



Volvo Car Corporation

2019 Pre-Model Year Automotive Fuel Economy Report

TABLE OF CONTENTS

	Topic	Applicable Section of 49 CFR §537.7
Attachment I	Passenger Car Fuel Economy Information	
Exhibit I	Model Type Summary & CAFE Status	(b) (3), (c) (1), (c) (2)
Exhibit II	Configuration Summaries	(c) (3), (4)
Table 1	Engine Horsepower	
Table 2	Model Dimensional Data	
Table 3	Footprint Data	
Table 4	Configuration Data	
Table 5	Code Descriptions	
Exhibit III	Fuel Consumption Improvement Information	
Exhibit IV	Addendum to Preceding Exhibits	
Attachment II	Light Duty Truck Fuel Economy Information	
Exhibit I	Model Type Summary & CAFE Status	(b) (3), (c) (1), (c) (2)
Exhibit II	Configuration Summaries	(c) (3), (4)
Table 1	Engine Horsepower	
Table 2	Model Dimensional Data	
Table 3	Footprint Data	
Table 4	Configuration Data	
Table 5	Code Descriptions	
Exhibit III	Fuel Consumption Improvement Information	
Exhibit IV	Addendum to Preceding Exhibits	
Attachment III	Light Truck Vehicle Information	(C) (5)
Attachment IV	Fuel Economy Methodology Used in Projecting CAFE	537.9 (a) (2), (3)
Attachment V	Addendum to the Report	



Attachment I

Passenger Car Fuel Economy Information



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CAFE - US Cars Model Type Summary / CAFE Status

Carline Name	Vehicle Class	Engine Name	Transmission Class	IWC	Tire Size	Wheelbase	Front Axle	Rear Axle	Average Track	Footprint	Projected Sales	City	Highway	MH	MH Rounded
							Track Width	Track Width							
XC40	Small SUV 4WD	2.0T	S8F	4000	235/60R17	106.3	62.9	63.9	63.4	46.8	0	29,8000	47,2000	35,7267	35.7
XC40	Small SUV 4WD	2.0T	S8F	4000	235/55R18	106.3	62.9	63.9	63.4	46.8	309	29,8000	47,2000	35,7267	35.7
XC40	Small SUV 4WD	2.0T	S8F	4000	235/50R19	106.3	62.9	63.9	63.4	46.8	996	29,8000	47,2000	35,7267	35.7
XC40	Small SUV 4WD	2.0T	S8F	4000	245/45R20	106.3	62.9	63.9	63.4	46.8	916	29,8000	47,2000	35,7267	35.7
XC40	Small SUV 4WD	2.0T	S8F	4000	245/40R21	106.3	62.9	63.9	63.4	46.8	0	29,8000	47,2000	35,7267	35.7
S60 FWD	Compact Car	2.0T	S8F	4000	225/50 R17	113.1	62.8	62.8	62.8	49.3	0	30,4178	51,9129	37,3834	37.4
S60 FWD	Compact Car	2.0T	S8F	4000	235/45 R18	113.1	62.7	62.7	62.7	49.2	1443	30,4178	51,9129	37,3834	37.4
S60 FWD	Compact Car	2.0T	S8F	4000	235/40 R19	113.1	62.7	62.7	62.7	49.2	4074	30,4178	51,9129	37,3834	37.4
S60 FWD	Compact Car	2.0T	S8F	4000	245/35 R20	113.1	62.2	62.3	62.2	48.9	0	30,4178	51,9129	37,3834	37.4
V60 FWD	Small Station Wagon	2.0T	S8F	4000	225/50 R17	113.1	62.8	62.8	62.8	49.3	8	30,4178	51,9129	37,3834	37.4
V60 FWD	Small Station Wagon	2.0T	S8F	4000	235/45 R18	113.1	62.7	62.7	62.7	49.2	24	30,4178	51,9129	37,3834	37.4
V60 FWD	Small Station Wagon	2.0T	S8F	4000	235/40 R19	113.1	62.7	62.7	62.7	49.2	16	30,4178	51,9129	37,3834	37.4
V60 FWD	Small Station Wagon	2.0T	S8F	4000	245/35 R20	113.1	62.2	62.3	62.2	48.9	0	30,4178	51,9129	37,3834	37.4
S90 FWD	Midsize Car	2.0T	S8F	4000	245/45 R18	120.5	64.0	64.0	64.0	53.6	353	30,4178	51,9129	37,3834	37.4
S90 FWD	Midsize Car	2.0T	S8F	4000	255/40 R19	120.5	63.6	63.6	63.6	53.2	365	30,4178	51,9129	37,3834	37.4
S90 FWD	Midsize Car	2.0T	S8F	4000	255/35 R20	120.5	63.6	63.6	63.6	53.2	0	30,4178	51,9129	37,3834	37.4
V90 FWD	Midsize Station Wagon	2.0T	S8F	4000	245/45 R18	115.8	64.0	64.0	64.0	51.5	0	30,4178	51,9129	37,3834	37.4
V90 FWD	Midsize Station Wagon	2.0T	S8F	4000	255/40 R19	115.8	63.6	63.6	63.6	51.1	97	30,4178	51,9129	37,3834	37.4
V90 FWD	Midsize Station Wagon	2.0T	S8F	4000	255/35 R20	115.8	63.6	63.6	63.6	51.1	262	30,4178	51,9129	37,3834	37.4
XC60 FWD	Small SUV 4WD	2.0T	S8F	4000	235/60 R18	112.8	64.9	65.1	65.0	50.9	536	27,7000	40,7000	32,3498	32.3
XC60 FWD	Small SUV 4WD	2.0T	S8F	4000	235/55 R19	112.8	64.9	65.1	65.0	50.9	1231	27,7000	40,7000	32,3498	32.3
XC60 FWD	Small SUV 4WD	2.0T	S8F	4000	255/45 R20	112.8	64.8	65.0	64.9	50.8	4279	27,7000	40,7000	32,3498	32.3
XC60 FWD	Small SUV 4WD	2.0T	S8F	4000	259/40 R21	112.8	65.0	65.2	65.1	51.0	384	27,7000	40,7000	32,3498	32.3
XC60 FWD	Small SUV 4WD	2.0T	S8F	4000	265/35 R22	112.8	65.5	65.7	65.6	51.4	0	27,7000	40,7000	32,3498	32.3
S90 AWD	Midsize Car	2.0T	S8A	4000	245/45 R18	120.5	64.0	64.0	64.0	53.6	135	28,4000	45,3000	34,1297	34.1
S90 AWD	Midsize Car	2.0T	S8A	4000	255/40 R19	120.5	63.6	63.6	63.6	53.2	230	28,4000	45,3000	34,1297	34.1
S90 AWD	Midsize Car	2.0T	S8A	4000	255/35 R20	120.5	63.6	63.6	63.6	53.2	0	28,4000	45,3000	34,1297	34.1
S60 AWD	Compact Car	2.0TS	S8A	4000	235/45 R18	113.1	62.7	62.7	62.7	49.2	2358	27,0000	46,8000	33,3492	33.3
S60 AWD	Compact Car	2.0TS	S8A	4000	235/40 R19	113.1	62.7	62.7	62.7	49.2	7532	27,0000	46,8000	33,3492	33.3
S60 AWD	Compact Car	2.0TS	S8A	4000	245/35 R20	113.1	62.2	62.3	62.2	48.9	0	27,0000	46,8000	33,3492	33.3
V60 AWD	Small Station Wagon	2.0TS	S8A	4500	235/45 R18	113.1	62.7	62.7	62.7	49.2	89	26,4547	44,2947	32,3107	32.3
V60 AWD	Small Station Wagon	2.0TS	S8A	4500	235/40 R19	113.1	62.7	62.7	62.7	49.2	73	26,4547	44,2947	32,3107	32.3
V60 AWD	Small Station Wagon	2.0TS	S8A	4500	245/35 R20	113.1	62.2	62.3	62.2	48.9	0	26,4547	44,2947	32,3107	32.3
S90 AWD	Midsize Car	2.0TS	S8A	4500	245/45 R18	120.5	64.0	64.0	64.0	53.6	29	26,4547	44,2947	32,3107	32.3
S90 AWD	Midsize Car	2.0TS	S8A	4500	255/40 R19	120.5	63.6	63.6	63.6	53.2	565	26,4547	44,2947	32,3107	32.3
S90 AWD	Midsize Car	2.0TS	S8A	4500	255/35 R20	120.5	63.6	63.6	63.6	53.2	535	26,4547	44,2947	32,3107	32.3
V90 AWD	Midsize Station Wagon	2.0TS	S8A	4500	245/45 R18	115.8	64.0	64.0	64.0	51.5	0	26,4547	44,2947	32,3107	32.3
V90 AWD	Midsize Station Wagon	2.0TS	S8A	4500	255/40 R19	115.8	63.6	63.6	63.6	51.1	60	26,4547	44,2947	32,3107	32.3
V90 AWD	Midsize Station Wagon	2.0TS	S8A	4500	255/35 R20	115.8	63.6	63.6	63.6	51.1	106	26,4547	44,2947	32,3107	32.3
S60 AWD	Compact Car	2.0TSH	S8A	4500	235/45 R18	113.1	62.7	62.7	62.7	49.2	12	91,1500	68,6456	79,4318	79.4
S60 AWD	Compact Car	2.0TSH	S8A	4500	235/40 R19	113.1	62.7	62.7	62.7	49.2	643	91,1500	68,6456	79,4318	79.4
S60 AWD	Compact Car	2.0TSH	S8A	4500	245/35 R20	113.1	62.2	62.3	62.2	48.9	12	91,1500	68,6456	79,4318	79.4
S90 AWD	Midsize Car	2.0TSH	S8A	5000	245/45 R18	120.5	64.0	64.0	64.0	53.6	26	80,4920	67,4137	74,0292	74.0
S90 AWD	Midsize Car	2.0TSH	S8A	5000	255/40 R19	120.5	63.6	63.6	63.6	53.2	38	80,4920	67,4137	74,0292	74.0
S90 AWD	Midsize Car	2.0TSH	S8A	5000	255/35 R20	120.5	63.6	63.6	63.6	53.2	199	80,4920	67,4137	74,0292	74.0
Total Volume											27935				

