



California Transportation Fuel Demand Forecasts

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New Elements of Fuel Demand Models

2009

- CALCARS PVC
- Transit
- Intercity
- CALCARS CVC
- Freight
- Aviation
- Offroad (external)

2011

- Personal light-duty vehicle choice
- Urban travel and fuel
- Intercity travel and fuel
- Traffic congestion
- Commercial light-duty vehicle choice
- Freight and heavy vehicle activity
- Aviation passenger travel, goods movement
- Simple growth models: Offroad (external), Other bus



Transportation Fuel Demand Scenario Methodology

Two step approach:

- 1) Preliminary fuel demand forecast using scenarios and inputs run in the DynaSim framework
- 2) Final fuel demand forecast using post-processing policy analyses
 - a. Post-processing of preliminary demand forecast assuming California's proportional share under Federal Renewable Fuel Standards (RFS) are consumed
 - b. Post-processing of RFS-adjusted demand forecast evaluating California's Low Carbon Fuel Standard (LCFS)



How Future Uncertainties Are Captured

- Economic projections: gross product and income
- Current & pending regulatory standards
- Fuel and vehicle technology
- Crude oil and transportation fuel price forecasts



Some Future Uncertainties Are Not Captured

- Change in consumer preferences over time
- Future regulatory environment
- Changes in land-use
- Events that shape energy markets in short-term
- Fuel price effects of RFS2 or LCFS



Low Petroleum Fuel Demand Forecast

- High crude oil & E85 price trend
- Low economic growth and income
 - IHS Global Insight
 - Moody's Analytics
- High penetration of fuel efficient technologies
 - Higher heavy-duty vehicle fuel economy
 - Near-term CAFE standards
 - More fuel-efficient technology in commercial aircraft
- Low electricity & natural gas price trend

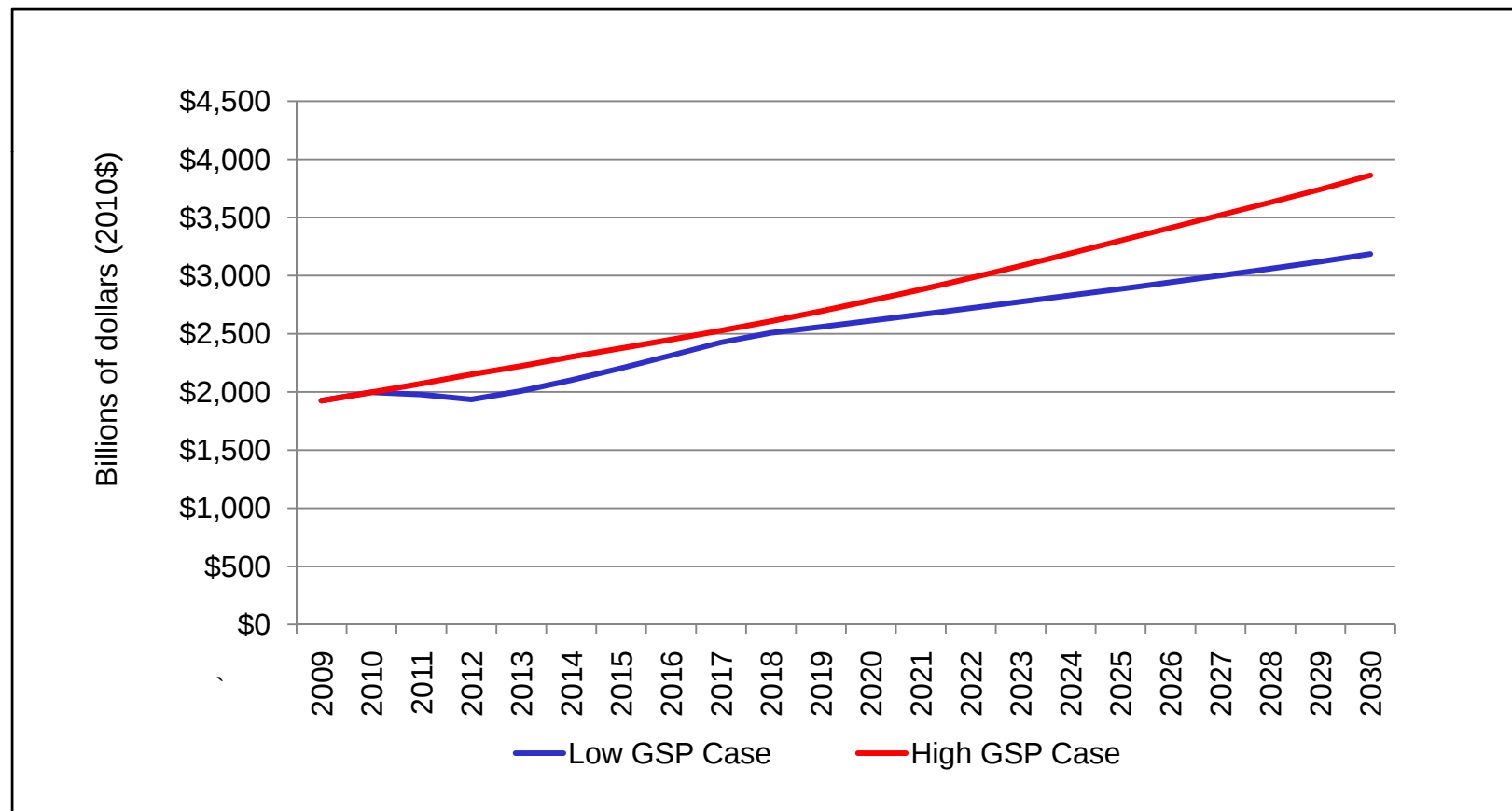


High Petroleum Fuel Demand Forecast

- Low crude oil & E85 price trend
- High economic growth and income
 - IHS Global Insight
 - Moody's Analytics
- Low penetration of fuel efficient technologies
 - Lower heavy-duty vehicle fuel economy standards
 - Near-term CAFE standards
 - Less fuel-efficient technology in commercial aircraft
- High natural gas & electricity price trend

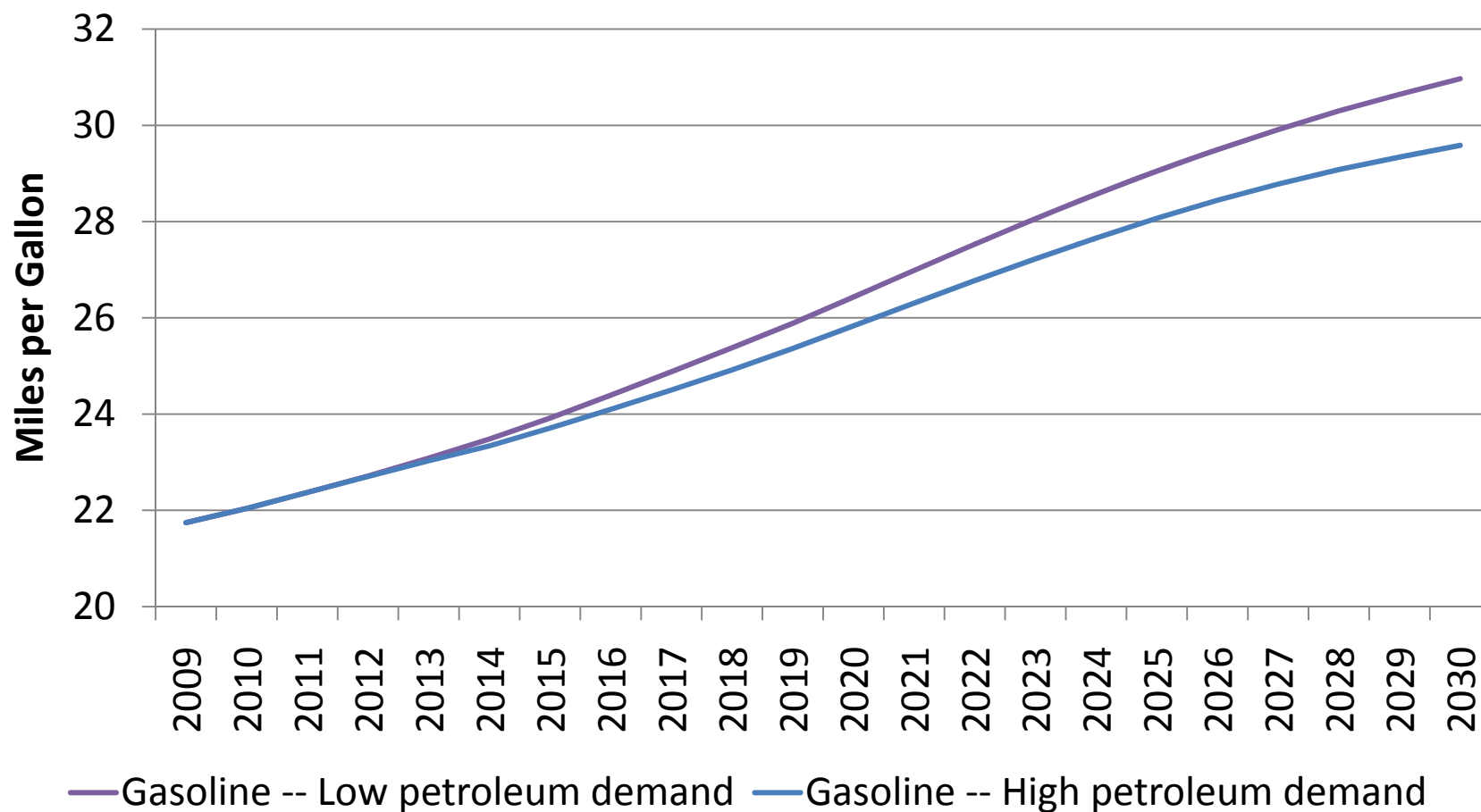


Gross State Product (2010 dollars)



