.4	0.4	0.2	0.1	-0.2	-0.3	-0.1	0.0	0.2	8.5

Table B-28-16 - 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	6.0	0.3	0.3	0.2	-0.1	-0.7	-1.1	-1.1	-1.0	-1.0	1.7
Light Trucks	7.0	0.4	0.4	0.2	0.0	0.2	0.3	0.7	0.8	1.0	11.0
Total	13.0	0.6	0.7	0.4	-0.1	-0.5	-0.7	-0.4	-0.2	0.0	12.7

29. Sales Impacts

Table B-29-1 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	13,592,551	0	0	0
2021	14,721,140	0	0	0
2022	16,553,058	0	0	0
2023	17,327,385	-37,818	-55,055	-90,374
2024	17,169,458	-141,037	-147,557	-262,709
2025	16,822,766	-145,940	-235,328	-400,142
2026	16,391,671	-154,382	-316,754	-502,441
2027	16,044,091	-143,291	-294,816	-469,309
2028	15,807,695	-131,235	-269,890	-427,766
2029	15,654,520	-119,281	-243,374	-388,550

Table B-29-2 - Estimated Sales Impacts by Alternative, Passenger Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	5,929,602	0	0	0
2021	6,603,312	0	0	0
2022	7,659,662	0	0	0
2023	8,178,821	-17,853	-25,988	-42,681
2024	8,228,015	-75,719	-87,558	-156,302
2025	8,163,620	-145,131	-211,108	-320,587
2026	8,036,605	-174,476	-306,985	-450,706
2027	7,928,760	-186,866	-355,225	-502,595
2028	7,896,481	-192,708	-353,572	-498,947
2029	7,885,395	-207,250	-363,979	-503,782

Table B-29-3 - Estimated Sales Impacts by Alternative, Light Truck Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	7,662,949	0	0	0
2021	8,117,828	0	0	0
2022	8,893,396	0	0	0
2023	9,148,564	-19,965	-29,067	-47,693
2024	8,941,443	-65,318	-59,999	-106,407
2025	8,659,146	-809	-24,220	-79,555
2026	8,355,066	20,094	-9,769	-51,735
2027	8,115,331	43,575	60,409	33,286
2028	7,911,214	61,473	83,682	71,181
2029	7,769,125	87,969	120,605	115,232

Table B-29-4 - Estimated Sales Impacts by Alternative, Domestic Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	2,780,461	0	0	0
2021	3,110,530	0	0	0
2022	3,625,933	0	0	0
2023	3,883,519	-8,485	-12,336	-20,271
2024	3,915,797	-36,639	-42,858	-76,532
2025	3,892,377	-74,434	-107,453	-161,715
2026	3,837,587	-90,194	-157,121	-229,403
2027	3,790,415	-97,323	-184,222	-258,878
2028	3,780,794	-100,903	-184,155	-258,307
2029	3,779,952	-109,254	-190,742	-262,265

Table B-29-5 - Estimated Sales Impacts by Alternative, Imported Car Fleet for Manufacturer (Total)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	3,149,141	0	0	0
2021	3,492,782	0	0	0
2022	4,033,729	0	0	0
2023	4,295,302	-9,368	-13,652	-22,410
2024	4,312,218	-39,080	-44,700	-79,770
2025	4,271,243	-70,697	-103,655	-158,872
2026	4,199,018	-84,282	-149,864	-221,303
2027	4,138,345	-89,543	-171,003	-243,717
2028	4,115,687	-91,805	-169,417	-240,640
2029	4,105,443	-97,996	-173,237	-241,517

Table B-29-6 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (BMW)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	296,063	0	0	0
2021	326,079	0	0	0
2022	373,688	0	0	0
2023	395,992	-858	-1,258	-2,071
2024	396,101	-3,493	-3,929	-6,998
2025	391,142	-5,610	-8,386	-13,100
2026	383,587	-6,557	-11,967	-17,899
2027	377,345	-6,841	-13,242	-19,193
2028	374,324	-6,932	-12,988	-18,739
2029	372,643	-7,262	-13,075	-18,541

Table B-29-7 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Daimler)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	363,906	0	0	0
2021	396,285	0	0	0
2022	448,401	0	0	0
2023	471,299	-1,032	-1,496	-2,460
2024	468,484	-3,958	-4,227	-7,536
2025	460,248	-4,907	-7,606	-12,473
2026	449,427	-5,428	-10,502	-16,224
2027	440,640	-5,337	-10,605	-16,127
2028	435,162	-5,146	-10,049	-15,192
2029	431,725	-5,063	-9,601	-14,403