CAFE Status excluding Fuel Consumption Improvement values The current estimate of Volvo's Passenger Car CAFE, based on a model year production forecast of [27.935] units. This estimate uses minimum CAFE data requirements	35.0
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CAFE Status including Fuel Consumption Improvement values According to §600.510-12(c) and as calculated in Exhibit III	36.3
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CAFE Requirement The current estimate of Volvo's Passenger Car CAFE Requirement, based on a model year production forecast of [27.935] units and calculated according to 49 CFR 531.5(b).	39.2
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SAE Net Horsepower - Cars

Engine Name	Carline Name	(Hp)
2.0T	XC40	187
2.0T	S60, V60, XC60, S90, V90	250
2.0TS	S60, V60, S90, V90	316
2.0TSH	S60, S90	313



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Car Dimensional Data

Vehicle Line	Body Style	Drive Type	Wheelbase (inches)	Interior Volume Index (ft3)	Frontal Area (ft3)
XC40	Station Wagon	FWD	106,3	123,9	27,6
S60	Sedan	FWD	113,1	104,2	23,9
S60 AWD	Sedan	AWD	113,1	104,2	23,9
V60	Station Wagon	FWD	113,1	122,7	24,0
V60 AWD	Station Wagon	AWD	113,1	122,7	24,0
XC60	Station Wagon	FWD	112,8	132,6	28,1
S90	Sedan	FWD	120,5	115,4	24,6
S90 AWD	Sedan	AWD	120,5	115,4	24,6
V90	Station Wagon	FWD	115,8	132,3	24,8
V90 AWD	Station Wagon	AWD	115,8	132,3	24,8