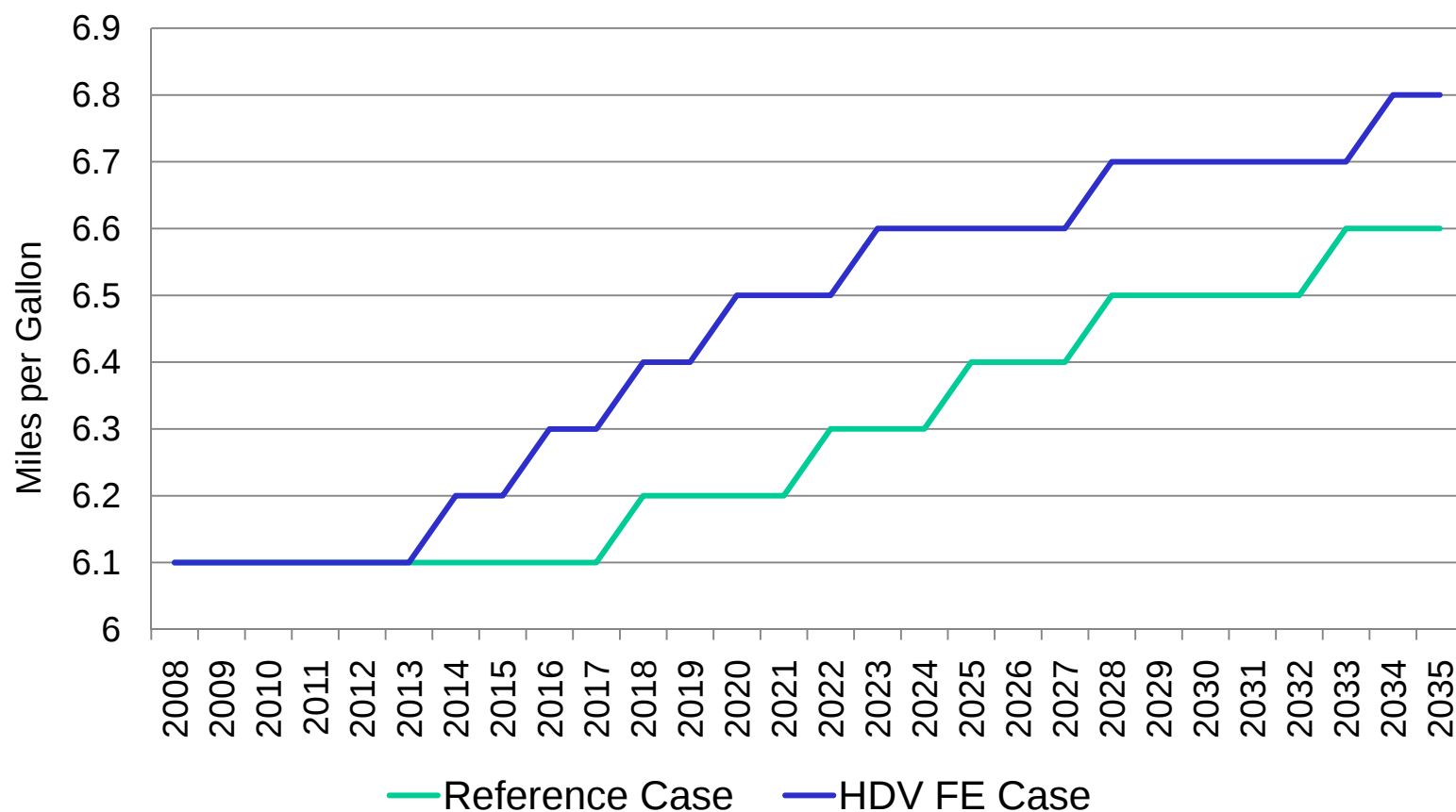


Light-duty Gasoline Vehicle Fuel Economy



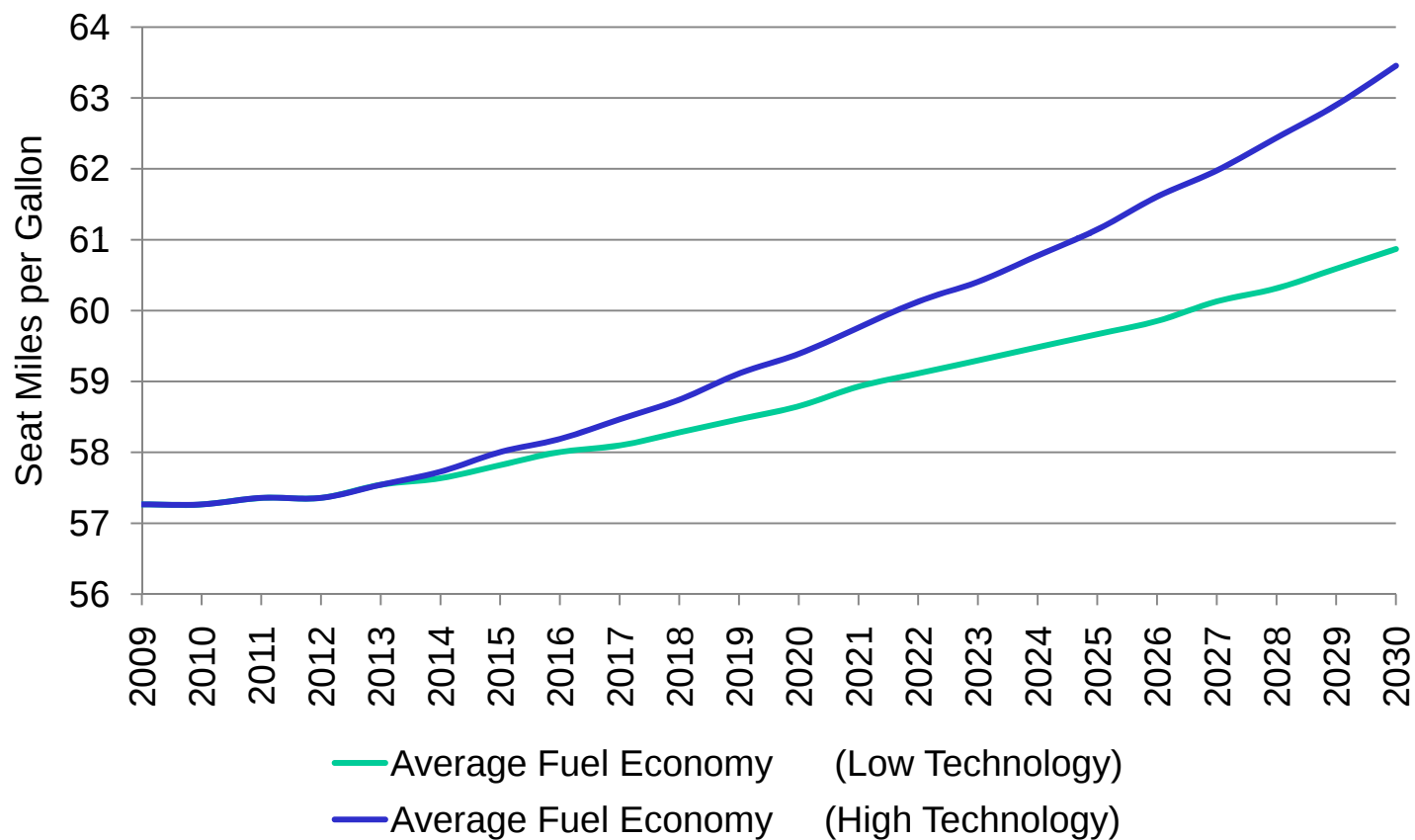


EIA Average Truck Fuel Economy



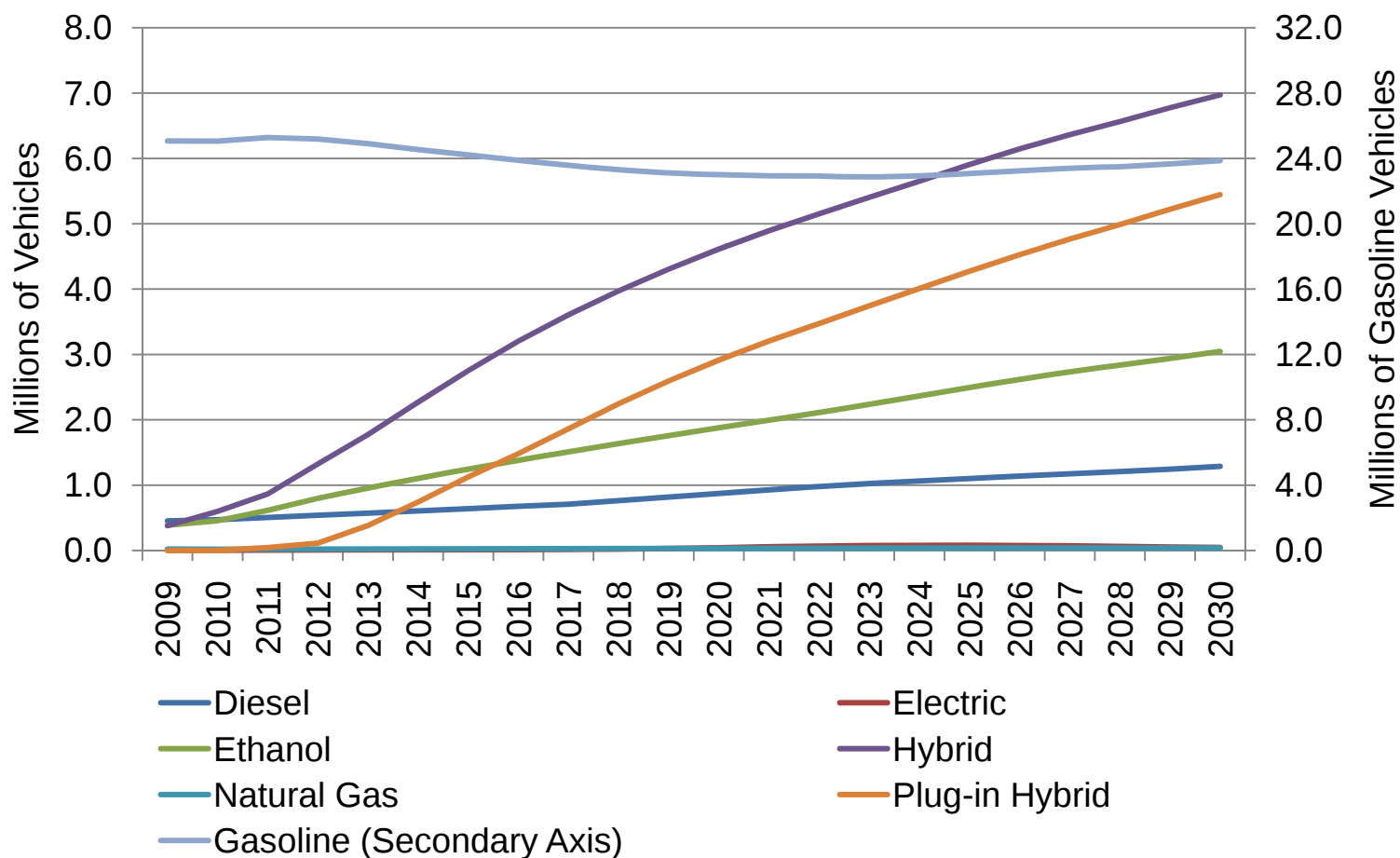


