



January 15, 2024

Mr. Joshua Cunningham
Chief, Advanced Clean Cars Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments on the November 15, 2023, Advanced Clean Cars Workshop

Dear Mr. Cunningham,

The Renewable Fuels Association (RFA) thanks you for the opportunity to comment on the workshop held by the California Air Resources Board (CARB) on November 15, 2023, to consider potential amendments to the Advanced Clean Cars (ACC) regulation.

The RFA is the leading national trade association representing U.S. fuel ethanol producers. Its mission is to drive growth in sustainable renewable fuels and bioproducts for a better future. Founded in 1981, RFA serves as the premier forum for industry leaders and supporters to discuss ethanol policy, regulation, and technical issues. RFA's 300-plus members are working daily to help America become cleaner, safer, more energy secure, and economically vibrant.

The 2022 CARB Scoping Plan update recognized the need to increase the supply of low- to zero-carbon liquid fuels to achieve the goal of carbon neutrality by 2045. Tremendous progress has been made on the composition of California's diesel supply, with renewable diesel and biodiesel now accounting for more than 60 percent of total volumes.

However, progress is notably lacking on the light-duty vehicle (LDV) fuel side, as finished gasoline is generally still limited to 10 percent low-carbon renewable ethanol, with the remaining 90 percent consisting of petroleum-based blendstock (CARBOB). While electrification of the LDV fleet is expanding rapidly, significant volumes of liquid fuels will continue to be used for decades to come, and carbon neutrality can only be achieved by displacing a substantial share of those with low- and zero-carbon liquid fuels.

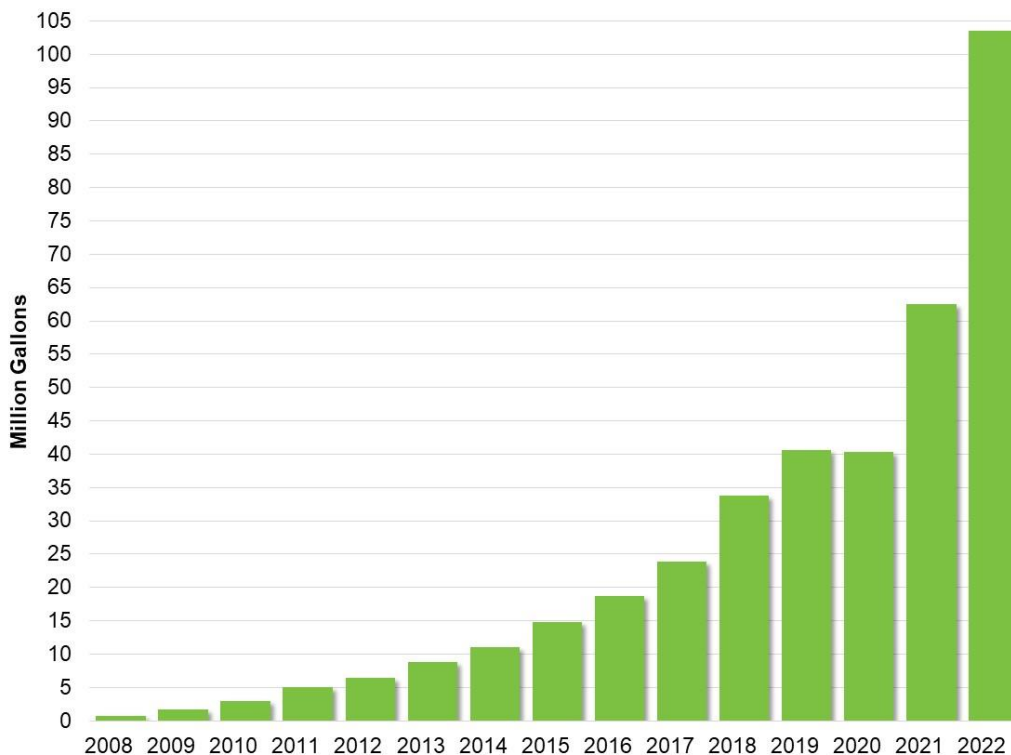
The RFA appreciates CARB staff's recognition of the opportunity for higher blends of ethanol to provide further greenhouse gas (GHG) emissions reductions under the ACC

regulation. The following comments address the specific topics on which CARB solicited feedback in the staff presentation at the November 15 workshop.

