UIC ENGINEERING

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We used the UIC Alternative Fuels Emissions Model to assess the GHG emissions savings from the Next Generation Fuels Act. The Next Generation Fuels Act is directed to utilize high octane fuel vehicles (HOF).

The model was populated to reflect the use of HOF in 16 million vehicles starting in the year 2026, increasing each year by an additional 16 million vehicles through the year 2035. We assumed that HOF E20 will be used from 2026 through 2030 and HOF E30 from 2031 through 2035.

In Scenario 1 we assumed an efficiency increase (EER) of 5% with HOF E20 and 10% with HOF E30 over the current E10 baseline fuel. Note that the efficiency gain with E20 is consistent with the current GREET assumptions, the efficiency gain for E30 is assumed to benefit from future R&D in this area. Under this Scenario HOF will save 684,863,012 tonnes CO_2e relative to the use of E10 and 1,022,959,301 tonnes CO_2e relative to the use of E0.

Scenario 1:

Annual Consumption and Cost	**EV**		**Gasoline Baseline E10**	**HOF E20**	**HOF E30**	
Annual Distance Travelled	13,000	miles	13,000	13,000	13,000	miles
Fuel Economy	82.2	mpge	25.7	26.1	26.3	mpg HOF
Fuel Economy (MJ/mi)			4.52	4.30	4.11	
EER	3.2		1	1.05	1.10	
Annual Fuel Use	5,096	kWh	505.8	498.7	493.4	gallons Fuel

In Scenario 2 we assumed an efficiency increase (EER) of 8% with HOF E20 and 8% with HOF E30. Under this Scenario HOF will save 653,084,118 tonnes CO_2e relative to the use of E10 and 991,180,406 tonnes CO_2e relative to the use of E0.

Scenario 2:

Annual Consumption and Cost	**EV**		**Gasoline Baseline E10**	**HOF E20**	**HOF E30**	
Annual Distance Travelled	13,000	miles	13,000	13,000	13,000	miles
Fuel Economy	82.2	mpge	25.7	26.8	25.9	mpg HOF
Fuel Economy (MJ/mi)			4.52	4.18	4.18	
EER	3.2		1	1.08	1.08	
Annual Fuel Use	5,096	kWh	505.8	484.9	502.6	Annual Fuel Use

Under both scenarios, the use of HOF technologies would approximately save 1 gigatonne of GHG emissions.