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Car Footprint Data

Carline Name	Engine Name	Transmission Class	Tire Size	Wheelbase (in)	Front Track Width (in)	Rear Track Width (in)	Average Track Width (in)	Footprint (ft2)
XC40	2 0T	S8F	235/60R17	106,3	62,9	63,9	63,4	46,8
XC40	2 0T	S8F	235/55R18	106,3	62,9	63,9	63,4	46,8
XC40	2 0T	S8F	235/50R19	106,3	62,9	63,9	63,4	46,8
XC40	2 0T	S8F	245/45R20	106,3	62,9	63,9	63,4	46,8
XC40	2 0T	S8F	245/40R21	106,3	62,9	63,9	63,4	46,8
S60 FWD	2 0T	S8F	225/50 R17	113,1	62,8	62,8	62,8	49,3
S60 FWD	2 0T	S8F	235/45 R18	113,1	62,7	62,7	62,7	49,2
S60 FWD	2 0T	S8F	235/40 R19	113,1	62,7	62,7	62,7	49,2
S60 FWD	2 0T	S8F	245/35 R20	113,1	62,2	62,3	62,2	48,9
V60 FWD	2 0T	S8F	225/50 R17	113,1	62,8	62,8	62,8	49,3
V60 FWD	2 0T	S8F	235/45 R18	113,1	62,7	62,7	62,7	49,2
V60 FWD	2 0T	S8F	235/40 R19	113,1	62,7	62,7	62,7	49,2
V60 FWD	2 0T	S8F	245/35 R20	113,1	62,2	62,3	62,2	48,9
S90 FWD	2 0T	S8F	245/45 R18	120,5	64,0	64,0	64,0	53,6
S90 FWD	2 0T	S8F	255/40 R19	120,5	63,6	63,6	63,6	53,2
S90 FWD	2 0T	S8F	255/35 R20	120,5	63,6	63,6	63,6	53,2
V90 FWD	2 0T	S8F	245/45 R18	115,8	64,0	64,0	64,0	51,5
V90 FWD	2 0T	S8F	255/40 R19	115,8	63,6	63,6	63,6	51,1
V90 FWD	2 0T	S8F	255/35 R20	115,8	63,6	63,6	63,6	51,1
XC60 FWD	2 0T	S8F	235/60 R18	112,8	64,9	65,1	65,0	50,9
XC60 FWD	2 0T	S8F	235/55 R19	112,8	64,9	65,1	65,0	50,9
XC60 FWD	2 0T	S8F	255/45 R20	112,8	64,8	65,0	64,9	50,8
XC60 FWD	2 0T	S8F	255/40 R21	112,8	65,0	65,2	65,1	51,0
XC60 FWD	2 0T	S8F	265/35 R22	112,8	65,5	65,7	65,6	51,4
S90 AWD	2 0T	S8A	245/45 R18	120,5	64,0	64,0	64,0	53,6
S90 AWD	2 0T	S8A	255/40 R19	120,5	63,6	63,6	63,6	53,2
S90 AWD	2 0T	S8A	255/35 R20	120,5	63,6	63,6	63,6	53,2
S60 AWD	2 0TS	S8A	235/45 R18	113,1	62,7	62,7	62,7	49,2
S60 AWD	2 0TS	S8A	235/40 R19	113,1	62,7	62,7	62,7	49,2
S60 AWD	2 0TS	S8A	245/35 R20	113,1	62,2	62,3	62,2	48,9
V60 AWD	2 0TS	S8A	235/45 R18	113,1	62,7	62,7	62,7	49,2
V60 AWD	2 0TS	S8A	235/40 R19	113,1	62,7	62,7	62,7	49,2
V60 AWD	2 0TS	S8A	245/35 R20	113,1	62,2	62,3	62,2	48,9
S90 AWD	2 0TS	S8A	245/45 R18	120,5	64,0	64,0	64,0	53,6
S90 AWD	2 0TS	S8A	255/40 R19	120,5	63,6	63,6	63,6	53,2
S90 AWD	2 0TS	S8A	255/35 R20	120,5	63,6	63,6	63,6	53,2
V90 AWD	2 0TS	S8A	245/45 R18	115,8	64,0	64,0	64,0	51,5
V90 AWD	2 0TS	S8A	255/40 R19	115,8	63,6	63,6	63,6	51,1
V90 AWD	2 0TS	S8A	255/35 R20	115,8	63,6	63,6	63,6	51,1
S60 AWD	2 0TSH	S8A	235/45 R18	113,1	62,7	62,7	62,7	49,2
S60 AWD	2 0TSH	S8A	235/40 R19	113,1	62,7	62,7	62,7	49,2
S60 AWD	2 0TSH	S8A	245/35 R20	113,1	62,2	62,3	62,2	48,9
S90 AWD	2 0TSH	S8A	245/45 R18	120,5	64,0	64,0	64,0	53,6
S90 AWD	2 0TSH	S8A	255/40 R19	120,5	63,6	63,6	63,6	53,2
S90 AWD	2 0TSH	S8A	255/35 R20	120,5	63,6	63,6	63,6	53,2



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Car Configuration Data

Carline Name	Engine Name	Engine Displ (l)	EPA Engine Config	# cyl	Engine Aspiration	Calibration	Transmission Class	Over Drive	Axle Ratio	Min N/V	Max N/V	Min ETW	Max ETW	Min TRLHP	Max TRLHP	Min LVW	Max LVW	Projected Sales	MH FE
XC40	2.0T	2.0	1	4	T	AC_1	S8F	Yes	3,33	27,0	27,9	4000	4000	13,0	14,3	3992	3992	2221	35,7267
S60	2.0T	2.0	1	4	T	10_6	S8F	Yes	2,96	26,1	26,6	4000	4000	10,7	10,9	4034	4034	5517	37,3834
V60	2.0T	2.0	1	4	T	10_6	S8F	Yes	2,96	26,1	26,6	4250	4250	11,1	11,3	4145	4145	48	37,3834
S90	2.0T	2.0	1	4	T	10_3	S8F	Yes	3,08	26,5	26,9	4250	4250	11,1	12,1	4181	4181	718	37,3834
V90	2.0T	2.0	1	4	T	10_3	S8F	Yes	3,08	26,5	26,9	4250	4250	11,9	12,6	4213	4213	359	37,3834
XC60	2.0T	2.0	1	4	T	10_1	S8F	Yes	3,33	26,5	26,7	4250	4250	14,8	15,3	4255	4255	6430	32,3498
S90 AWD	2.0T	2.0	1	4	T	10_4	S8F	Yes	3,20	27,6	28,0	4250	4250	11,5	12,1	4359	4359	365	34,1297
S60 AWD	2.0TS	2.0	1	4	TS	A2_4	S8A	Yes	3,08	27,2	27,3	4250	4250	11,4	11,6	4265	4265	9890	33,3492
V60 AWD	2.0TS	2.0	1	4	TS	A2_4	S8A	Yes	3,08	27,2	27,3	4500	4500	12,0	12,0	4382	4382	162	32,3107
S90 AWD	2.0TS	2.0	1	4	TS	A2_2	S8A	Yes	3,20	27,6	28,0	4500	4500	11,8	12,4	4494	4494	1129	32,3107
V90 AWD	2.0TS	2.0	1	4	TS	A2_2	S8A	Yes	3,20	27,6	28,0	4500	4500	12,5	12,8	4468	4468	166	32,3107
S60 AWD	2.0TSH	2.0	1	4	TS	BR_3	S8A	Yes	3,08	27,2	27,3	4750	4750	11,0	11,2	4771	4771	667	79,4318
S90 AWD	2.0TSH	2.0	1	4	TS	BR_2	S8A	Yes	3,20	26,9	27,6	5000	5000	11,5	12,0	4929	4929	263	68,3114
Total Volume																		27935	



