

**PRE-CAFE REPORT
FOR
2019 MODEL YEAR
OF
HYUNDAI MOTOR COMPANY**

- Passenger cars -



NOTE : THIS REPORT CONTAINS [REDACTED] INFORMATION.

THE PRODUCTION VOLUME IS [REDACTED] INFORMATION
AND THIS INFORMATION IS DEEMED BY HMC TO BE EXEMPT
FROM DISCLOSURE UNDER 5 U.S.C. 552(B)(4) AND
49 U.S.C 32910(c).

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Note * : These sections contain [REDACTED] information

I. Introduction

As required by 49 CFR Part 537.9, estimated fuel economy values for Accent, Veloster, Veloster N, Elantra, Elantra SE, Elantra GT, Kona FWD, Kona AWD, Kona Electric, Ioniq, Ioniq Blue, Ioniq Electric, Ioniq Plug-in Hybrid, Tucson AWD, Tucson FWD, Sonata, Sonata SE, Sonata Hybrid, Sonata Hybrid SE, Sonata Plug-in Hybrid, Nexo, Nexo Blue, Santa Fe FWD, Santa FE AWD, G70 RWD, G70 AWD, G80 RWD, G80 AWD, G90 RWD, G90 AWD are included in this report.

The certification emission-data and fuel economy data of the above-mentioned vehicles used to get the following fuel economy values were tested in accordance with applicable exhaust emission test procedures and complied with applicable 2019 exhaust emission standards as defined 40 CFR §86.

II. Projected Average and Required Fuel Economy

1. Projected Average Fuel Economy

- IP : 37.6 MPG (without A/C efficiency & off-cycle credits)

- IP : **38.4** MPG (with A/C efficiency & off-cycle credits)

- DP : N/A

2. Projected Required Fuel Economy

- IP : **41.5** MPG

- DP : N/A

At this point in time and based on available best present information, the above projections represent the Hyundai Motor Company (HMC) average and required fuel economy for the 2018 model year for the purpose of the Act.