EIA Commercial Air Passenger Carrier Fuel Economy Projections



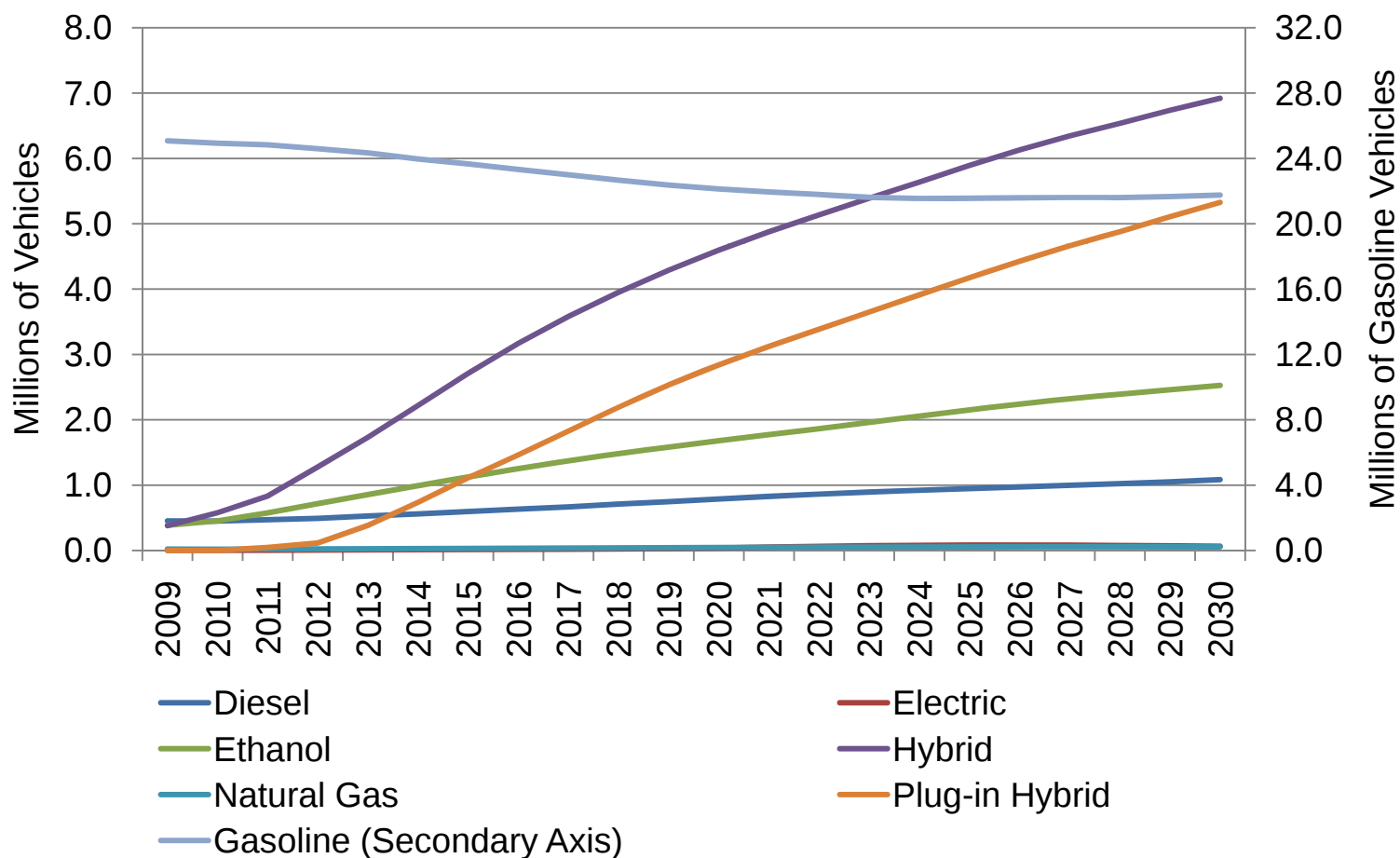


High Petroleum Demand Light-duty Vehicle Forecast



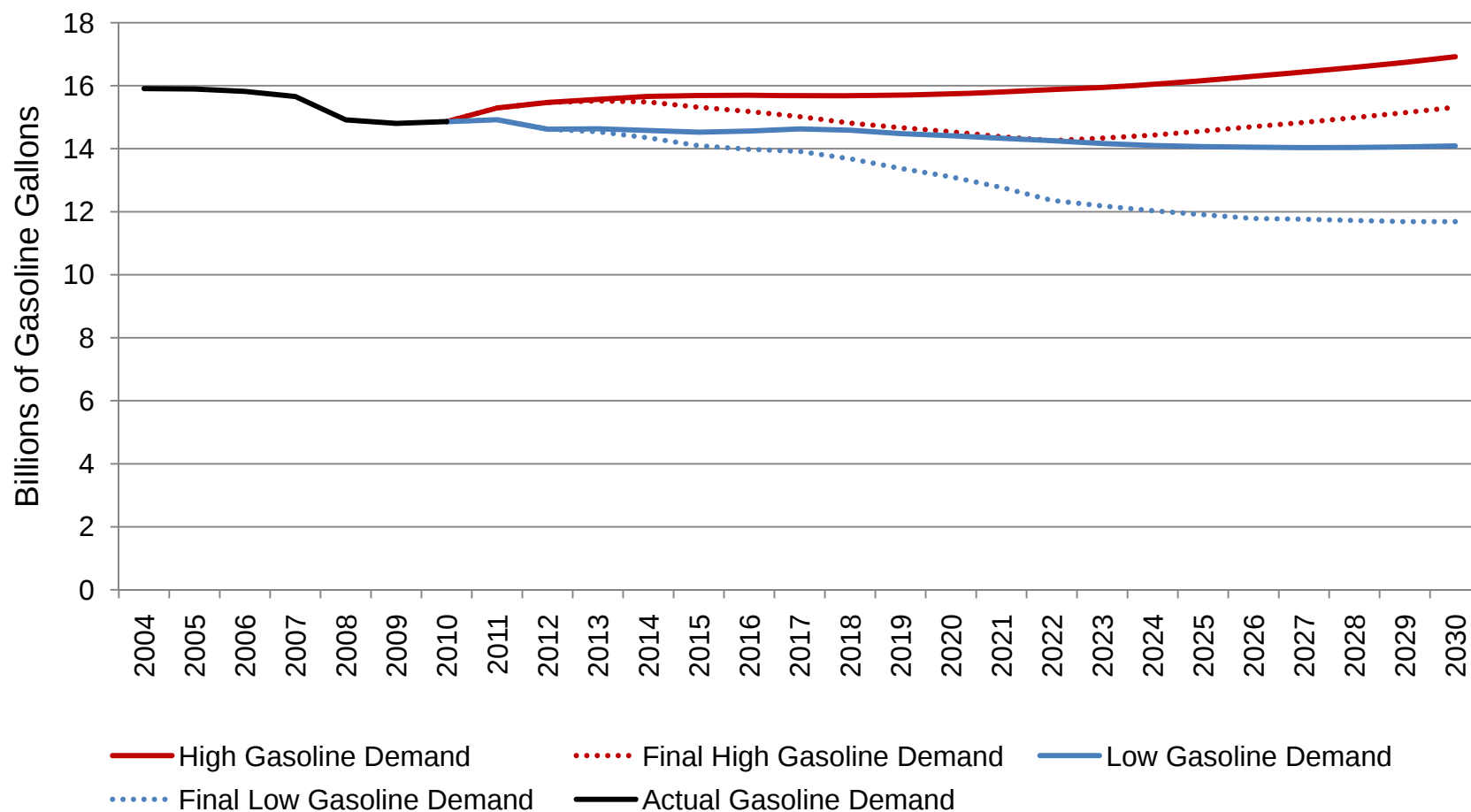


Low Petroleum Demand Light-duty Vehicle Forecast