Table B-29-8 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (FCA)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,504,790	0	0	0
2021	1,603,556	0	0	0
2022	1,769,257	0	0	0
2023	1,828,821	-3,977	-5,829	-9,537
2024	1,794,308	-13,554	-13,006	-23,055
2025	1,743,382	-4,381	-10,405	-23,199
2026	1,686,857	-1,637	-10,715	-22,168
2027	1,642,051	2,069	69	-8,932
2028	1,605,643	5,033	4,208	-2,213
2029	1,580,652	9,210	10,333	5,297

Table B-29-9 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Ford)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,686,149	0	0	0
2021	1,806,115	0	0	0
2022	2,004,949	0	0	0
2023	2,080,970	-4,552	-6,620	-10,876
2024	2,048,340	-15,971	-15,768	-28,004
2025	1,995,733	-9,113	-17,227	-33,526
2026	1,935,515	-7,327	-20,649	-36,777
2027	1,887,535	-4,018	-11,522	-25,304
2028	1,850,388	-1,279	-7,422	-18,565
2029	1,825,215	2,396	-1,685	-11,262

Table B-29-10 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (GM)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	2,315,296	0	0	0
2021	2,478,493	0	0	0
2022	2,749,347	0	0	0
2023	2,852,217	-6,273	-9,053	-14,885
2024	2,806,384	-21,767	-21,379	-38,063
2025	2,733,423	-11,824	-22,701	-44,757
2026	2,650,219	-9,128	-26,914	-48,508
2027	2,584,012	-4,484	-13,909	-32,246
2028	2,532,390	-670	-8,204	-22,877
2029	2,497,376	4,529	-183	-12,673

Table B-29-11 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Honda)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,293,078	0	0	0
2021	1,417,276	0	0	0
2022	1,615,427	0	0	0
2023	1,705,916	-3,708	-5,413	-8,888
2024	1,701,852	-14,724	-16,188	-28,839
2025	1,676,944	-21,452	-32,468	-51,619
2026	1,641,600	-24,644	-45,819	-69,288
2027	1,612,597	-25,188	-49,098	-72,284
2028	1,596,685	-25,071	-47,582	-69,675
2029	1,587,288	-25,771	-47,099	-67,981

Table B-29-12 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Hyundai Kia-H)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	741,548	0	0	0
2021	811,289	0	0	0
2022	922,825	0	0	0
2023	973,240	-2,114	-3,092	-5,077
2024	969,946	-8,321	-9,087	-16,215
2025	954,946	-11,619	-17,715	-28,412
2026	934,173	-13,236	-24,868	-37,845
2027	917,174	-13,405	-26,270	-39,019
2028	907,473	-13,252	-25,325	-37,408
2029	901,627	-13,482	-24,869	-36,268

Table B-29-13 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Hyundai Kia-K)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	596,735	0	0	0
2021	657,543	0	0	0
2022	753,919	0	0	0
2023	799,167	-1,759	-2,548	-4,186
2024	799,552	-7,076	-7,909	-14,141
2025	789,729	-11,484	-17,065	-26,654
2026	774,583	-13,430	-24,375	-36,451
2027	762,044	-14,012	-26,994	-39,126
2028	756,074	-14,172	-26,491	-38,202
2029	752,801	-14,863	-26,676	-37,829

Table B-29-14 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (JLR)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	138,251	0	0	0
2021	146,929	0	0	0
2022	161,594	0	0	0
2023	166,676	-369	-534	-870
2024	163,253	-1,232	-1,154	-2,045
2025	158,377	-223	-720	-1,822
2026	153,058	81	-632	-1,549
2027	148,851	465	486	-191
2028	145,351	748	877	460
2029	142,938	1,165	1,477	1,195

Table B-29-15 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Mazda)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	260,417	0	0	0
2021	280,945	0	0	0
2022	314,493	0	0	0
2023	328,230	-711	-1,036	-1,711
2024	324,486	-2,606	-2,675	-4,774
2025	317,323	-2,297	-3,842	-6,782
2026	308,696	-2,302	-5,042	-8,226
2027	301,772	-1,983	-4,281	-7,192
2028	296,816	-1,682	-3,751	-6,313
2029	293,539	-1,330	-3,109	-5,425

Table B-29-16 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Mitsubishi)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	112,715	0	0	0
2021	120,841	0	0	0
2022	134,283	0	0	0
2023	139,470	-302	-441	-714
2024	137,359	-1,064	-1,063	-1,877
2025	133,896	-651	-1,211	-2,317
2026	129,903	-538	-1,471	-2,589
2027	126,728	-335	-905	-1,871
2028	124,284	-156	-633	-1,419
2029	122,644	71	-270	-953