II. Projected Average and Required Fuel Economy

BUSINESS INFORMATION

- Projected Required Fuel Economy

Projected Required	41.5
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Model Type Description	Carline	Basic Engine (disp)	Drive	T/M class	Base Tire	Projected sales	Track width FR (inch)	Track width RR (inch)	Average Track width (inch)	Wheelbase (inch)	footprint (sqr feet)	Target standard	ETW	IWC
Veloster 2.0 6AT	Veloster	2.0	FWD	SA6	215/45R17(Nex)	6,394	61.5	62.0	61.8	104.3	44.8	43.18	3,000	3,000
	Veloster	2.0	FWD	SA6	225/40R18(Nex)	5,115	61.0	61.5	61.2	104.3	44.3	43.63	3,125	3,000
Veloster 2.0 6MT	Veloster	2.0	FWD	M6	215/45R17(Nex)	1,279	61.5	62.0	61.8	104.3	44.8	43.18	3,000	3,000
Veloster 1.6T 7DCT	Veloster	1.6	FWD	AM7	225/40R18(Nex)	8,696	61.0	61.5	61.2	104.3	44.3	43.63	3,250	3,000
Veloster 1.6T 6MT	Veloster	1.6	FWD	M6	225/40R18(Mi)	4,092	61.0	61.5	61.2	104.3	44.3	43.63	3,250	3,000
	Veloster	1.6	FWD	M6	225/40R18(Nex)	0	61.0	61.5	61.2	104.3	44.3	43.63	3,250	3,000
G70 3.3T AWD 8AT(PS4)	G70 AWD	3.3	AWD	SA8	FR: 225/40R19 RR: 255/35R19	1,720	62.8	63.1	63.0	111.6	48.8	39.89	4,250	4,000
G70 3.3T AWD 8AT(PS4S)	G70 AWD	3.3	AWD	SA8	FR: 225/40R19 RR: 255/35R19	120	62.8	63.1	63.0	111.6	48.8	39.89	4,250	4,000
G70 3.3T RWD 8AT(PS4)	G70 RWD	3.3	RWD	SA8	FR: 225/40R19 RR: 255/35R19	3,655	62.8	63.1	63.0	111.6	48.8	39.89	4,250	4,000
G70 3.3T RWD 8AT(PS4S)	G70 RWD	3.3	RWD	SA8	FR: 225/40R19 RR: 255/35R19	280	62.8	63.1	63.0	111.6	48.8	39.89	4,250	4,000
G70 2.0T AWD 8AT	G70 AWD	2.0	AWD	SA8	FR: 225/45R18 RR: 255/45R18	4,945	62.8	64.3	63.6	111.6	49.3	39.51	4,000	4,000
	G70 AWD	2.0	AWD	SA8	FR: 225/40R19 RR: 255/35R19	1,075	62.8	63.1	63.0	111.6	48.8	39.89	4,250	4,000
G70 2.0T RWD 8AT	G70 RWD	2.0	RWD	SA8	FR: 225/45R18 RR: 255/45R18	5,590	62.8	64.3	63.6	111.6	49.3	39.51	3,875	4,000
	G70 RWD	2.0	RWD	SA8	FR: 225/40R19 RR: 255/35R19	3,870	62.8	63.1	63.0	111.6	48.8	39.89	4,000	4,000
G70 2.0T RWD 6MT	G70 RWD	2.0	RWD	M6	FR: 225/40R19 RR: 255/35R19	645	62.8	63.1	63.0	111.6	48.8	39.89	4,000	4,000
G90 3.3T AWD	G90 AWD	3.3	AWD	SA8	245/45R19(F) 275/40R19(R)	806	64.6	64.5	64.6	124.4	55.8	35.19	5,000	5,000
G90 3.3T RWD	G90 RWD	3.3	RWD	SA8	245/45R19(F) 275/40R19(R)	1,209	64.6	64.5	64.6	124.4	55.8	35.19	5,000	5,000
G90 5.0 AWD	G90 AWD	5.0	AWD	SA8	245/45R19(F) 275/40R19(R)	434	64.6	64.5	64.6	124.4	55.8	35.19	5,250	5,000
G90 5.0 RWD	G90 RWD	5.0	RWD	SA8	245/45R19(F) 275/40R19(R)	651	64.6	64.5	64.6	124.4	55.8	35.19	5,000	5,000
G80 3.3T AWD	G80 AWD	3.3	AWD	SA8	245/40R19"(F) 275/35R19"(R)	1,300	63.8	64.3	64.0	118.5	52.7	37.13	5,000	5,000
G80 3.3T RWD	G80 RWD	3.3	RWD	SA8	245/40R19"(F) 275/35R19"(R)	1,950	63.8	64.3	64.0	118.5	52.7	37.13	4,750	4,500
G80 3.8 AWD	G80 AWD	3.8	AWD	SA8	245/45R18"	1,690	64.1	65.3	64.7	118.5	53.2	36.80	4,750	4,500
	G80 AWD	3.8	AWD	SA8	245/40R19"(F) 275/35R19"(R)	1,560	63.8	64.3	64.0	118.5	52.7	37.13	4,750	4,500
G80 3.8 RWD	G80 RWD	3.8	RWD	SA8	245/45R18"	3,510	64.1	65.3	64.7	118.5	53.2	36.80	4,500	4,500
	G80 RWD	3.8	RWD	SA8	245/40R19"(F) 275/35R19"(R)	2,340	63.8	64.3	64.0	118.5	52.7	37.13	4,750	4,500