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Code Descriptions

Code	Definition
EPA Engine Config Code	
1	In-line
Engine Aspiration	
T	Turbocharged
N	Naturally aspirated
TS	Turbocharged & Supercharged
TSH	Turbocharged & Supercharged, PHEV
Transmission Class	
Pos 1	S=Semi Automatic, M=Manual
Pos 2	Number of forward gears
Pos 3	F=Front Wheel Drive, A=All Wheel Drive



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Fuel Consumption Improvement Information

Vehicle Lifetime Miles | 195264

Model Type Information				Projected production volume	A/C Efficiency Credits [gpm]	A/C Efficiency Credit [megagrams]	FCIV _{AC} [gal/mile]	Stop/Start Credits [g/mile]	Exterior Lights Credits [g/mile]	Vent Seats Credits [g/mile]	Passive Cabin Vent Credits [g/mile]	Active Engine Warm-Up [g/mile]	Total Off Cycle Credits [gpm]	OCcredit [megagrams]	FCIV _{OC} [gal/mile]	Final CAFE including Credits
Carline Name	Drive	Engine	Trans													
XC40 T4	2WD	2.0L	S8	2 221	3,8	1648	0,000531	0,0	0,9	0,0	1,7	1,5	4,1	1778	0,00048416	36,3
S60 T5	2WD	2.0L	S8	5 517	4,8	5171		0,0	1,0	0,0	1,7	1,5	4,2	4525		
V60 T5	2WD	2.0L	S8	48	4,8	45		0,0	1,0	0,0	1,7	1,5	4,2	39		
S90 T5	2WD	2.0L	S8	718	4,8	673		0,0	0,9	0,0	1,7	1,5	4,1	575		
V90 T5	2WD	2.0L	S8	216	4,8	202		0,0	0,9	0,0	1,7	1,5	4,1	173		
				143	4,8	134		0,0	0,9	1,0	1,7	1,5	5,1	142		
XC60 T5	2WD	2.0L	S8	6 430	4,8	6027		0,0	1,0	0,0	1,7	1,5	4,2	5273		
S90 T5 AWD	4WD	2.0L	S8	365	4,8	342		0,0	0,9	0,0	1,7	1,5	4,1	292		
S90 T6 AWD	4WD	2.0L	S8	548	4,8	514		0,0	0,9	0,0	1,7	1,5	4,1	439		
				581	4,8	545		0,0	0,9	1,0	1,7	1,5	5,1	579		
V90 T6 AWD	4WD	2.0L	S8	84	4,8	79		0,0	0,9	0,0	1,7	1,5	4,1	67		
				82	4,8	77		0,0	0,9	1,0	1,7	1,5	5,1	82		
S60 T6 AWD	4WD	2.0L	S8	9 890	4,8	9270		0,0	1,0	0,0	1,7	1,5	4,2	8111		
V60 T6 AWD	4WD	2.0L	S8	162	4,8	152		0,0	1,0	0,0	1,7	1,5	4,2	133		
S90 T8 AWD	4WD	2.0L	S8	1	4,8	1		2,5	0,9	0,0	1,7	1,5	6,6	1		
				262	4,8	246		2,5	0,9	1,0	1,7	1,5	7,6	389		
S60 T8 AWD	4WD	2.0L	S8	667	4,8	625		2,5	1,0	0,0	1,7	1,5	6,7	873		
Sum				27935		25749							23470			

$$FCIV_{AC} \text{ (gal/mi)} = \frac{(ACCredit \times 1,000,000)}{(VLM \times Production \times 8887)}$$

$$FCIV_{OC} \text{ (gal/mi)} = \frac{(OCcredit \times 1,000,000)}{(VLM \times Production \times 8887)}$$

$$Average MPG = \frac{1}{\frac{1}{MPG} - (FCIV_{AC} + FCIV_{OC} + FCIV_{EV})}$$



Attachment I Exhibit IV

Addendum to Preceding Exhibits Passenger Cars

Format Modifications

Several format modifications have been made to this report. Ref 49 CFR §537.7(c)(3), "Other formats such as those accepted by EPA which contain all the required information in a readily identifiable form are also acceptable." To communize NHTSA reporting with EPA Reporting, some EPA codes are used in this report. For a description of these codes, see Exhibit II, Table 5.

Requested data that is not specifically stated in the previous exhibits includes:

- All carlines use three-way catalysts for emission control
- All carlines use sequential fuel injection
- All engines are Otto spark

Optional Equipment

Optional equipment considered to be actually installed on the vehicle configuration for fuel economy testing purposes under 40 CFR Parts 86 and 600 (Air Conditioning, Power Steering and Anti-lock Brakes), are now standard equipment. The curb weight of the vehicle configuration used for fuel economy testing purposes includes the weight of optional equipment as required under 40 CFR Parts 86 and 600.