Table B-29-17 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Nissan)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,030,570	0	0	0
2021	1,125,551	0	0	0
2022	1,277,788	0	0	0
2023	1,345,902	-2,928	-4,270	-7,009
2024	1,340,050	-11,416	-12,376	-22,072
2025	1,318,278	-15,280	-23,456	-37,915
2026	1,288,756	-17,247	-32,760	-50,098
2027	1,264,680	-17,306	-34,102	-51,024
2028	1,250,425	-16,961	-32,676	-48,608
2029	1,241,705	-17,089	-31,813	-46,778

Table B-29-18 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Subaru)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	751,468	0	0	0
2021	809,262	0	0	0
2022	904,013	0	0	0
2023	942,220	-2,052	-2,990	-4,904
2024	930,492	-7,424	-7,564	-13,451
2025	909,127	-5,997	-10,259	-18,408
2026	883,750	-5,818	-13,238	-21,904
2027	863,420	-4,768	-10,560	-18,383
2028	848,555	-3,817	-8,944	-15,722
2029	838,667	-2,652	-6,918	-12,995

Table B-29-19 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Tesla)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	196,000	0	0	0
2021	222,393	0	0	0
2022	263,160	0	0	0
2023	284,444	-619	-907	-1,485
2024	288,756	-2,823	-3,424	-6,114
2025	288,602	-6,647	-9,444	-13,915
2026	285,792	-8,203	-13,983	-20,158
2027	283,224	-9,005	-16,893	-23,386
2028	283,769	-9,449	-17,048	-23,596
2029	284,671	-10,377	-17,889	-24,253

Table B-29-20 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Toyota)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	1,774,456	0	0	0
2021	1,939,600	0	0	0
2022	2,204,008	0	0	0
2023	2,322,901	-5,047	-7,369	-12,101
2024	2,313,883	-19,779	-21,531	-38,367
2025	2,277,162	-27,056	-41,368	-66,564
2026	2,226,871	-30,677	-57,921	-88,303
2027	2,185,797	-30,935	-60,744	-90,501
2028	2,161,900	-30,446	-58,396	-86,497
2029	2,147,383	-30,824	-57,097	-83,536

Table B-29-21 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (Volvo)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	103,970	0	0	0
2021	112,096	0	0	0
2022	125,390	0	0	0
2023	130,801	-289	-420	-681
2024	129,261	-1,047	-1,066	-1,902
2025	126,363	-896	-1,493	-2,659
2026	122,891	-901	-1,943	-3,200
2027	120,111	-756	-1,605	-2,755
2028	118,099	-634	-1,388	-2,391
2029	116,778	-500	-1,135	-2,038

Table B-29-22 - Estimated Sales Impacts by Alternative, Total Fleet for Manufacturer (VWA)

Model Year	Regulatory Alternative			
	0 (Baseline)	1	2	3
2020	427,139	0	0	0
2021	466,887	0	0	0
2022	530,516	0	0	0
2023	559,119	-1,228	-1,779	-2,919
2024	556,951	-4,782	-5,211	-9,256
2025	548,091	-6,503	-9,962	-16,020
2026	535,993	-7,390	-13,955	-21,254
2027	526,110	-7,452	-14,641	-21,775
2028	520,357	-7,349	-14,078	-20,809
2029	516,868	-7,439	-13,765	-20,107

30. Regulatory Costs per Vehicle, by Vehicle Type

Table B-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)	874	1,134	1,003
Alternative 1	1,302	1,601	1,453
Alternative 2	1,762	1,950	1,858
Alternative 3	2,208	2,375	2,294

Table B-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)	1,886	887	1,586
Alternative 1	1,675	1,173	1,520
Alternative 2	1,973	1,554	1,841
Alternative 3	2,200	1,768	2,062

Table B-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)	1,374	1,453	1,410
Alternative 1	2,098	1,679	1,905
Alternative 2	2,787	1,793	2,321
Alternative 3	2,934	2,804	2,872

Table B-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)	1,702	1,365	1,422
Alternative 1	2,874	1,756	1,939
Alternative 2	3,676	1,987	2,258
Alternative 3	4,251	2,250	2,567

Table B-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)	982	938	952
Alternative 1	2,221	1,128	1,461
Alternative 2	2,605	1,521	1,846
Alternative 3	2,744	2,024	2,238

Table B-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)	1,010	1,059	1,041
Alternative 1	1,665	2,019	1,892
Alternative 2	2,016	2,479	2,314
Alternative 3	2,354	3,043	2,799