G80 5.0 AWD	G80 AWD	5.0	AWD	SA8	245/40R19"(F) 275/35R19"(R)	260	63.8	64.3	64.0	118.5	52.7	37.13	5,000	5,000
G80 5.0 RWD	G80 RWD	5.0	RWD	SA8	245/40R19"(F) 275/35R19"(R)	390	63.8	64.3	64.0	118.5	52.7	37.13	4,750	4,500
Santa Fe FWD 2.4 AT	Santa Fe FWD	2.4	FWD	SA8	235/60R18	15,020	64.5	64.8	64.6	108.9	48.9	39.81	4,000	4,000
	Santa Fe FWD	2.4	FWD	SA8	235/65R17	21,042	64.7	65.0	64.8	108.9	49	39.74	3,875	4,000
Santa Fe AWD 2.4 AT	Santa Fe AWD	2.4	AWD	SA8	235/60R18	17,331	64.5	64.8	64.6	108.9	48.9	39.81	4,250	4,000
	Santa Fe AWD	2.4	AWD	SA8	235/65R17	20,271	64.7	65.0	64.8	108.9	49	39.74	4,000	4,000
Santa Fe FWD 2.0T AT	Santa Fe FWD	2.0	FWD	SA8	235/55R19	7,318	64.5	64.8	64.6	108.9	48.9	39.81	4,250	4,000
Santa Fe AWD 2.0T AT	Santa Fe AWD	2.0	AWD	SA8	235/55R19	7,318	64.5	64.8	64.6	108.9	48.9	39.81	4,500	4,500
Elantra SE 2.0	Elantra SE	2.0	FWD	SA6	195/65R15	33,030	61.5	61.9	61.7	106.3	45.5	42.57	3,125	3,000
	Elantra SE	2.0	FWD	SA6	195/65R15	3,670	61.5	61.9	61.7	106.3	45.5	42.57	3,125	3,000
Elantra 2.0 AT	Elantra	2.0	FWD	SA6	205/55R16	39,564	61.2	61.6	61.4	106.3	45.3	42.74	3,125	3,000
	Elantra	2.0	FWD	SA6	225/45R17	9,891	61.0	61.3	61.2	106.3	45.2	42.83	3,250	3,000
	Elantra	2.0	FWD	SA6	205/55R16	4,396	61.2	61.6	61.4	106.3	45.3	42.74	3,125	3,000
	Elantra	2.0	FWD	SA6	225/45R17	1,099	61.0	61.3	61.2	106.3	45.2	42.83	3,250	3,000
Elantra 2.0 MT	Elantra	2.0	FWD	M6	195/65R15	785	61.5	61.9	61.7	106.3	45.5	42.57	3,125	3,000
Ioniq EV	Ioniq Electric	Electric	FWD	A1	205/55R16	1,400	61.2	61.6	61.4	106.3	45.3	42.74	3,500	3,500
Kona 1.6 AWD	Kona AWD	1.6	AWD	AM7	235/45R18	6,669	61.4	61.7	61.6	102.4	43.8	44.09	3,500	3,500
Kona 1.6 FWD	Kona FWD	1.6	FWD	AM7	235/45R18	5,884	61.4	61.7	61.6	102.4	43.8	44.09	3,375	3,500
Kona 2.0 AWD	Kona AWD	2.0	AWD	SA6	205/60R16	3,993	62.0	62.4	62.2	102.4	44.2	43.73	3,375	3,500
	Kona AWD	2.0	AWD	SA6	215/55R17	10,199	61.5	61.9	61.7	102.4	43.9	44.00	3,375	3,500
Kona 2.0 FWD	Kona FWD	2.0	FWD	SA6	205/60R16	4,778	62.0	62.4	62.2	102.4	44.2	43.73	3,250	3,000
	Kona FWD	2.0	FWD	SA6	215/55R17	12,553	61.5	61.9	61.7	102.4	43.9	44.00	3,250	3,000
Accent AT	Accent	1.6	FWD	SA6	205/45R17	1,540	59.5	59.7	59.6	101.6	42.1	45.73	3,000	3,000
	Accent	1.6	FWD	SA6	185/65R15	17,690	60.0	60.2	60.1	101.6	42.4	45.44	2,875	2,750
Accent MT	Accent	1.6	FWD	M6	185/65R15	770	60.0	60.2	60.1	101.6	42.4	45.44	2,750	2,750