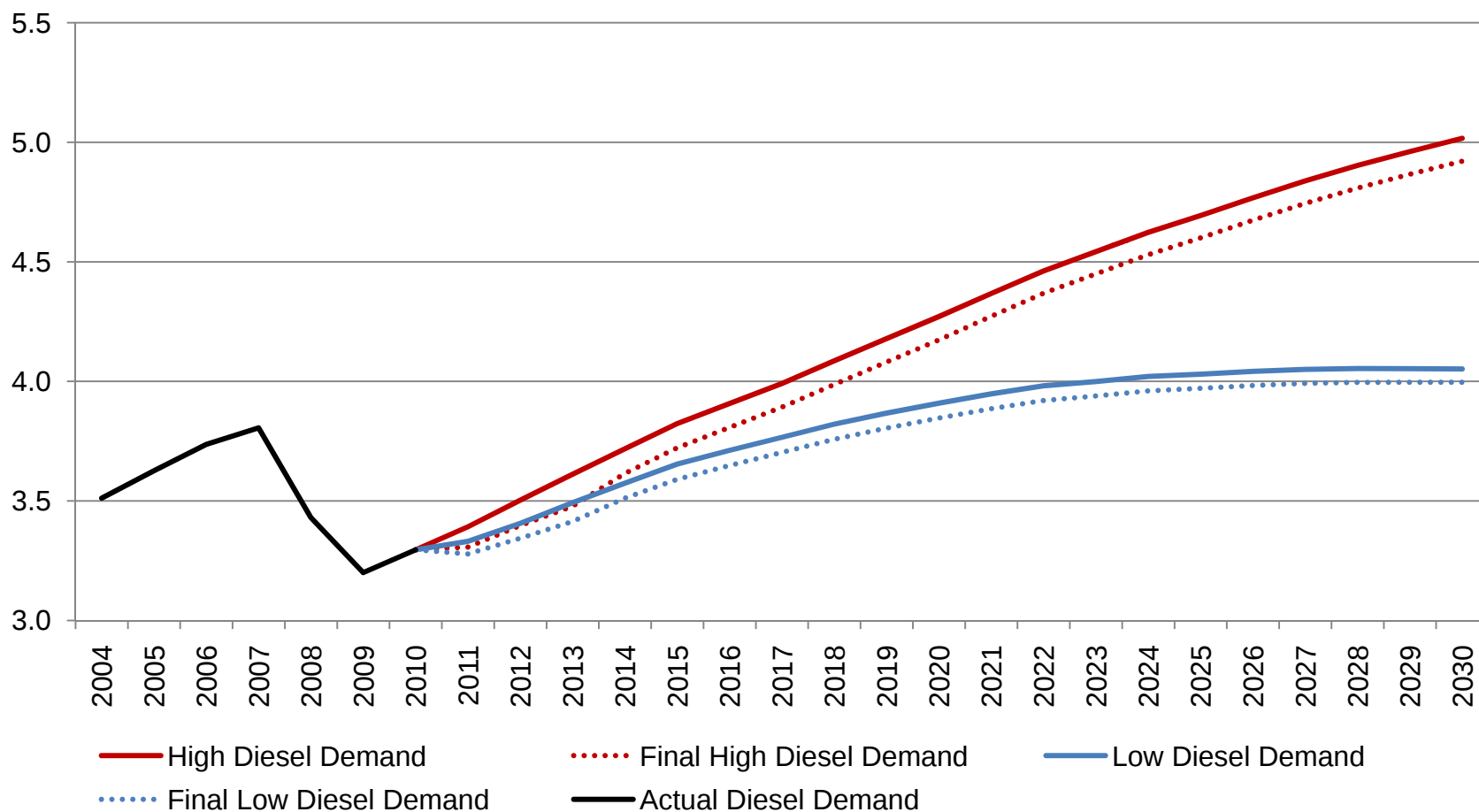


California Gasoline Demand Forecasts



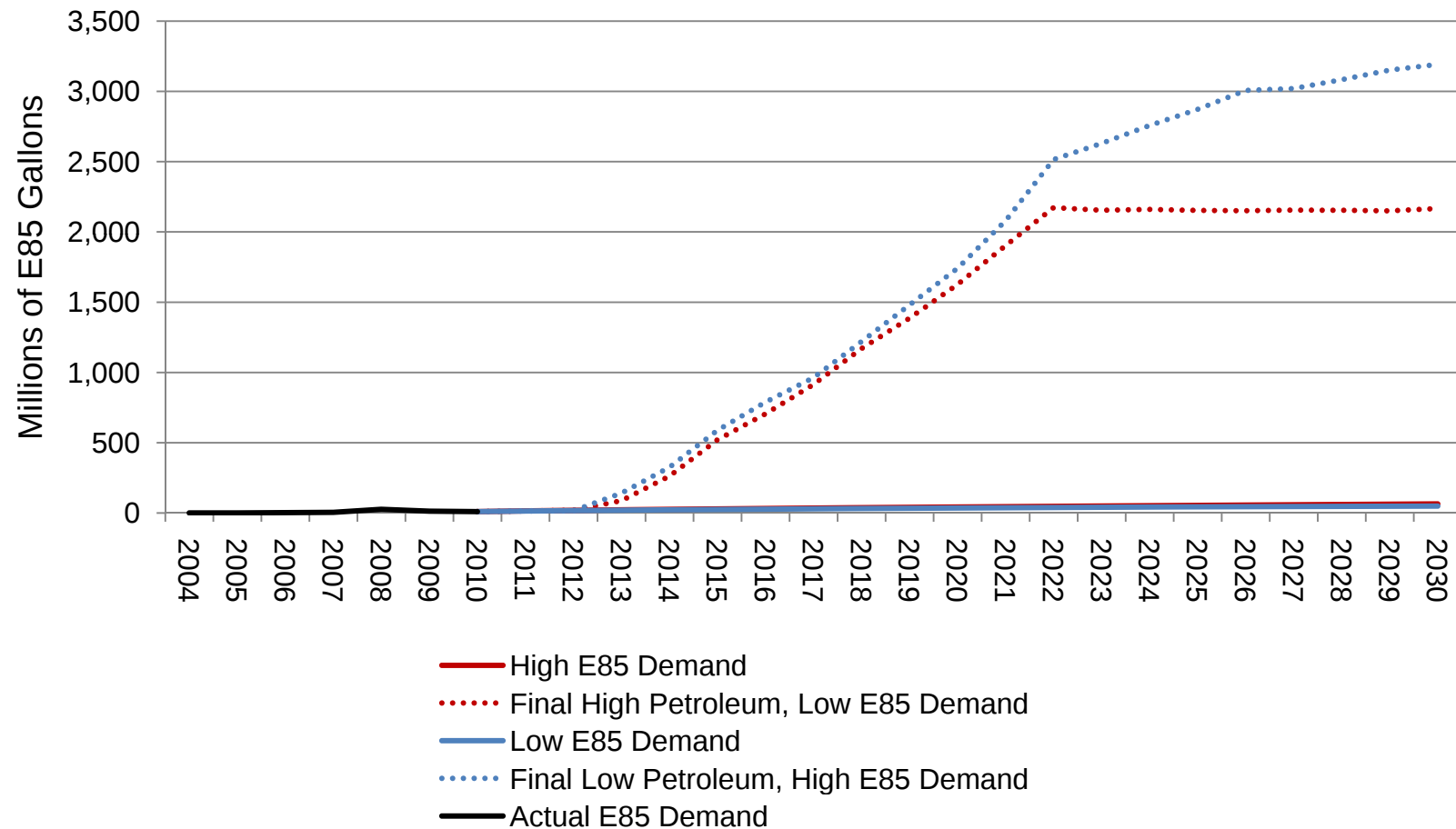


Transportation Diesel Demand Forecasts



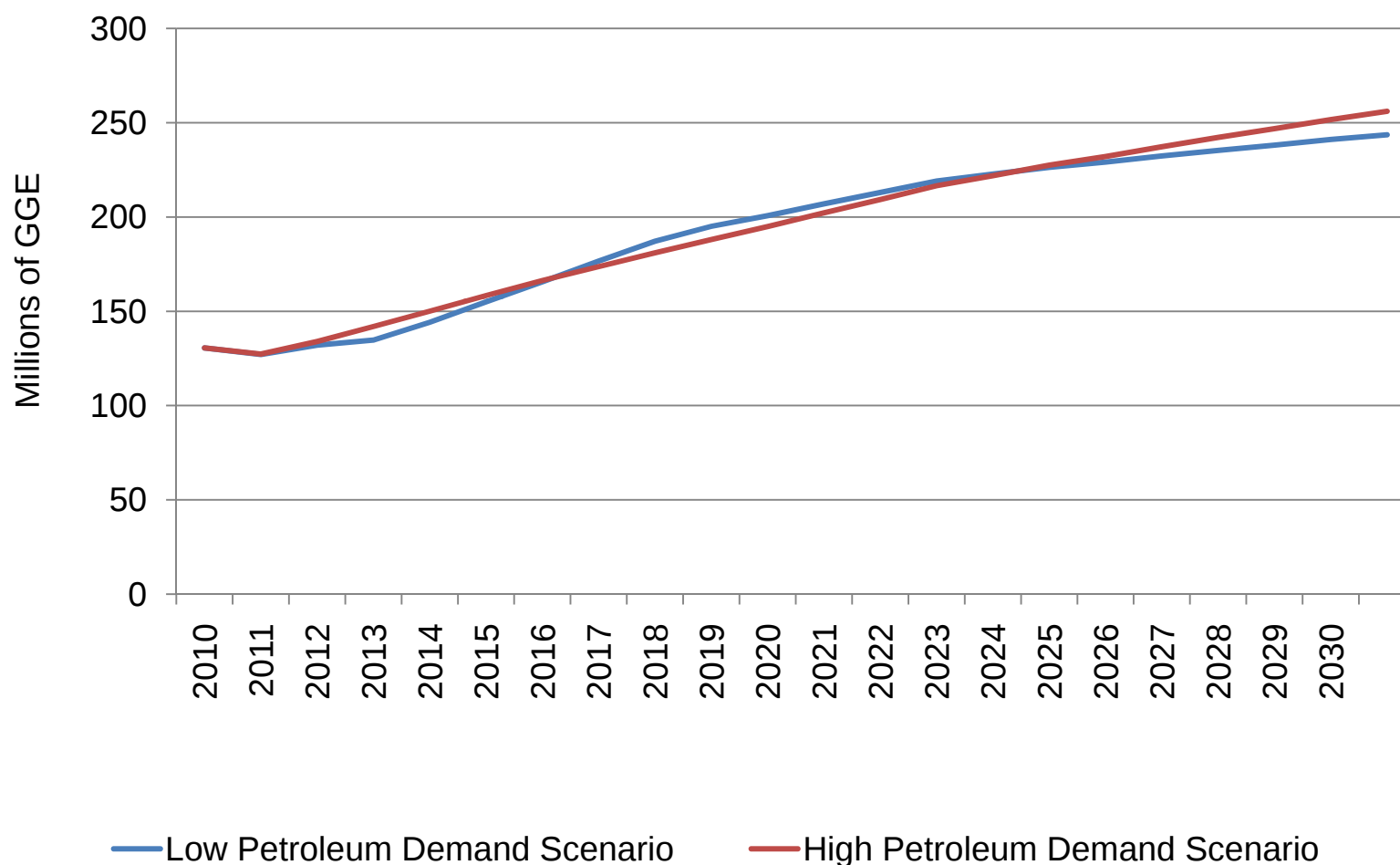


California E85 Demand Forecasts