Table B-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)	724	594	678
Alternative 1	774	777	775
Alternative 2	1,300	1,437	1,350
Alternative 3	1,774	1,836	1,797

Table B-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)	782	1,483	844
Alternative 1	1,196	2,326	1,299
Alternative 2	1,892	2,882	1,985
Alternative 3	2,297	3,478	2,408

Table B-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)	695	1,179	845
Alternative 1	887	1,707	1,149
Alternative 2	1,585	2,264	1,806
Alternative 3	2,042	2,844	2,307

Table B-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)	1,269	1,140	1,148
Alternative 1	1,714	1,631	1,636
Alternative 2	2,334	1,921	1,945
Alternative 3	2,736	2,237	2,264

Table B-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)	2,181	779	1,529
Alternative 1	2,564	988	1,819
Alternative 2	3,131	1,706	2,451
Alternative 3	3,573	1,991	2,812

Table B-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)	731	442	585
Alternative 1	1,135	1,091	1,113
Alternative 2	1,675	1,574	1,623
Alternative 3	1,889	2,033	1,963

Table B-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)	607	1,106	737
Alternative 1	981	1,452	1,106
Alternative 2	1,656	1,977	1,743
Alternative 3	2,943	3,061	2,975

Table B-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)	921	1,111	1,057
Alternative 1	2,008	1,405	1,569
Alternative 2	1,863	1,325	1,468
Alternative 3	2,330	1,405	1,646

Table B-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)	46	74	47
Alternative 1	46	74	47
Alternative 2	46	74	47
Alternative 3	46	74	47

Table B-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)	613	1,234	857
Alternative 1	892	1,932	1,311
Alternative 2	1,144	2,250	1,597
Alternative 3	1,379	2,544	1,862

Table B-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)	1,131	2,009	1,745
Alternative 1	1,635	2,018	1,906
Alternative 2	2,171	2,006	2,053
Alternative 3	2,098	2,316	2,254

Table B-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)	1,375	2,139	1,746
Alternative 1	1,622	2,053	1,837
Alternative 2	1,905	2,118	2,013
Alternative 3	2,379	2,223	2,299

Table B-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)	12,120	15,661	0	0
Alternative 1	11,596	14,985	-524	-677
Alternative 2	11,245	14,534	-874	-1,128
Alternative 3	10,977	14,187	-1,142	-1,475

Table B-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)	9,696	12,397	0	0
Alternative 1	9,199	11,759	-497	-638
Alternative 2	8,763	11,199	-933	-1,198
Alternative 3	8,467	10,818	-1,229	-1,579

Table B-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)	14,579	18,975	0	0
Alternative 1	13,938	18,137	-641	-838
Alternative 2	13,611	17,713	-968	-1,262
Alternative 3	13,328	17,341	-1,251	-1,634

31. Change in Safety Parameters

Table B-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	3
Fatalities			
Fatalities From Mass Changes	75	123	143
Fatalities from Rebound Effect	482	617	745
Fatalities from Sales/Scrappage	505	861	1,374
Total Changes in Fatalities	1,062	1,601	2,262
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.5	0.8	1.0
Fatality Costs From Rebound Effect	3.2	4.1	5.0
Fatality Costs from Sales/Scrappage	4.4	7.6	12.3
Total - Fatality Costs (\$b)	8.0	12.6	18.3
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.6	1.0	1.1
Non-Fatal Crash Costs From Rebound Effect	3.4	4.5	5.5
Non-Fatal Crash Costs from Sales/Scrappage	1.2	1.9	3.1
Total - Non-Fatal Crash Costs (\$b)	5.2	7.4	9.6
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.2	0.2
Property Damage Costs From Rebound Effect	0.7	0.9	1.1
Property Damage Costs From Sales/Scrappage	0.2	0.3	0.5
Total - Property Damage Costs (\$b)	1.0	1.5	1.9
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	1.2	2.0	2.3
Crash Costs from Rebound Effect	7.3	9.5	11.5
Crash Costs from Sales/Scrappage	5.7	9.9	15.9
Total - Societal Crash Costs (\$b)	14.3	21.4	29.7