Elantra 1.4T DCT	Elantra	1.4	FWD	AM7	195/65R15	700	61.5	61.9	61.7	106.3	45.5	42.57	3,125	3,000
Veloster N 2.0T MT	Veloster N	2.0	FWD	M6	225/40R18	200	61.3	61.7	61.5	104.3	44.5	43.45	3,375	3,500
	Veloster N	2.0	FWD	M6	235/35R19	2,300	61.2	61.6	61.4	105.3	44.9	43.09	3,375	3,500
Nexo	Nexo	Fuelcell	FWD	A1	245/45R19	195	63.5	64.0	63.8	109.8	48.6	40.04	4,500	4,500
Nexo Blue	NEXO Blue	Fuelcell	FWD	A1	225/60R17	105	63.7	64.1	63.9	109.8	48.7	39.96	4,250	4,000
Sonata 2.4 AT	Sonata	2.4	FWD	SA6	215/55R17	61,360	63.1	63.4	63.2	110.4	48.5	40.12	3,625	3,500
Sonata 2.4 SE AT	Sonata SE	2.4	FWD	SA6	205/65R16	34,320	63.5	63.8	63.6	110.4	48.8	39.89	3,500	3,500
Sonata 2.0T 8AT	Sonata	2.0	FWD	SA8	235/45R18	7,280	62.9	63.1	63.0	110.4	48.3	40.27	3,875	4,000
Sonata 1.6T 7DCT	Sonata	1.6	FWD	AM7	205/65R16	1,040	63.5	63.8	63.6	110.4	48.8	39.89	3,500	3,500
Ioniq PHEV	Ioniq Plug-in Hybrid	1.6	FWD	AM6	205/55 R16	2,800	61.2	61.8	61.5	106.3	45.4	42.66	3,625	3,500
Sonata PHEV	Sonata plug-in hybrid	2.0	FWD	AM6	215/55 R17	1,200	63.1	63.3	63.2	110.4	48.5	40.12	4,000	4,000
Ioniq 1.6 AT	Ioniq	1.6	FWD	AM6	195/65R15	8,190	61.5	62.1	61.8	106.3	45.6	42.48	3,375	3,500
	Ioniq	1.6	FWD	AM6	225/45R17	5,880	61.0	61.5	61.2	106.3	45.2	42.83	3,375	3,500
Ioniq BLUE 1.6 AT	Ioniq Blue	1.6	FWD	AM6	195/65R15	6,930	61.5	62.1	61.8	106.3	45.6	42.48	3,250	3,000
Kona EV	Kona Electric	Electric	FWD	A1	215/55R17	4,900	61.2	61.6	61.4	106.3	45.3	42.74	4,000	4,000
Tucson 2.0 AWD	Tucson AWD	2.0	AWD	SA6	225/60R17	26,256	63.3	63.8	63.6	105.1	46.4	41.80	3,750	3,500
Tucson 2.0 FWD	Tucson FWD	2.0	FWD	SA6	225/60R17	33,134	63.3	63.8	63.6	105.1	46.4	41.80	3,625	3,500
	Tucson FWD	2.0	FWD	SA6	225/60R17	0	63.3	63.8	63.6	105.1	46.4	41.80	3,625	3,500
Tucson 2.4 AWD	Tucson AWD	2.4	AWD	SA6	245/45R19	6,114	63.1	63.6	63.4	105.1	46.3	41.89	3,875	4,000
	Tucson AWD	2.4	AWD	SA6	225/55R18	16,049	63.3	63.8	63.6	105.1	46.4	41.80	3,875	4,000
Tucson 2.4 FWD	Tucson FWD	2.4	FWD	SA6	245/45R19	0	63.1	63.6	63.4	105.1	46.3	41.89	3,750	3,500
	Tucson FWD	2.4	FWD	SA6	225/55R18	0	63.3	63.8	63.6	105.1	46.4	41.80	3,750	3,500
	Tucson FWD	2.4	FWD	SA6	245/45R19	6,114	63.1	63.6	63.4	105.1	46.3	41.89	3,750	3,500
	Tucson FWD	2.4	FWD	SA6	225/55R18	13,756	63.3	63.8	63.6	105.1	46.4	41.80	3,750	3,500
Elantra GT 2.0 AT	Elantra GT	2.0	FWD	SA6	225/45R17	10,200	61.1	61.7	61.4	104.3	44.5	43.45	3,250	3,000