Attachment II

Light Duty Truck Fuel Economy Information



Volvo Car Corporation

CAFE - US Trucks Model Type Summary / CAFE Status

Truckline Name	Vehicle Class	Engine Name	Transmission Class	IWC	Base Tire	Wheelbase	Front Axle Track Width	Rear Axle Track Width	Average Track Width	Footprint	Projected Sales	City	Highway	MH	MH Rounded
XC40 AWD	Small SUV 4WD	2.0T	S8A	4000	235/55R18	106.3	62.9	63.9	63.4	46.8	3043	29,3000	45,1000	34,7836	34.8
XC40 AWD	Small SUV 4WD	2.0T	S8A	4000	235/50R19	106.3	62.9	63.9	63.4	46.8	9795	29,3000	45,1000	34,7836	34.8
XC40 AWD	Small SUV 4WD	2.0T	S8A	4000	245/45R20	106.3	62.9	63.9	63.4	46.8	7608	29,3000	45,1000	34,7836	34.8
XC40 AWD	Small SUV 4WD	2.0T	S8A	4000	245/40R21	106.3	62.9	63.9	63.4	46.8	0	29,3000	45,1000	34,7836	34.8
V60 CC AWD	Small Station Wagon	2.0T	S8A	4000	225/55 R18	113.1	64.9	64.2	64.6	50.7	0	27,8000	44,6000	33,4741	33.5
V60 CC AWD	Small Station Wagon	2.0T	S8A	4000	235/45 R19	113.1	64.6	63.8	64.2	50.4	0	27,8000	44,6000	33,4741	33.5
XC60 AWD	Small SUV 4WD	2.0T	S8A	4500	235/60R18	112.8	64.9	65.1	65.0	50.9	1003	25,5000	38,2000	29,9861	30.0
XC60 AWD	Small SUV 4WD	2.0T	S8A	4500	235/55R19	112.8	64.9	65.1	65.0	50.9	2372	25,5000	38,2000	29,9861	30.0
XC60 AWD	Small SUV 4WD	2.0T	S8A	4500	255/45R20	112.8	64.8	65.0	64.9	50.8	8353	25,5000	38,2000	29,9861	30.0
XC60 AWD	Small SUV 4WD	2.0T	S8A	4500	255/40R21	112.8	65.0	65.2	65.1	51.0	800	25,5000	38,2000	29,9861	30.0
XC60 AWD	Small SUV 4WD	2.0T	S8A	4500	265/35R22	112.8	65.5	65.7	65.6	51.4	0	25,5000	38,2000	29,9861	30.0
XC90 AWD	Standard SUV 4WD	2.0T	S8A	4500	235/60 R18	117.5	65.5	65.6	65.6	53.5	637	25,5000	38,2000	29,9861	30.0
XC90 AWD	Standard SUV 4WD	2.0T	S8A	4500	235/55 R19	117.5	65.5	65.6	65.6	53.5	159	25,5000	38,2000	29,9861	30.0
XC90 AWD	Standard SUV 4WD	2.0T	S8A	4500	275/45 R20	117.5	65.8	65.9	65.8	53.7	2667	25,5000	38,2000	29,9861	30.0
XC90 AWD	Standard SUV 4WD	2.0T	S8A	4500	275/40 R21	117.5	65.8	65.9	65.8	53.7	0	25,5000	38,2000	29,9861	30.0
XC90 AWD	Standard SUV 4WD	2.0T	S8A	4500	275/35 R22	117.5	65.8	65.9	65.8	53.7	88	25,5000	38,2000	29,9861	30.0
XC90 FWD	Standard SUV 2WD	2.0T	S8F	4500	235/60 R18	117.5	65.5	65.6	65.6	53.5	343	27,3000	40,9000	32,1038	32.1
XC90 FWD	Standard SUV 2WD	2.0T	S8F	4500	235/55 R19	117.5	65.5	65.6	65.6	53.5	125	27,3000	40,9000	32,1038	32.1
XC90 FWD	Standard SUV 2WD	2.0T	S8F	4500	275/45 R20	117.5	65.8	65.9	65.8	53.7	1569	27,3000	40,9000	32,1038	32.1
XC90 FWD	Standard SUV 2WD	2.0T	S8F	4500	275/40 R21	117.5	65.8	65.9	65.8	53.7	0	27,3000	40,9000	32,1038	32.1
XC90 FWD	Standard SUV 2WD	2.0T	S8F	4500	275/35 R22	117.5	65.8	65.9	65.8	53.7	43	27,3000	40,9000	32,1038	32.1
V90CC AWD	Midsize Station Wagon	2.0T	S8A	4500	235/55 R18	115.8	64.9	64.6	64.8	52.1	153	27,9000	43,8000	33,3475	33.3
V90CC AWD	Midsize Station Wagon	2.0T	S8A	4500	235/50 R19	115.8	64.9	64.6	64.8	52.1	143	27,9000	43,8000	33,3475	33.3
V90CC AWD	Midsize Station Wagon	2.0T	S8A	4500	245/45 R20	115.8	65.0	64.7	64.8	52.1	19	27,9000	43,8000	33,3475	33.3
V90CC AWD	Midsize Station Wagon	2.0T	S8A	4500	245/40 R21	115.8	65.0	64.7	64.8	52.1	0	27,9000	43,8000	33,3475	33.3
XC60 AWD	Small SUV 4WD	2.0TS	S8A	4500	235/55R19	112.8	64.9	65.1	65.0	50.9	2163	24,5000	38,7000	29,3454	29.3
XC60 AWD	Small SUV 4WD	2.0TS	S8A	4500	255/45R20	112.8	64.8	65.0	64.9	50.8	7552	24,5000	38,7000	29,3454	29.3
XC60 AWD	Small SUV 4WD	2.0TS	S8A	4500	255/40R21	112.8	65.0	65.2	65.1	51.0	1442	24,5000	38,7000	29,3454	29.3
XC60 AWD	Small SUV 4WD	2.0TS	S8A	4500	265/35R22	112.8	65.5	65.7	65.6	51.4	0	24,5000	38,7000	29,3454	29.3
XC90 AWD	Standard SUV 4WD	2.0TS	S8A	5000	235/55 R19	117.5	65.5	65.6	65.6	53.5	3434	24,4000	37,3000	28,8973	28.9
XC90 AWD	Standard SUV 4WD	2.0TS	S8A	5000	275/45 R20	117.5	65.8	65.9	65.8	53.7	12899	24,4000	37,3000	28,8973	28.9
XC90 AWD	Standard SUV 4WD	2.0TS	S8A	5000	275/40 R21	117.5	65.8	65.9	65.8	53.7	13639	24,4000	37,3000	28,8973	28.9
XC90 AWD	Standard SUV 4WD	2.0TS	S8A	5000	275/35 R22	117.5	65.8	65.9	65.8	53.7	941	24,4000	37,3000	28,8973	28.9
V90 CC AWD	Midsize Station Wagon	2.0TS	S8A	4500	235/50 R19	115.8	64.9	64.6	64.8	52.1	72	25,9000	42,5000	31,4231	31.4
V90 CC AWD	Midsize Station Wagon	2.0TS	S8A	4500	245/45 R20	115.8	65.0	64.7	64.8	52.1	95	25,9000	42,5000	31,4231	31.4
V90 CC AWD	Midsize Station Wagon	2.0TS	S8A	4500	245/40 R21	115.8	65.0	64.7	64.8	52.1	0	25,9000	42,5000	31,4231	31.4
XC60 AWD	Small SUV 4WD	2.0TSH	S8A	5000	235/55R19	112.8	64.9	65.1	65.0	50.9	670	55,6000	66,5000	60,0276	60.0
XC60 AWD	Small SUV 4WD	2.0TSH	S8A	5000	255/45R20	112.8	64.8	65.0	64.9	50.8	1104	55,6000	66,5000	60,0276	60.0
XC60 AWD	Small SUV 4WD	2.0TSH	S8A	5000	255/40R21	112.8	65.0	65.2	65.1	51.0	1235	55,6000	66,5000	60,0276	60.0
XC60 AWD	Small SUV 4WD	2.0TSH	S8A	5000	265/35R22	112.8	65.5	65.7	65.6	51.4	0	55,6000	66,5000	60,0276	60.0
XC90 AWD	Standard SUV 4WD	2.0TSH	S8A	5500	235/55 R19	117.5	65.5	65.6	65.6	53.5	51	54,1000	64,6000	58,3693	58.4
XC90 AWD	Standard SUV 4WD	2.0TSH	S8A	5500	275/45 R20	117.5	65.8	65.9	65.8	53.7	763	54,1000	64,6000	58,3693	58.4
XC90 AWD	Standard SUV 4WD	2.0TSH	S8A	5500	275/40 R21	117.5	65.8	65.9	65.8	53.7	987	54,1000	64,6000	58,3693	58.4
XC90 AWD	Standard SUV 4WD	2.0TSH	S8A	5500	275/35 R22	117.5	65.8	65.9	65.8	53.7	143	54,1000	64,6000	58,3693	58.4
Total Volume											86110				