E85 Is Becoming Available at an Increasing Number of Stations and Is Proving Popular with California Drivers

E85 is the fastest-growing low-carbon fuel in California, due to the rapid expansion of E85 distribution outlets and the lower cost of E85 relative to gasoline in the state. Sales were less than 6 million gallons when the Low Carbon Fuel Standard was first implemented, but have accelerated rapidly in recent years, exceeding 100 million gallons in 2022, as shown in the figure below. Annualized growth rates averaged 60 percent over the last two years. Data for 2023 is not yet available, but indications are that the pace of growth continued.

Annual E85 Sales Volumes in California



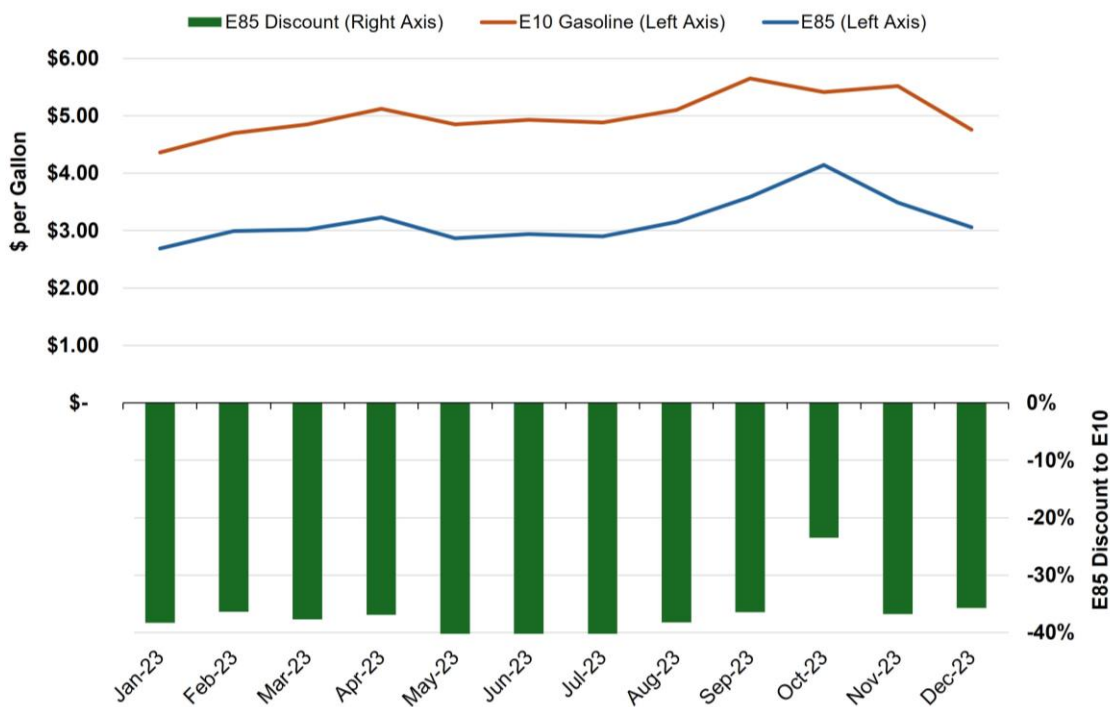
Source: CARB

The number of E85 retail stations has increased rapidly along with the consumption of E85. There are currently over 400 stations offering E85 in California, with approximately another 200 in the permitting or planning process. This is in response to consumer demand and acceptance of E85.