Table B-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	3
Fatalities			
Fatalities From Mass Changes	86	146	170
Fatalities from Rebound Effect	176	282	359
Fatalities from Sales/Scrappage	-357	-581	-668
Total Changes in Fatalities	-95	-153	-138
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.6	1.0	1.2
Fatality Costs From Rebound Effect	1.2	1.9	2.4
Fatality Costs from Sales/Scrappage	-1.8	-2.9	-2.8
Total - Fatality Costs (\$b)	-0.1	0.0	0.8
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.7	1.1	1.3
Non-Fatal Crash Costs From Rebound Effect	1.3	2.2	2.8
Non-Fatal Crash Costs from Sales/Scrappage	-3.7	-6.0	-7.7
Total - Non-Fatal Crash Costs (\$b)	-1.6	-2.8	-3.7
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.2	0.3
Property Damage Costs From Rebound Effect	0.3	0.4	0.6
Property Damage Costs From Sales/Scrappage	-0.8	-1.3	-1.7
Total - Property Damage Costs (\$b)	-0.4	-0.6	-0.8
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	1.4	2.4	2.7
Crash Costs from Rebound Effect	2.8	4.5	5.8
Crash Costs from Sales/Scrappage	-6.3	-10.2	-12.2
Total - Societal Crash Costs (\$b)	-2.1	-3.3	-3.7

Table B-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	3
Fatalities			
Fatalities From Mass Changes	-11	-22	-27
Fatalities from Rebound Effect	306	335	386
Fatalities from Sales/Scrappage	862	1,442	2,042
Total Changes in Fatalities	1,156	1,755	2,401
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	-0.1	-0.1	-0.2
Fatality Costs From Rebound Effect	2.0	2.2	2.5
Fatality Costs from Sales/Scrappage	6.2	10.5	15.1
Total - Fatality Costs (\$b)	8.1	12.5	17.5
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.2	-0.2
Non-Fatal Crash Costs From Rebound Effect	2.1	2.4	2.7
Non-Fatal Crash Costs from Sales/Scrappage	4.8	8.0	10.8
Total - Non-Fatal Crash Costs (\$b)	6.8	10.2	13.3
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.0	0.0	0.0
Property Damage Costs From Rebound Effect	0.4	0.5	0.6
Property Damage Costs From Sales/Scrappage	1.0	1.6	2.2
Total - Property Damage Costs (\$b)	1.4	2.1	2.7
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	-0.2	-0.3	-0.4
Crash Costs from Rebound Effect	4.5	5.0	5.8
Crash Costs from Sales/Scrappage	12.0	20.1	28.1
Total - Societal Crash Costs (\$b)	16.3	24.7	33.4

Table B-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	3
Fatalities			
Fatalities From Mass Changes	75	123	143
Fatalities from Rebound Effect	482	617	745
Fatalities from Sales/Scrappage	505	861	1,374
Total Changes in Fatalities	1,062	1,601	2,262
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.3	0.5	0.6
Fatality Costs From Rebound Effect	1.8	2.3	2.8
Fatality Costs from Sales/Scrappage	3.3	5.7	9.3
Total - Fatality Costs (\$b)	5.4	8.5	12.7
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.4	0.6	0.7
Non-Fatal Crash Costs From Rebound Effect	2.1	2.8	3.4
Non-Fatal Crash Costs from Sales/Scrappage	1.0	1.7	2.7
Total - Non-Fatal Crash Costs (\$b)	3.5	5.1	6.9
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.1	0.1
Property Damage Costs From Rebound Effect	0.4	0.6	0.7
Property Damage Costs From Sales/Scrappage	0.2	0.3	0.5
Total - Property Damage Costs (\$b)	0.7	1.0	1.3
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	0.7	1.2	1.4
Crash Costs from Rebound Effect	4.4	5.7	7.0
Crash Costs from Sales/Scrappage	4.4	7.7	12.5
Total - Societal Crash Costs (\$b)	9.5	14.6	20.9

Table B-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	3
Fatalities			
Fatalities From Mass Changes	86	146	170
Fatalities from Rebound Effect	176	282	359
Fatalities from Sales/Scrappage	-357	-581	-668
Total Changes in Fatalities	-95	-153	-138
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.3	0.6	0.7
Fatality Costs From Rebound Effect	0.7	1.1	1.4
Fatality Costs from Sales/Scrappage	-0.6	-0.9	-0.4
Total - Fatality Costs (\$b)	0.4	0.8	1.7
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.4	0.7	0.8
Non-Fatal Crash Costs From Rebound Effect	0.9	1.4	1.7
Non-Fatal Crash Costs from Sales/Scrappage	-2.1	-3.4	-4.3
Total - Non-Fatal Crash Costs (\$b)	-0.8	-1.3	-1.7
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.1	0.2
Property Damage Costs From Rebound Effect	0.2	0.3	0.4
Property Damage Costs From Sales/Scrappage	-0.5	-0.7	-0.9
Total - Property Damage Costs (\$b)	-0.2	-0.3	-0.4
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	0.9	1.4	1.7
Crash Costs from Rebound Effect	1.7	2.8	3.5
Crash Costs from Sales/Scrappage	-3.2	-5.0	-5.6
Total - Societal Crash Costs (\$b)	-0.6	-0.8	-0.4