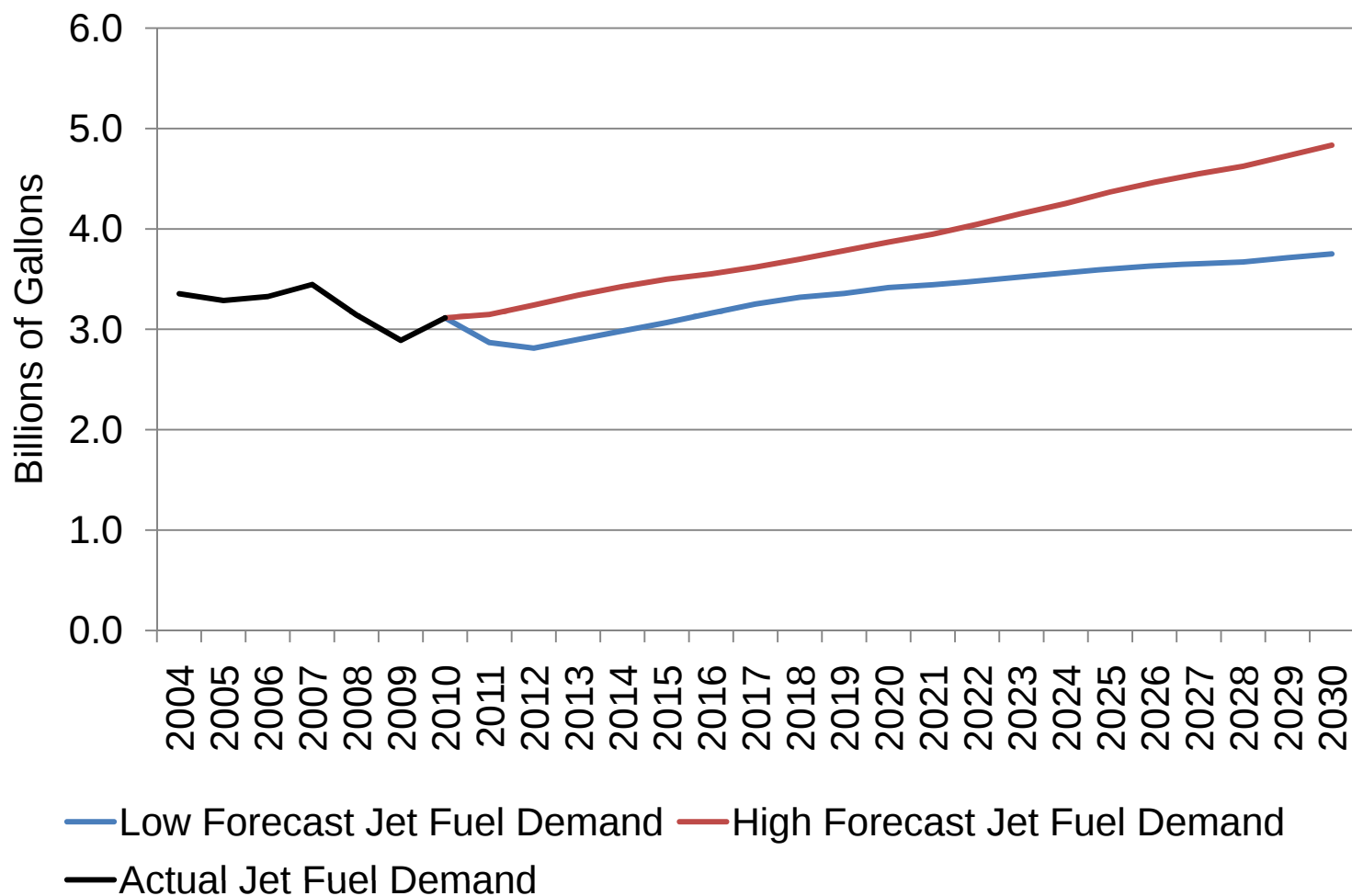


California Transportation Natural Gas Demand



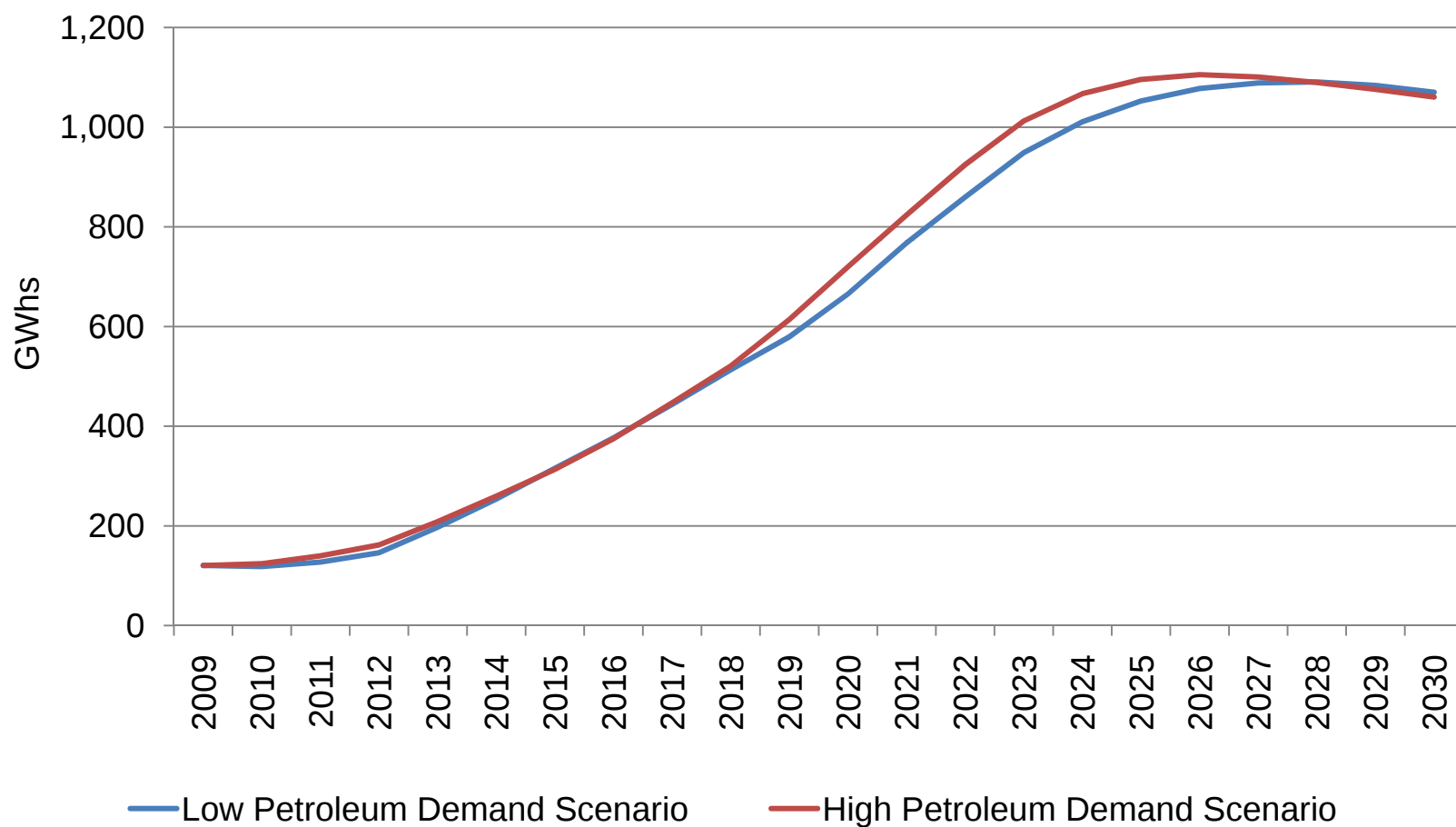


California Jet Fuel Demand





California Transportation Electricity Demand Forecasts