The Inflation Reduction Act (IRA) of 2022 allocated \$500 million to the Higher Blends Infrastructure Incentive Program (HBIIIP) to support the expansion of infrastructure to distribute and dispense higher blends of both ethanol and biodiesel produced from agricultural products. The first round of \$50 million in HBIIIP funding has been committed, with \$450 million still available over the next several years. California businesses have been utilizing this program to support the growth of E85 distribution.

E85 has consistently sold for a discount to California reformulated gasoline of between \$1.50 and \$2.00 per gallon, which provides a strong incentive for consumers with flex-fuel vehicles (FFVs) to purchase the product. This is evidenced by the rapid growth of E85 sales even as the number of FFVs in California has remained relatively stable or even declined. The data supports the conclusion that the propensity for California drivers with FFVs to fuel with E85 has increased significantly.

California Monthly Average Retail Prices: E85 vs. E10 Gasoline



Source: e85prices.com

Ethanol Is Reducing GHG Emissions and Providing Air Quality and Equity Benefits, but It Can Do More

On average, the carbon intensity (CI) of ethanol sold in California is approximately 40 percent less than the California gasoline baseline, with some ethanol sold in California approximately 70 percent lower. The CI of ethanol continues to decline with the use of renewable process energy at production facilities, improvements in farm practices, the

deployment of carbon capture and sequestration, and other process efficiency improvements. RFA membership has committed to achieving carbon neutrality from its combined ethanol production no later than 2050 and is on track to achieving this important goal.¹

Mid- and high-level blends of low-carbon ethanol in the gasoline pool represent the nearest-term and most affordable path for greater reductions of GHG emissions from the LDV fleet. California is the only state in the country that does not certify 15 percent ethanol blends (E15) as a legal fuel, and consequently consumers are paying more at the pump while also suffering higher GHG and criteria pollutant emissions. GHG emissions in 2023 would have been reduced by more than two million metric tons if all the gasoline were E15 rather than the current E10.

E85 results in even greater GHG reductions given the lower CI of ethanol. Using renewable naphtha, a coproduct of renewable diesel production, as the “hydrocarbon” portion of E85 results in a 100 percent renewable fuel that can be comparable to battery electric vehicles in reducing GHG emissions.

In addition, recent emissions testing conducted by the Center for Environmental Research and Technology at the University of California Riverside, which was financially supported in part by CARB, found that replacing E10 with E15 results in significant air quality benefits.² Important from a public health perspective is a statistically significant 18-percent decrease in total particulate matter (PM) emissions for E15 compared to E10. The air quality and public health benefits from high-level ethanol blends, specifically E85, would be even greater.

FFVs sell at prices that are comparable to their non-FFV counterparts and that are materially lower than the average price for an electric vehicle in California.³ In addition, a significant number of FFVs (of various makes and models) are available in the used automobile market, providing an array of clean vehicle options for lower-income families. Combining the GHG and criteria pollutant benefits of FFVs with the lower cost of the vehicle and the fuel offers a compellingly positive equity impact for E85.

A stated goal of the CARB Scoping Plan is to rapidly displace petroleum, which is important for public health. Higher ethanol blends from E15 to E85, as a complement to

¹ <https://ethanolrfa.org/pledge>

² <https://ww2.arb.ca.gov/resources/documents/comparison-exhaust-emissions-between-e10-carfg-and-splash-blended-e15>

³ According to General Motors, adding the capability to run on E85 costs adds \$70 to the production cost of each vehicle (see: <https://www.reuters.com/article/gm-ethanol/corrected-gm-seeking-more-u-s-ethanol-fueling-stations-idUSN1619509020100216/>). However, this cost has not historically been passed on in retail prices for FFVs, which typically have the same MSRP as the non-FFV version of the same vehicle.

electrification, can be a critical component in displacing petroleum in liquid fuels that will be part of California's transportation energy mix for decades to come. Facilitating a more rapid transition to E15 and E85 will not lead to large increases in the amount of ethanol use in California, but rather allow for a more rapid displacement of petroleum as overall liquid fuel consumption declines, as projected in the Scoping Plan.