Table B-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	3
Fatalities			
Fatalities From Mass Changes	-11	-22	-27
Fatalities from Rebound Effect	306	335	386
Fatalities from Sales/Scrappage	862	1,442	2,042
Total Changes in Fatalities	1,156	1,755	2,401
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.0	-0.1	-0.1
Fatality Costs From Rebound Effect	1.1	1.2	1.4
Fatality Costs from Sales/Scrappage	3.9	6.6	9.7
Total - Fatality Costs (\$b)	4.9	7.7	11.0
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.1	-0.1
Non-Fatal Crash Costs From Rebound Effect	1.3	1.4	1.7
Non-Fatal Crash Costs from Sales/Scrappage	3.1	5.1	7.0
Total - Non-Fatal Crash Costs (\$b)	4.3	6.4	8.5
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.0	0.0	0.0
Property Damage Costs From Rebound Effect	0.3	0.3	0.3
Property Damage Costs From Sales/Scrappage	0.6	1.0	1.4
Total - Property Damage Costs (\$b)	0.9	1.3	1.7
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	-0.1	-0.2	-0.3
Crash Costs from Rebound Effect	2.7	3.0	3.4
Crash Costs from Sales/Scrappage	7.6	12.7	18.1
Total - Societal Crash Costs (\$b)	10.1	15.5	21.3

Table B-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	3
Fatalities			
Fatalities From Mass Changes	101	161	213
Fatalities from Rebound Effect	795	1,109	1,313
Fatalities from Sales/Scrappage	-33	-114	-216
Total Changes in Fatalities	863	1,156	1,310
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.6	0.9	1.2
Fatality Costs From Rebound Effect	4.4	6.1	7.3
Fatality Costs from Sales/Scrappage	-0.2	-0.6	-1.1
Total - Fatality Costs (\$b)	4.8	6.4	7.3
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.6	1.0	1.3
Non-Fatal Crash Costs From Rebound Effect	5.0	7.1	8.4
Non-Fatal Crash Costs from Sales/Scrappage	-0.2	-0.4	-0.7
Total - Non-Fatal Crash Costs (\$b)	5.4	7.6	9.0
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.2	0.3
Property Damage Costs From Rebound Effect	1.0	1.5	1.7
Property Damage Costs From Sales/Scrappage	0.0	-0.1	-0.1
Total - Property Damage Costs (\$b)	1.1	1.6	1.9
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	1.3	2.1	2.8
Crash Costs from Rebound Effect	10.4	14.7	17.4
Crash Costs from Sales/Scrappage	-0.4	-1.1	-2.0
Total - Societal Crash Costs (\$b)	11.4	15.7	18.2

Table B-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	3
Fatalities			
Fatalities From Mass Changes	117	217	282
Fatalities from Rebound Effect	267	442	572
Fatalities from Sales/Scrappage	-1,283	-2,114	-2,822
Total Changes in Fatalities	-900	-1,455	-1,968
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.7	1.2	1.6
Fatality Costs From Rebound Effect	1.5	2.5	3.2
Fatality Costs from Sales/Scrappage	-7.1	-11.7	-15.6
Total - Fatality Costs (\$b)	-4.9	-8.0	-10.8
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.7	1.4	1.8
Non-Fatal Crash Costs From Rebound Effect	1.7	2.8	3.6
Non-Fatal Crash Costs from Sales/Scrappage	-8.2	-13.3	-17.6
Total - Non-Fatal Crash Costs (\$b)	-5.8	-9.1	-12.2
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.3	0.4
Property Damage Costs From Rebound Effect	0.3	0.6	0.7
Property Damage Costs From Sales/Scrappage	-1.7	-2.7	-3.6
Total - Property Damage Costs (\$b)	-1.2	-1.9	-2.5
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	1.5	2.8	3.7
Crash Costs from Rebound Effect	3.5	5.8	7.6
Crash Costs from Sales/Scrappage	-17.0	-27.7	-36.8
Total - Societal Crash Costs (\$b)	-12.0	-19.0	-25.6