Questions or Comments?

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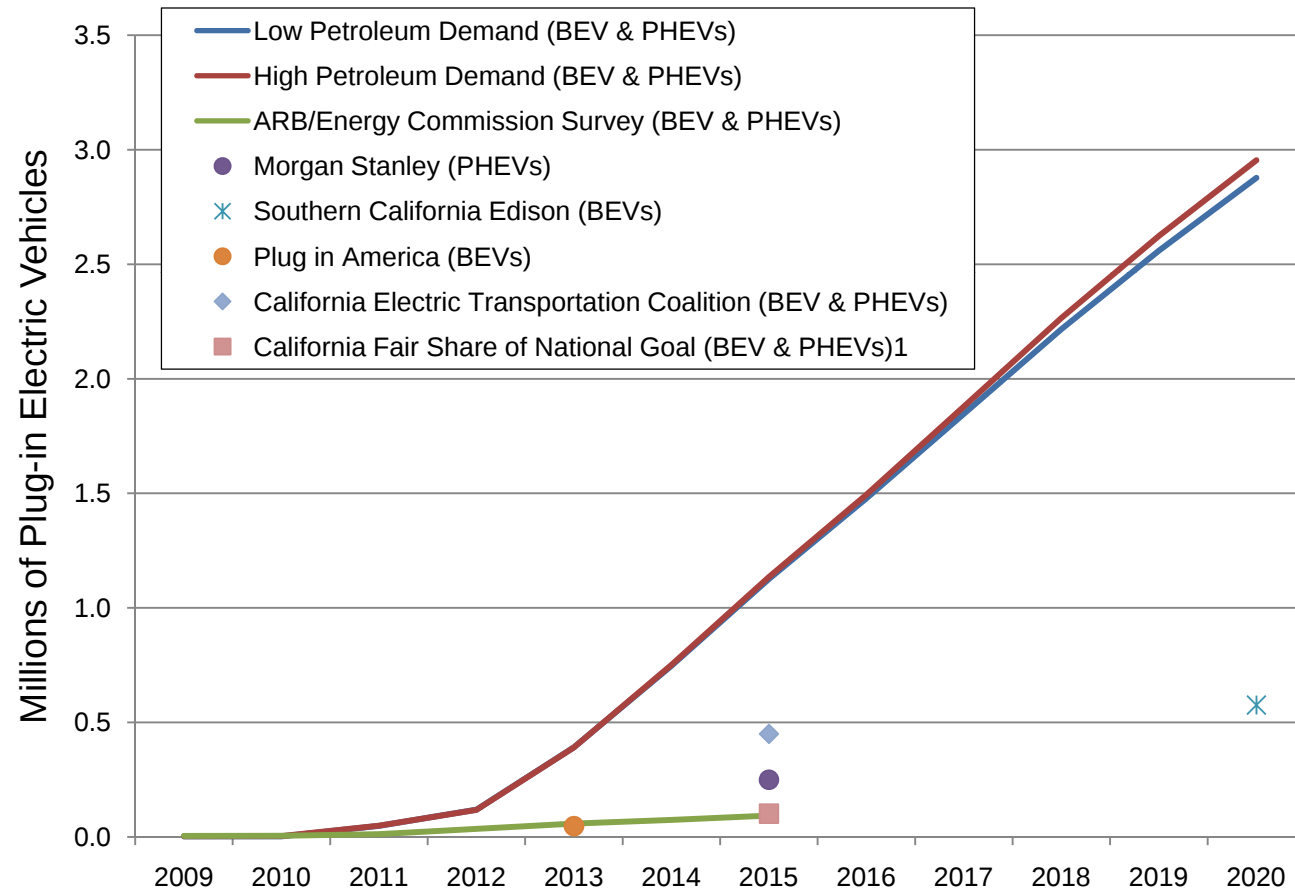
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Electric Drive Vehicle Population Estimates