CAFE Status excluding Fuel Consumption Improvement values The current estimate of Volvo's Truck CAFE, based on a model year production forecast of [86.110] units. This estimate uses minimum CAFE data requirements	31.5
CAFE Status including Fuel Consumption Improvement values According to §600.510-12(c) and as calculated in Exhibit III	33.0
CAFE Requirement The current estimate of Volvo's Truck CAFE Requirement, based on a model year production forecast of [86.110] units and calculated according to 49 CFR 531.5(b).	31.7



Volvo Car Corporation

SEA Net Horsepower - Trucks

Engine Name	Truckline Name	Power (Hp)
2.0T	XC40	248
2.0T	XC60, V60CC, XC90, V90CC	250
2.0TS	XC60, XC90, V90CC	316
2.0TSH	XC60, XC90	313



Volvo Car Corporation

Truck Dimensional Data

Vehicle Line	Drive Type	Wheelbase (inches)	Passenger Carrying Volume (ft3)	Cargo Carrying Volume (ft3)	Frontal Area (ft3)
XC40	AWD	106,3	98,4	21,7	27,6
V60CC	AWD	113,1	93,6	25,5	24,8
XC60	AWD	112,8	102,9	25,8	28,1
V90CC	AWD	115,8	98,4	30,1	25,5
XC90 5-seater	FWD	117,5	103,8	40,2	29,9
XC90 7-seater	FWD	117,5	103,8	41,8	29,9
XC90 5-seater	AWD	117,5	103,8	40,2	29,9
XC90 7-seater	AWD	117,5	103,8	41,8	29,9