Table B-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	3
Fatalities			
Fatalities From Mass Changes	-16	-57	-69
Fatalities from Rebound Effect	528	667	741
Fatalities from Sales/Scrappage	1,251	2,001	2,606
Total Changes in Fatalities	1,763	2,611	3,278
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	-0.1	-0.3	-0.4
Fatality Costs From Rebound Effect	2.9	3.7	4.1
Fatality Costs from Sales/Scrappage	6.9	11.1	14.4
Total - Fatality Costs (\$b)	9.7	14.5	18.2
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	-0.1	-0.4	-0.4
Non-Fatal Crash Costs From Rebound Effect	3.3	4.3	4.7
Non-Fatal Crash Costs from Sales/Scrappage	8.0	12.9	16.9
Total - Non-Fatal Crash Costs (\$b)	11.3	16.8	21.2
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.0	-0.1	-0.1
Property Damage Costs From Rebound Effect	0.7	0.9	1.0
Property Damage Costs From Sales/Scrappage	1.7	2.7	3.5
Total - Property Damage Costs (\$b)	2.3	3.5	4.4
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	-0.2	-0.7	-0.9
Crash Costs from Rebound Effect	6.9	8.8	9.8
Crash Costs from Sales/Scrappage	16.6	26.6	34.8
Total - Societal Crash Costs (\$b)	23.3	34.7	43.7

Table B-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	3
Fatalities			
Fatalities From Mass Changes	101	161	213
Fatalities from Rebound Effect	795	1,109	1,313
Fatalities from Sales/Scrappage	-33	-114	-216
Total Changes in Fatalities	863	1,156	1,310
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.2	0.4	0.5
Fatality Costs From Rebound Effect	1.9	2.6	3.1
Fatality Costs from Sales/Scrappage	-0.1	-0.2	-0.5
Total - Fatality Costs (\$b)	2.1	2.8	3.2
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.3	0.4	0.6
Non-Fatal Crash Costs From Rebound Effect	2.2	3.0	3.6
Non-Fatal Crash Costs from Sales/Scrappage	-0.1	-0.2	-0.3
Total - Non-Fatal Crash Costs (\$b)	2.3	3.3	3.9
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.1	0.1
Property Damage Costs From Rebound Effect	0.4	0.6	0.7
Property Damage Costs From Sales/Scrappage	0.0	0.0	-0.1
Total - Property Damage Costs (\$b)	0.5	0.7	0.8
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	0.6	0.9	1.2
Crash Costs from Rebound Effect	4.5	6.3	7.4
Crash Costs from Sales/Scrappage	-0.2	-0.5	-0.8
Total - Societal Crash Costs (\$b)	4.9	6.7	7.8

Table B-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	3
Fatalities			
Fatalities From Mass Changes	117	217	282
Fatalities from Rebound Effect	267	442	572
Fatalities from Sales/Scrappage	-1,283	-2,114	-2,822
Total Changes in Fatalities	-900	-1,455	-1,968
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.3	0.5	0.7
Fatality Costs From Rebound Effect	0.6	1.1	1.4
Fatality Costs from Sales/Scrappage	-3.0	-5.0	-6.6
Total - Fatality Costs (\$b)	-2.1	-3.4	-4.6
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.3	0.6	0.8
Non-Fatal Crash Costs From Rebound Effect	0.7	1.2	1.6
Non-Fatal Crash Costs from Sales/Scrappage	-3.5	-5.7	-7.6
Total - Non-Fatal Crash Costs (\$b)	-2.5	-3.9	-5.2
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.1	0.1	0.2
Property Damage Costs From Rebound Effect	0.1	0.2	0.3
Property Damage Costs From Sales/Scrappage	-0.7	-1.2	-1.5
Total - Property Damage Costs (\$b)	-0.5	-0.8	-1.1
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	0.7	1.2	1.6
Crash Costs from Rebound Effect	1.5	2.5	3.2
Crash Costs from Sales/Scrappage	-7.2	-11.8	-15.7
Total - Societal Crash Costs (\$b)	-5.1	-8.1	-10.9

Table B-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	3
Fatalities			
Fatalities From Mass Changes	-16	-57	-69
Fatalities from Rebound Effect	528	667	741
Fatalities from Sales/Scrappage	1,251	2,001	2,606
Total Changes in Fatalities	1,763	2,611	3,278
Fatality Costs (\$b)			
Fatality Costs From Mass Changes	0.0	-0.1	-0.2
Fatality Costs From Rebound Effect	1.2	1.6	1.7
Fatality Costs from Sales/Scrappage	2.9	4.7	6.2
Total - Fatality Costs (\$b)	4.2	6.2	7.8
Non-Fatal Crash Costs (\$b)			
Non-Fatal Crash Costs From Mass Changes	0.0	-0.2	-0.2
Non-Fatal Crash Costs From Rebound Effect	1.4	1.8	2.0
Non-Fatal Crash Costs from Sales/Scrappage	3.4	5.5	7.2
Total - Non-Fatal Crash Costs (\$b)	4.8	7.2	9.1
Property Damage Costs (\$b)			
Property Damage Costs From Mass Changes	0.0	0.0	0.0
Property Damage Costs From Rebound Effect	0.3	0.4	0.4
Property Damage Costs From Sales/Scrappage	0.7	1.1	1.5
Total - Property Damage Costs (\$b)	1.0	1.5	1.9
Societal Crash Costs (\$b)			
Crash Costs from Mass Changes	-0.1	-0.3	-0.4
Crash Costs from Rebound Effect	3.0	3.8	4.2
Crash Costs from Sales/Scrappage	7.1	11.4	14.9
Total - Societal Crash Costs (\$b)	10.0	14.8	18.7