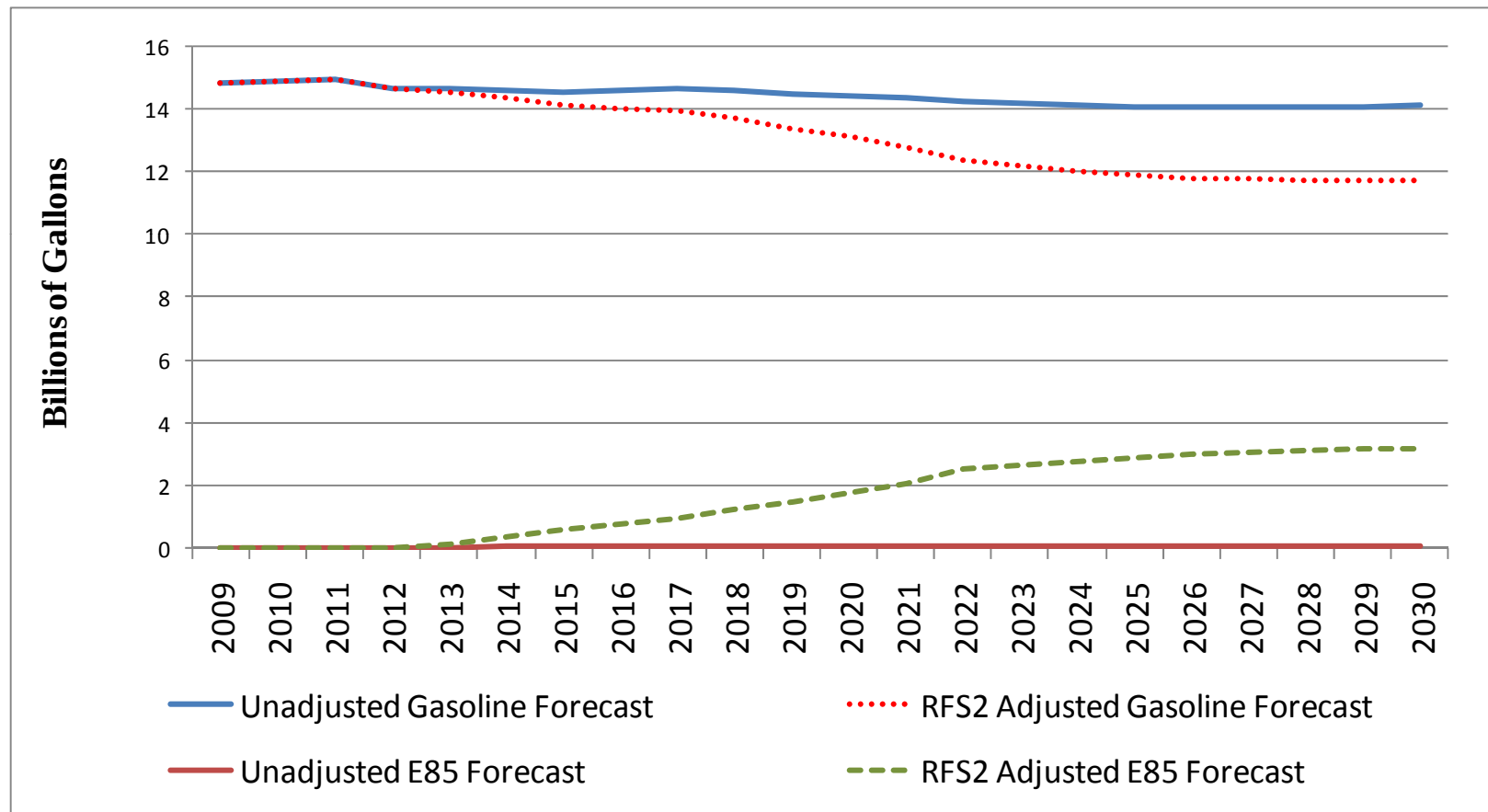


Post-processing Demand Adjustments

- RFS2
- LCFS

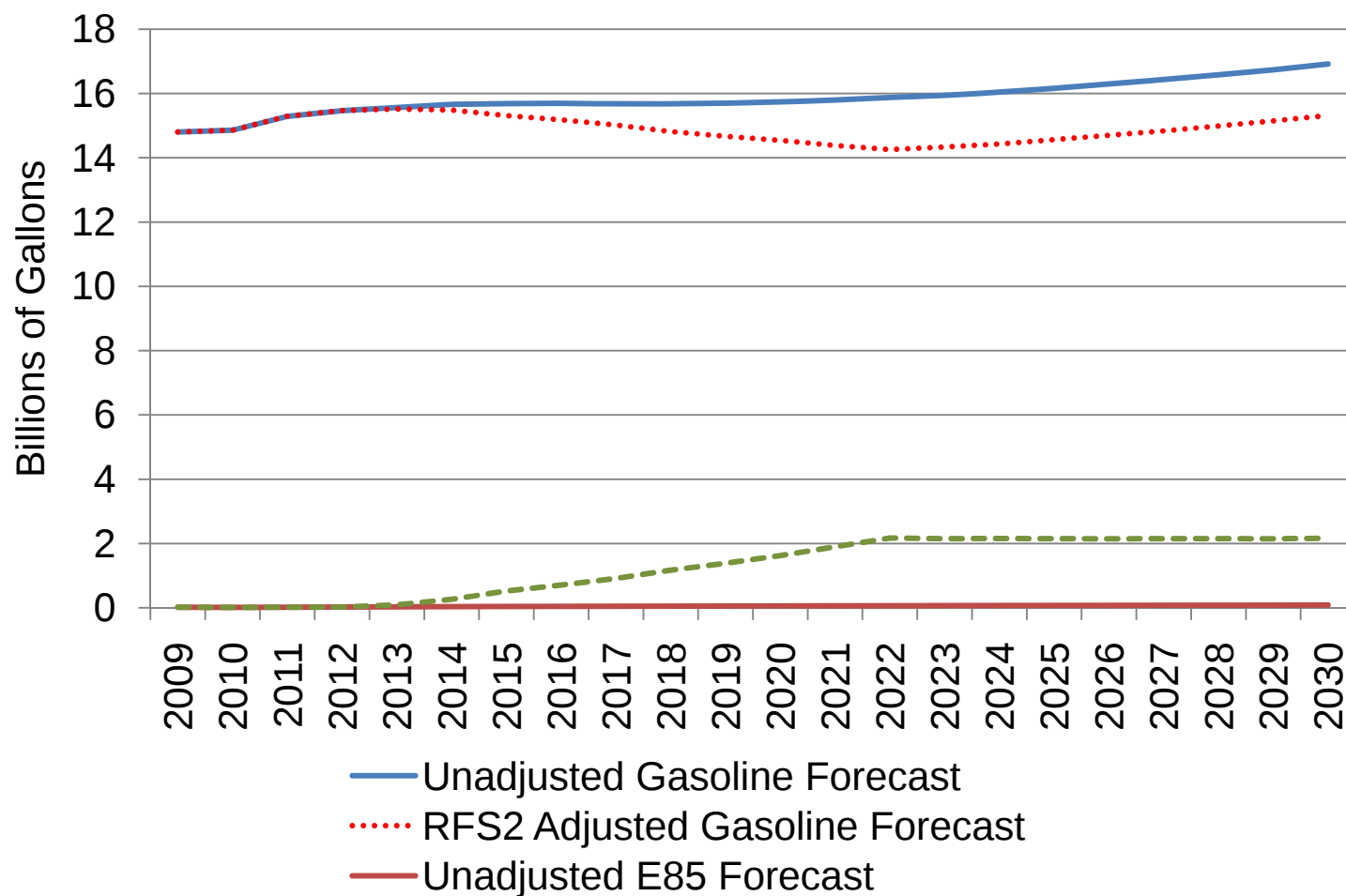


RFS2-Adjusted Gasoline Demand



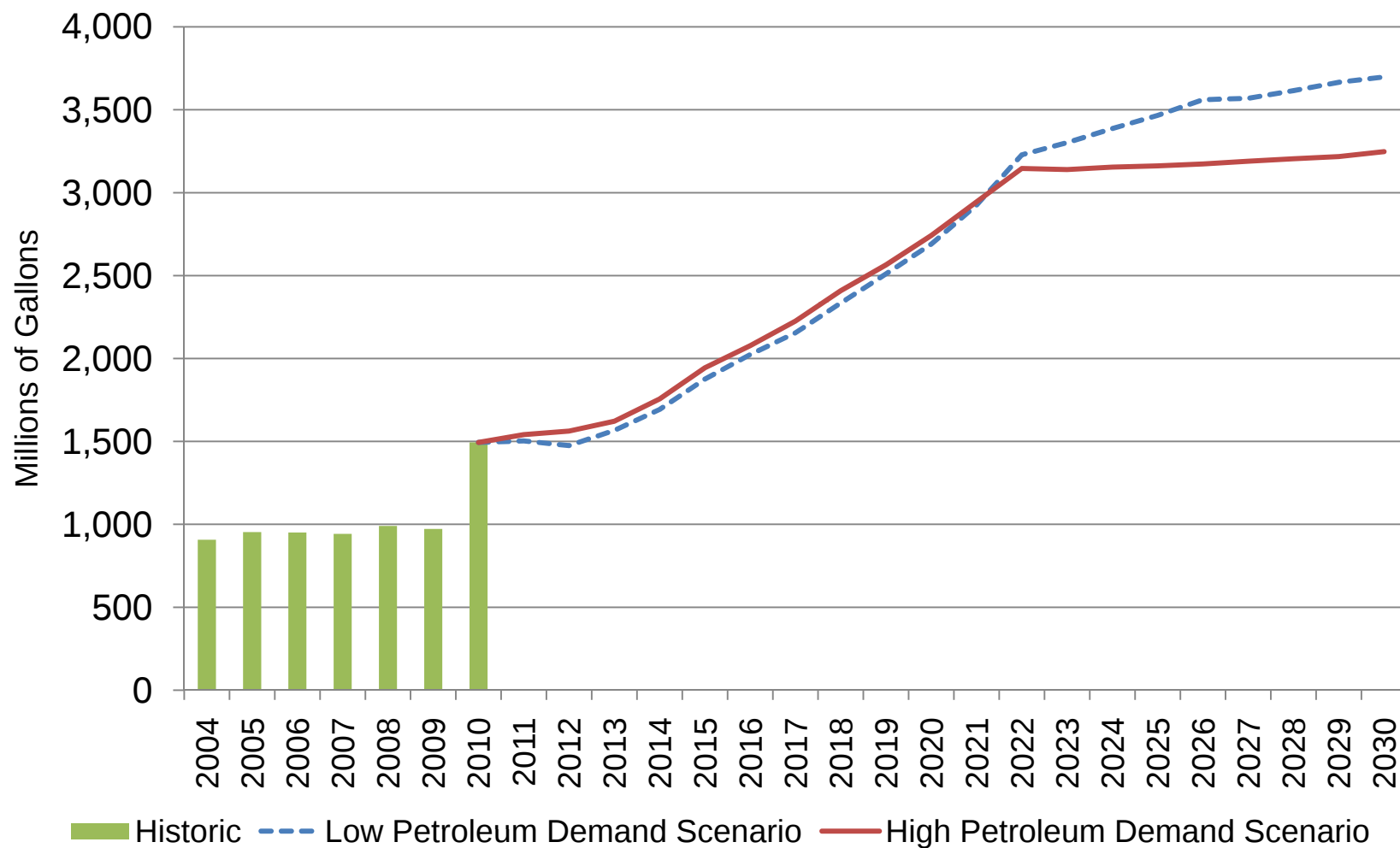


RFS2-Adjusted Gasoline Demand



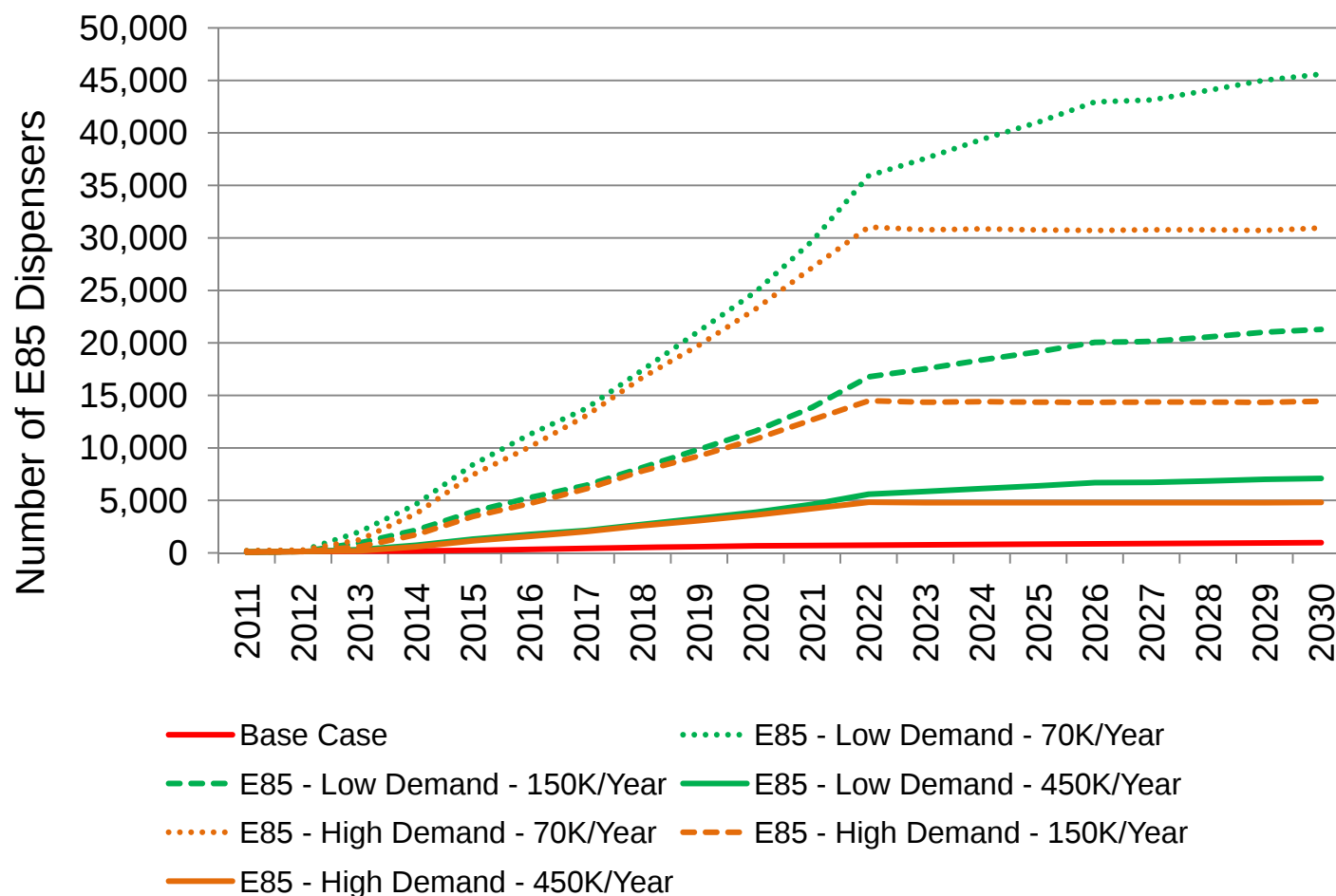


RFS2-Adjusted Ethanol Demand



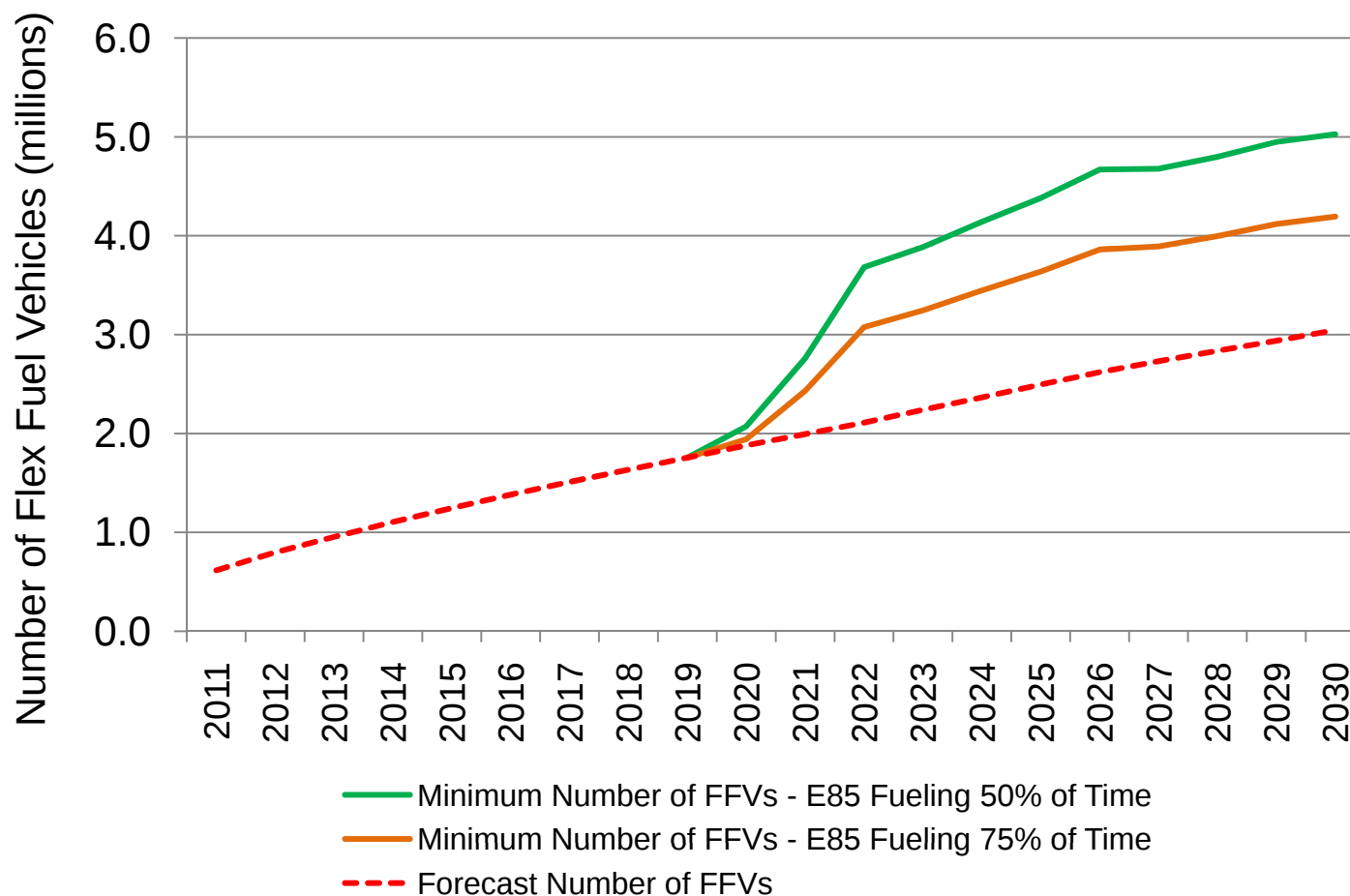


RFS2-Adjusted E85 Dispenser Forecast





Flexible Fuel Vehicles Required to Meet RFS2-Adjusted Ethanol Forecast





Preliminary Forecast Scenarios

Intent: *describe reasonable bounds for demand*

Means: *combine factors to drive demand one way*

High and low cases

- Economic conditions
- Pending regulations
- Fuel technology cases for light and heavy vehicles

Single case

- Population
- Existing regulations



Policy Case Inputs

Policy Case		Vehicle Technology Case Fuel Efficiency Cost			LCFS	RFS II	ZEV Mandate ¹⁷	CA Pavley ¹⁸	2011-2016 Light-Duty Vehicle CAFE Standards	Medium- & Heavy-Duty Freight Fuel Economy	Aircraft Fuel Economy
		EPA	NAS	Manufacturer							
Preliminary Forecast	1		X				X	X	X	Low	Low
	2		X				X	X	X	High	High
Final Forecast	1		X			X	X	X	X	Low	Low
	2		X			X	X	X	X	High	High

Source: California Energy Commission



RFS2-Adjusted Gasoline Demand