FFVs Are Cost-Effective

FFVs have been sold in California for years, complying with all relevant California certification requirements. The incremental hardware to produce FFVs is a de minimis cost to automakers.⁴ While RFA appreciates that there may be adjustments in emission systems programming for E85 when meeting criteria pollution standards, it is our understanding that these adjustments are manageable both from a cost and compliance perspective. This is particularly true if a substantial portion of light duty vehicles sold in California were FFV capable, as any cost of compliance would be spread over a larger number of vehicles.

It would be beneficial to initiate a dialog with CARB staff and automakers regarding the issues involved with California's certification of FFVs in complying with CARB's emissions standards. From a cost-benefit perspective, any incremental certification costs are offset by the overwhelming GHG, criteria pollutant, and consumer cost advantages that FFVs operating on low- to zero-carbon fuel provide.

CARB Should Require All New Vehicles with Internal Combustion Engines Sold in California to be Flex-Fuel Capable, Beginning as Early as Model Year 2026

Requiring that all LDVs with internal combustion engines (ICE) sold in California be FFVs will enable the remaining fleet of vehicles that use liquid fuels to be capable of running on low- to zero-carbon ethanol over their useful life. Additionally, for the portion of Zero-Emission Vehicle program requirements met through the sale of plug-in hybrid electric vehicles (PHEVs), requiring that PHEVs be FFVs—and therefore able to use both renewable electricity and renewable liquid fuels—will ensure GHG emissions reductions from this practical and affordable option for California consumers.

All automakers have the capability of manufacturing FFVs, and many models were available as FFVs, particularly in the period from model year 2010 to 2016. However, since the corporate average fuels economy (CAFE) and tailpipe GHG emissions credits associated with FFVs were reduced or eliminated, the production of FFVs has dramatically declined. Historical FFV availability across automakers and models is documented in the attachment to this letter.

⁴ *Id.*

California has an opportunity to continue its leading position in climate action by requiring flex-fuel capability on all new car sales in the state. Unless new FFV models are available to consumers, the number of FFVs on the road in California will gradually decline, as will E85 sales, reducing the amount of low-carbon liquid fuel consumed in the state.

The recent growth in E85 sales is a prime success story of California's efforts to reduce GHG emissions while simultaneously reducing criteria pollutants, displacing petroleum, and offering consumers an affordable, practical, and equitable option in complementing the state's electrification goals. As part of potential amendments to the ACC regulation, a policy to require flex-fuel capability in new ICE vehicle sales in California is necessary to build on this success and can be a significant component in the state's efforts to achieve carbon neutrality by 2045 and beyond.

RFA appreciates California's leadership on carbon policy and looks forward to continued collaboration with CARB on the development of modifications to the ACC regulation.

Sincerely,



Scott Richman
Chief Economist



CAN YOU FLEX FUEL?

Flex Fuel Vehicle (E85) for ALL models of specified engine size
Flex Fuel Vehicle (E85) for FLEET models only of specified engine size