Elantra GT 1.6T DCT	Elantra GT	1.6	FWD	AM7	225/40R18	1,200	61.0	61.5	61.2	104.3	44.3	43.63	3,375	3,500
Elantra GT 1.6T MT	Elantra GT	1.6	FWD	M6	225/40R18	600	61.0	61.5	61.2	104.3	44.3	43.63	3,375	3,500
Elantra 1.6T DCT	Elantra	1.6	FWD	AM7	225/40R18	6,000	60.8	61.4	61.1	106.3	45.1	42.92	3,375	3,500
Elantra 1.6T MT	Elantra	1.6	FWD	M6	225/40R18	2,400	60.8	61.4	61.1	106.3	45.1	42.92	3,375	3,500
Sonata HEV	Sonata Hybrid	2.0	FWD	AM6	215/55R17	2,700	63.1	63.3	63.2	110.4	48.5	40.12	4,000	4,000
Sonata HEV SE	Sonata Hybrid SE	2.0	FWD	AM6	205/65R16	1,800	63.5	63.8	63.6	110.4	48.8	39.89	3,750	3,500

Projected Required	41.5
Total Sales Volume	573,510

$$CAFE_{required} = \frac{\sum_i PRODUCTION_i}{\sum_i TARGET_i}$$

Elantra GT 2.0 AT	Elantra GT	2.0	FWD	SA6	225/45R17	10,200	31.6	46.6	36.9526	3000	37	10,200
Elantra GT 1.6T DCT	Elantra GT	1.6	FWD	AM7	225/40R18	1,200	32	46.4	37.1944	3500	37.2	1,200
Elantra GT 1.6T MT	Elantra GT	1.6	FWD	M6	225/40R18	600	29.3	42.6	34.0893	3500	34.1	600
Elantra 1.6T DCT	Elantra	1.6	FWD	AM7	225/40R18	6,000	33.2	46.7	38.1647	3500	38.2	6,000
Elantra 1.6T MT	Elantra	1.6	FWD	M6	225/40R18	2,400	28	43.1	33.2406	3500	33.3	2,400
Sonata HEV	Sonata Hybrid	2.0	FWD	AM6	215/55R17	2,700	55.9	64	59.276	4000	59.3	2,700
Sonata HEV SE	Sonata Hybrid SE	2.0	FWD	AM6	205/65R16	1,800	56	64	59.3377	3500	59.3	1,800

Average	37.6
ROUNDED Avg. comb.	37.2342
Multiplied Factor	1.00682858
'a'	1.4317
C' FACTOR	0.0014
IW (Added Factor)	0.0970839
SF3IWC	0.2698
FE3IWC	43.0363
SF4ETW	0.0934
FE4IWC	32.9336

§600.510-12 : $AFE_{adj} = AFE[(0.55 \times a \times c) + (0.45 \times c) + (0.5556 \times a) + 0.4487] / [(0.55 \times a) + 0.45] + IW$

OCCredit	174,519
Car volume	573,510
FCIV _{OC} (Gal/mi)	0.000175358

VLM 195,264

$$FCIV_{OC} \text{ (gal/mi)} = \frac{(OCCredit \times 1,000,000)}{(VLM \times Production \times 8807)}$$

VI. Projected Average Fuel Economy Adjustment

Average MPG	38.4
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P4	MPG	37.6
P6	FCIV_{AC}(Gal/mi)	0.000407828
P7	FCIV_{OC}(Gal/mi)	0.000175358
N/A	FCIV_{PU}(Gal/mi)	0

$$\text{Average MPG} = \frac{1}{\left[\frac{1}{\text{MPG}} - (\text{FCIV}_{AC} + \text{FCIV}_{OC} + \text{FCIV}_{PU}) \right]}$$