Volvo Car Corporation

Truck Footprint Data

Truckline Name	Engine Name	Transmission Class	Tire Size	Wheelbase (in)	Front Track Width (in)	Rear Track Width (in)	Average Track Width (in)	Footprint (ft2)
XC40 AWD	2.0T	S8A	235/55R18	106,3	62,9	63,9	63,4	46,8
XC40 AWD	2.0T	S8A	235/50R19	106,3	62,9	63,9	63,4	46,8
XC40 AWD	2.0T	S8A	245/45R20	106,3	62,9	63,9	63,4	46,8
XC40 AWD	2.0T	S8A	245/40R21	106,3	62,9	63,9	63,4	46,8
V60 CC AWD	2.0T	S8A	225/55 R18	113,1	64,9	64,2	64,6	50,7
V60 CC AWD	2.0T	S8A	235/45 R19	113,1	64,6	63,8	64,2	50,4
XC60 AWD	2.0T	S8A	235/60R18	112,8	64,9	65,1	65,0	50,9
XC60 AWD	2.0T	S8A	235/55R19	112,8	64,9	65,1	65,0	50,9
XC60 AWD	2.0T	S8A	255/45R20	112,8	64,8	65,0	64,9	50,8
XC60 AWD	2.0T	S8A	255/40R21	112,8	65,0	65,2	65,1	51,0
XC60 AWD	2.0T	S8A	265/35R22	112,8	65,5	65,7	65,6	51,4
XC90 AWD	2.0T	S8A	235/60 R18	117,5	65,5	65,6	65,6	53,5
XC90 AWD	2.0T	S8A	235/55 R19	117,5	65,5	65,6	65,6	53,5
XC90 AWD	2.0T	S8A	275/45 R20	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0T	S8A	275/40 R21	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0T	S8A	275/35 R22	117,5	65,8	65,9	65,8	53,7
XC90 FWD	2.0T	S8F	235/60 R18	117,5	65,5	65,6	65,6	53,5
XC90 FWD	2.0T	S8F	235/55 R19	117,5	65,5	65,6	65,6	53,5
XC90 FWD	2.0T	S8F	275/45 R20	117,5	65,8	65,9	65,8	53,7
XC90 FWD	2.0T	S8F	275/40 R21	117,5	65,8	65,9	65,8	53,7
XC90 FWD	2.0T	S8F	275/35 R22	117,5	65,8	65,9	65,8	53,7
V90CC AWD	2.0T	S8A	235/55 R18	115,8	64,9	64,6	64,8	52,1
V90CC AWD	2.0T	S8A	235/50 R19	115,8	64,9	64,6	64,8	52,1
V90CC AWD	2.0T	S8A	245/45 R20	115,8	65,0	64,7	64,8	52,1
V90CC AWD	2.0T	S8A	245/40 R21	115,8	65,0	64,7	64,8	52,1
XC60 AWD	2.0TS	S8A	235/55R19	112,8	64,9	65,1	65,0	50,9
XC60 AWD	2.0TS	S8A	255/45R20	112,8	64,8	65,0	64,9	50,8
XC60 AWD	2.0TS	S8A	255/40R21	112,8	65,0	65,2	65,1	51,0
XC60 AWD	2.0TS	S8A	265/35R22	112,8	65,5	65,7	65,6	51,4
XC90 AWD	2.0TS	S8A	235/55 R19	117,5	65,5	65,6	65,6	53,5
XC90 AWD	2.0TS	S8A	275/45 R20	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0TS	S8A	275/40 R21	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0TS	S8A	275/35 R22	117,5	65,8	65,9	65,8	53,7
V90 CC AWD	2.0TS	S8A	235/50 R19	115,8	64,9	64,6	64,8	52,1
V90 CC AWD	2.0TS	S8A	245/45 R20	115,8	65,0	64,7	64,8	52,1
V90 CC AWD	2.0TS	S8A	245/40 R21	115,8	65,0	64,7	64,8	52,1
XC60 AWD	2.0TSH	S8A	235/55R19	112,8	64,9	65,1	65,0	50,9
XC60 AWD	2.0TSH	S8A	255/45R20	112,8	64,8	65,0	64,9	50,8
XC60 AWD	2.0TSH	S8A	255/40R21	112,8	65,0	65,2	65,1	51,0
XC60 AWD	2.0TSH	S8A	265/35R22	112,8	65,5	65,7	65,6	51,4
XC90 AWD	2.0TSH	S8A	235/55 R19	117,5	65,5	65,6	65,6	53,5
XC90 AWD	2.0TSH	S8A	275/45 R20	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0TSH	S8A	275/40 R21	117,5	65,8	65,9	65,8	53,7
XC90 AWD	2.0TSH	S8A	275/35 R22	117,5	65,8	65,9	65,8	53,7



Volvo Car Corporation

Truck Configuration Data

Truckline Name	Engine Name	Engine Displ (l)	EPA Engine Config	# cyl	Engine Aspiration	Calibration	Transmission Class	Over Drive	Axle Ratio	Min N/V	Max N/V	Min ETW	Max ETW	Min TRLHP	Max TRLHP	Min LVW	Max LVW	Projected Sales	MH FE
XC40 AWD	2.0T	2.0	1	4	T	16_1	S8A	Yes	3,33	27,0	27,6	4000	4000	13,3	14,7	4087	4087	20446	34,7836
V60 CC AWD	2.0T	2.0	1	4	T	10_7	S8A	Yes	3,2	26,9	27,3	4250	4250	13,1	13,2	4365	4365	0	33,4741
XC60 AWD	2.0T	2.0	1	4	T	10_2	S8A	Yes	3,33	26,5	26,7	4500	4500	15,4	16,0	4439	4439	12528	29,9861
XC90 AWD	2.0T	2.0	1	4	T	10_2	S8A	Yes	3,33	26,1	26,7	4750	4750	14,8	15,9	4863	4863	3551	29,9861
XC90 FWD	2.0T	2.0	1	4	T	10_1	S8F	Yes	3,33	26,1	26,7	4500	4500	13,6	14,9	4592	4592	2080	32,1038
V90 CC AWD	2.0T	2.0	1	4	T	10_5	S8A	Yes	3,33	27,0	27,6	4500	4500	12,7	13,4	4404	4404	315	33,3475
XC60 AWD	2.0TS	2.0	1	4	TS	A2_1	S8A	Yes	3,33	26,5	26,7	4500	4500	15,4	16,0	4556	4556	11157	29,3454
XC90 AWD	2.0TS	2.0	1	4	TS	A2_1	S8A	Yes	3,33	26,1	26,7	5000	5000	15,8	17,1	5004	5004	30913	28,8973
V90 CC AWD	2.0TS	2.0	1	4	TS	A2_3	S8A	Yes	3,33	27,0	27,6	4500	4500	12,7	13,4	4458	4458	167	31,4231
XC60 AWD	2.0TSH	2.0	1	4	TS	BR_1	S8A	Yes	3,33	26,5	26,7	5000	5000	14,7	15,6	5022	5022	3009	60,0276
XC90 AWD	2.0TSH	2.0	1	4	TS	BR_1	S8A	Yes	3,33	26,1	26,6	5500	5500	14,5	16,4	5515	5515	1944	58,3693
Total Volume																		86110	



Volvo Car Corporation

Code Descriptions

Code	Definition
EPA Engine Config Code	
1	In-line
Engine Aspiration	
T	Turbocharged
N	Naturally aspirated
TS	Turbocharged & Supercharged
TSH	Turbocharged & Supercharged, PHEV
Transmission Class	
Pos 1	S=Semi Automatic, M=Manual
Pos 2	Number of forward gears
Pos 3	F=Front Wheel Drive, A=All Wheel Drive