AUTOMAKERS / MODELS	MODEL YEAR														
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AUDI															
Audi A4 quattro automatic					2.0L	2.0L	2.0L	2.0L							
Audi A5 quattro automatic					2.0L	2.0L	2.0L	2.0L	2.0L						
Audi A5 Cabriolet quattro automatic					2.0L	2.0L	2.0L	2.0L	2.0L						
Audi Allroad quattro automatic					2.0L		2.0L	2.0L							
Audi Q5 quattro automatic					2.0L	2.0L	2.0L	2.0L	2.0L						
BENTLEY															
Bentley Continental Flying Spur/Speed			6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L						
Bentley Continental GT/Speed			6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L						
Bentley Continental GTC/Speed			6.0L	6.0L	6.0L	6.0L									
Bentley Continental Supersports/Convertible/Convertible ISR			6.0L	6.0L	6.0L										
CHRYSLER/DODGE/JEEP															
Chrysler 200				3.6L	3.6L	3.6L	3.6L	3.6L	3.6L						
Chrysler 300			3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
Chrysler Aspen	4.7L														
Chrysler Sebring Convertible	2.7L	2.7L	3.6L												
Chrysler Sebring Sedan	2.7L	2.7L	3.6L												
Chrysler Town & Country	3.3L	3.3L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L							
Dodge Avenger	2.7L	2.7L	3.6L	3.6L	3.6L	3.6L									
Dodge Caravan		3.3L													
Dodge Challenger			3.6L												
Dodge Charger			3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
Dodge Dakota	4.7L	4.7L	4.7L												
Dodge Dart					2.0L	2.0L	2.0L	2.0L							
Dodge Durango	4.7L		3.6L	3.6L	3.6L	3.6L	3.6L								
Dodge Grand Caravan	3.3L	3.3L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
Dodge Journey			3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
Dodge Ram					3.6L	3.6L									
Dodge Ram 1500	4.7L	4.7L	4.7L	4.7L			3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
Jeep Cherokee							2.4L	2.4L	2.4L	2.4L					
Jeep Commander	4.7L														
Jeep Grand Cherokee	4.7L		3.6L	3.6L	3.6L	3.6L	3.6L								
Jeep Renegade							2.4L	2.4L	2.4L	2.4L					
FORD/LINCOLN/MERCUY															
Ford Crown Victoria	4.6L	4.6L	4.6L	4.6L											
Ford Escape		3.0L	3.0L	3.0L					2.5L	2.5L	2.5L				
Ford E-Series Commercial Van/Wagon/Cutaway	4.6L	4.6L	4.6L	4.6L	4.6L	4.6L							6.2L		
Ford Expedition	5.4L	5.4L	5.4L	5.4L	5.4L	5.4L									
Ford Explorer					3.5L	3.5L	3.5L	3.5L	3.5L	3.5L	3.5L	3.5L	3.3L		
Ford F-150	5.4L	5.4L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L	5.0L
Ford Super Duty F-250/F-350			6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L	
Ford Super Duty F-450 Chassis Cab							6.2L	6.2L	6.2L	6.2L	6.2L	6.2L			
Ford Super Duty F-550 Chassis Cab							6.2L	6.2L	6.2L	6.2L					
Ford Focus				2.0L	2.0L	2.0L	2.0L	2.0L	2.0L						
Ford Fusion		3.0L	3.0L	3.0L											
Ford Police Interceptor - Utility							3.5L	3.5L	3.5L	3.5L	3.5L	3.3L	3.3L	3.3L	3.3L
							3.7L	3.7L	3.7L	3.7L	3.7L				
Ford Taurus					3.5L	3.5L	3.5L	3.5L	3.5L	3.5L	3.5L				
Ford Transit							3.7L	3.7L	3.7L	3.7L	3.7L	3.5L	3.5L	3.5L	3.5L
Ford Transit Connect								2.5L	2.5L	2.5L	2.0L	2.0L	2.0L	2.0L	
Lincoln Navigator/Navigator L	5.4L	5.4L	5.4L	5.4L	5.4L	5.4L									
Lincoln Town Car	4.6L	4.6L	4.6L												
Mercury Grand Marquis	4.6L	4.6L	4.6L												
Mercury Mariner		3.0L	3.0L												
Mercury Milan		3.0L	3.0L												
GENERAL MOTORS															
Buick Lacrosse				3.6L	3.6L	3.6L	3.6L	3.6L							
Buick Lucerne	3.9L	3.9L	3.9L												
Buick Regal			2.0L	2.0L	2.0L										
				2.4L											
Buick Verano				2.4L	2.4L										

Verify FFV capability with automaker before using E85.