Table B-31-13 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for MY 1981-2029 for Total Fleet, by Alternative

Alternative	1	2	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	6,438	10,689	12,385
Non-Fatal Injuries from Rebound Effect	39,178	51,168	61,715
Non-Fatal Injuries from Sales/Scrappage	9,527	14,272	21,754
Total Changes in Non-Fatal Injuries	55,143	76,130	95,853
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	24,641	40,914	47,405
Property Damaged Vehicles from Rebound Effect	149,688	195,556	235,838
Property Damaged Vehicles from Sales/Scrappage	29,214	42,053	62,816
Total Changes in Property Damaged Vehicles	203,543	278,523	346,059

Table B-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	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	7,423	12,560	14,639
Non-Fatal Injuries from Rebound Effect	15,051	24,115	30,754
Non-Fatal Injuries from Sales/Scrappage	-44,024	-73,455	-95,776
Total Changes in Non-Fatal Injuries	-21,550	-36,781	-50,382
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	28,402	48,057	56,014
Property Damaged Vehicles from Rebound Effect	57,574	92,236	117,628
Property Damaged Vehicles from Sales/Scrappage	-171,626	-286,528	-375,486
Total Changes in Property Damaged Vehicles	-85,649	-146,234	-201,844

Table B-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	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	-984	-1,870	-2,254
Non-Fatal Injuries from Rebound Effect	24,127	27,054	30,960
Non-Fatal Injuries from Sales/Scrappage	53,550	87,727	117,529
Total Changes in Non-Fatal Injuries	76,693	112,911	146,235
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	-3,761	-7,143	-8,609
Property Damaged Vehicles from Rebound Effect	92,114	103,320	118,211
Property Damaged Vehicles from Sales/Scrappage	200,840	328,581	438,302
Total Changes in Property Damaged Vehicles	289,192	424,757	547,904

Table B-31-16 - Change in Non-Fatal Safety Parameters from Alternative 0 (Baseline) for CY 2039-2048 for Total Fleet, by Alternative

Alternative	1	2	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	9,044	14,604	19,707
Non-Fatal Injuries from Rebound Effect	73,598	104,143	123,032
Non-Fatal Injuries from Sales/Scrappage	-2,684	-6,417	-10,833
Total Changes in Non-Fatal Injuries	79,958	112,329	131,906
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	34,416	55,666	75,224
Property Damaged Vehicles from Rebound Effect	281,085	398,051	470,212
Property Damaged Vehicles from Sales/Scrappage	-8,622	-20,330	-33,919
Total Changes in Property Damaged Vehicles	306,878	433,388	511,517

Table B-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	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	10,481	19,918	26,175
Non-Fatal Injuries from Rebound Effect	24,720	41,169	53,263
Non-Fatal Injuries from Sales/Scrappage	-121,545	-196,152	-259,749
Total Changes in Non-Fatal Injuries	-86,344	-135,065	-180,311
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	39,891	75,963	99,930
Property Damaged Vehicles from Rebound Effect	94,395	157,236	203,405
Property Damaged Vehicles from Sales/Scrappage	-464,275	-747,583	-989,060
Total Changes in Property Damaged Vehicles	-329,989	-514,385	-685,725

Table B-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	3
Non-Fatal Injuries			
Non-Fatal Injuries From Mass Changes	-1,437	-5,314	-6,469
Non-Fatal Injuries from Rebound Effect	48,878	62,974	69,770
Non-Fatal Injuries from Sales/Scrappage	118,861	189,735	248,916
Total Changes in Non-Fatal Injuries	166,302	247,395	312,217
Property Damaged Vehicles			
Property Damaged Vehicles From Mass Changes	-5,476	-20,297	-24,707
Property Damaged Vehicles from Rebound Effect	186,691	240,815	266,807
Property Damaged Vehicles from Sales/Scrappage	455,652	727,254	955,141
Total Changes in Property Damaged Vehicles	636,867	947,772	1,197,241