Volvo Car Corporation

Fuel Consumption Improvement Information

Vehicle Lifetime Miles 225865

Model Type Information				Projected production volume	A/C Efficiency Credits [gpm]	A/C Efficiency Credit [megagrams]	FCIV _{AC} [gal/mile]	Stop/Start Credits [g/mile]	Exterior Lights Credits [g/mile]	Vent Seats Credits [g/mile]	Passive Cabin Vent Credits [g/mile]	Active Engine Warm-Up [g/mile]	Total Off Cycle Credits [gpm]	OCCredit [megagrams]	FCIV _{OC} [gal/mile]	Final CAFE including Credits			
Carline Name	Drive	Engine	Trans																
XC40 T5 AWD	4WD	2.0L	S8	8 178	0	0	0,000670	0,0	0,9	0,0	2,3	3,2	6,4	11822	0,00077923	33,0			
XC40 T5 AWD	4WD	2.0L	S8	12 268	5,4	14963		0,0	0,9	0,0	2,3	3,2	6,4	17734					
V60CC T5 AWD	4WD	2.0L	S8	0	6,8	0		0,0	1,0	0,0	2,3	3,2	6,5	0					
XC60 T5 AWD	4WD	2.0L	S8	12 528	6,8	19242		0,0	1,0	0,0	2,3	3,2	6,5	18393					
V90CC T5 AWD	4WD	2.0L	S8	315	6,8	484		0,0	0,9	0,0	2,3	3,2	6,4	455					
XC90 T5 FWD	2WD	2.0L	S8	2 080	6,8	3195		0,0	1,0	0,0	2,3	3,2	6,5	3054					
XC90 T5 AWD	4WD	2.0L	S8	3 551	6,8	5454		0,0	1,0	0,0	2,3	3,2	6,5	5213					
XC60 T6 AWD	4WD	2.0L	S8	11 157	6,8	17136		0,0	1,0	0,0	2,3	3,2	6,5	16380					
V90CC T6 AWD	4WD	2.0L	S8	167	6,8	256		0,0	0,9	0,0	2,3	3,2	6,4	241					
XC90 T6 AWD	4WD	2.0L	S8	19 451	6,8	29874		0,0	1,0	0,0	2,3	3,2	6,5	28556					
				11 462	6,8	17604		0,0	1,0	1,3	2,3	3,2	7,8	20193					
XC60 T8 AWD	4WD	2.0L	S8	3 009	6,8	4621		4,4	1,0	0,0	2,3	3,2	10,9	7408					
XC90 T8 AWD	4WD	2.0L	S8	408	6,8	627		4,4	1,0	0,0	2,3	3,2	10,9	1004					
				1 536	6,8	2359		4,4	1,0	1,3	2,3	3,2	12,2	4233					
				86110		115815											134686		

$$FCIV_{AC} \text{ (gal / mi)} = \frac{(ACCredit \times 1,000,000)}{(VLM \times Production \times 8887)}$$

$$FCIV_{OC} \text{ (gal / mi)} = \frac{(OCCredit \times 1,000,000)}{(VLM \times Production \times 8887)}$$

Average MPG = $\frac{1}{\frac{1}{MPG} - (FCIV_{AC} + FCIV_{OC} + FCIV_{net})}$



Attachment II Exhibit IV

Addendum to Preceding Exhibits Light-Duty Trucks

Format Modifications

Several format modifications have been made to this report. Ref 49 CFR §537.7(c)(3), "Other formats such as those accepted by EPA which contain all the required information in a readily identifiable form are also acceptable." To communize NHTSA reporting with EPA Reporting, some EPA codes are used in this report. For a description of these codes, see Exhibit II, Table 5.

Requested data that is not specifically stated in the previous exhibits includes:

- All trucklines use three-way catalysts for emission control
- All trucklines use sequential fuel injection
- All engines are Otto spark

Optional Equipment

Optional equipment considered to be actually installed on the vehicle configuration for fuel economy testing purposes under 40 CFR Parts 86 and 600 (Air Conditioning, Power Steering and Anti-lock Brakes), are now standard equipment. The curb weight of the vehicle configuration used for fuel economy testing purposes includes the weight of optional equipment as required under 40 CFR Parts 86 and 600.



Volvo Car Corporation

Light Truck Vehicle Information

Truckline Name	4-Wheel Drive	Truck Criteria						3-Row Seating
		not<28 deg	not<14 deg	not<20 deg	not<20 cm	not<18 cm		
		Approach Angle	Breakover Angle	Departure Angle	Running Clearance	Front Axle Clearance	Rear Axle Clearance	
XC40 AWD	Yes	21,7	21,9	30,4	21,1	21,8	25,8	No
V60CC AWD	Yes	17,0	18,4	22,8	20,1	21,2	25,2	No
V90CC AWD	Yes	18,9	17,7	20,7	20,1	21,0	25,2	No
XC60 AWD	Yes	23,1	20,8	25,5	21,6	22,5	23,2	No
XC90 FWD	No	23,8	21,3	23,3	23,8	23,8	24,4	Yes
XC90 AWD	Yes	23,8	21,3	23,3	23,8	23,8	24,4	Yes

All values in the above table are determined at EPA Curb Weight



Attachment IV

Fuel Economy Methodology used in projecting CAFE values

Derived Fuel Economy Values

As provided for by 49 CFR §537.9(a)(3), Volvo has used analytically derived fuel economy values, data substitutions and best internal estimates where no EPA approved or Volvo tests results exists at the appropriate sub configuration level for minimum test requirements. These values are derived from a base configuration (ETW), axle ratio, road load horsepower, and engineering judgment.



Attachment V

Addendum to the Report

The information contained in this report is, to the best of Volvos knowledge, accurate and complete. This report is filed subject to the following provisions.

- 49 CFR §537.7(b)(5) requires that a manufacturer state whether the projected average fuel economy submitted herein, sufficiently represent the manufacturers average and target fuel economy for the current model year for purposes of the act. Volvo hereby represents that, to the best of its present knowledge and belief, it has followed the testing procedures and calculation methods required by EPA in computing fuel economy values for its passenger cars and light trucks. Without waiving its right to later challenge any of the fuel economy testing procedures and methods, Volvo further represents that projected CAFE values contained in the attachments are as sufficiently representative as practicable of Volvo's passenger cars and light truck CAFE values for the purpose of the act, based on the projected sales volumes in the attachments and the relevant EPA test procedures and methods specified in 40 CFR, part 600 subpart F.
- Additional test data and/or analytical data may be substituted for data supplied herewith if warranted after further review and analysis. Such substitutions will be done in accordance with EPA guidelines and requirements