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AUTOMAKERS / MODELS	MODEL YEAR														
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
GENERAL MOTORS															
Cadillac ATS					3.6L										
Cadillac Escalade/ESV/EXT	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L									
Cadillac SRX				3.6L	3.6L										
Chevrolet Avalanche	5.3L	5.3L	5.3L	5.3L	5.3L										
		6.2L													
Chevrolet Caprice Police				3.6L	3.6L	3.6L	3.6L	3.6L	3.6L						
				6.0L	6.0L	6.0L	6.0L	6.0L	6.0L						
Chevrolet Captiva					2.4L	2.4L	2.4L	2.4L							
Chevrolet Equinox				2.4L	2.4L	2.4L	2.4L	2.4L	2.4L						
			3.0L	3.0L	3.0L	3.6L									
Chevrolet Express		4.8L	4.8L	4.8L	4.8L										
	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L							
		6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L			
Chevrolet HHR	2.2L	2.2L	2.2L												
	2.4L	2.4L	2.4L												
	3.5L	3.5L	3.5L												
Chevrolet Impala				3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L	3.6L			
	3.9L		3.9L												
Chevrolet Malibu		2.4L	2.4L	2.4L											
	3.5L	3.5L													
		4.8L	4.8L	4.8L	4.8L	4.3L	4.3L	4.3L	4.3L	4.3L					
Chevrolet Silverado	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L
	6.2L	6.2L	6.2L	6.2L	6.2L										
Chevrolet Silverado HD					6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L		6.6L	6.6L	6.6L
Chevrolet Suburban	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L			
	6.2L														
Chevrolet Tahoe	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L			
	6.2L														
GMC Savana		4.8L	4.8L	4.8L	4.8L										
	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L								
		6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L			
		4.8L	4.8L	4.8L	4.8L	4.3L	4.3L	4.3L	4.3L	4.3L					
GMC Sierra	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L
	6.2L	6.2L	6.2L	6.2L	6.2L										
GMC Sierra HD					6.0L	6.0L	6.0L	6.0L	6.0L	6.0L	6.0L		6.6L	6.6L	6.6L
GMC Terrain				2.4L	2.4L	2.4L	2.4L	2.4L	2.4L						
			3.0L	3.0L	3.0L	3.6L									
GMC Yukon	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L			
	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L									
GMC Yukon XL	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L	5.3L			
	6.2L	6.2L	6.2L	6.2L	6.2L	6.2L									
Hummer H2/SUT	6.2L	6.2L													
Pontiac G6	3.5L														
JAGUAR															
Jaguar XF/XJ/XJL							5.0L								
Jaguar XJ/XJL							3.0L								
MERCEDES-BENZ															
Mercedes-Benz C 300	3.0L	3.0L	3.0L	3.0L	3.5L	3.5L									
Mercedes-Benz C 350				3.5L	3.5L	3.5L									
Mercedes-Benz CLA 250							2.0L	2.0L	2.0L	2.0L	2.0L				
Mercedes-Benz E 350							3.5L	3.5L							
Mercedes-Benz E 350 Cabriolet				3.5L	3.5L	3.5L									
Mercedes-Benz E 350 Coupe				3.5L	3.5L	3.5L									
Mercedes-Benz E 350 Sedan					3.5L	3.5L									
Mercedes-Benz GLA 250							2.0L	2.0L	2.0L	2.0L	2.0L				
Mercedes-Benz GLE 350								3.5L	3.5L	3.5L					
Mercedes-Benz ML 350				3.5L	3.5L	3.5L	3.5L								
NISSAN															
Nissan Armada (+All MYs 8th VIN is "B")	5.6L	5.6L	5.6L	5.6L	5.6L	5.6L	5.6L								
Nissan Frontier									4.0L	4.0L	4.0L				
Nissan Titan (+All MYs 8th VIN is "B")	5.6L	5.6L	5.6L	5.6L	5.6L	5.6L	5.6L								
SAAB															
SAAB 9-3 (+All MYs 8th VIN is "R")				2.0L											
SAAB 9-5 (+All MYs 8th VIN is "R")			2.0L	2.0L											
TOYOTA															
Toyota Sequoia	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L					
Toyota Tundra	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L	5.7L				
VOLKSWAGEN															
Volkswagen Routan (+All MYs 8th VIN is "C")				3.6L	3.6L	3.6L									

Verify FFV capability with automaker before using E85.

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