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Light-Duty Vehicle Forecast: 2020 IEPR Update

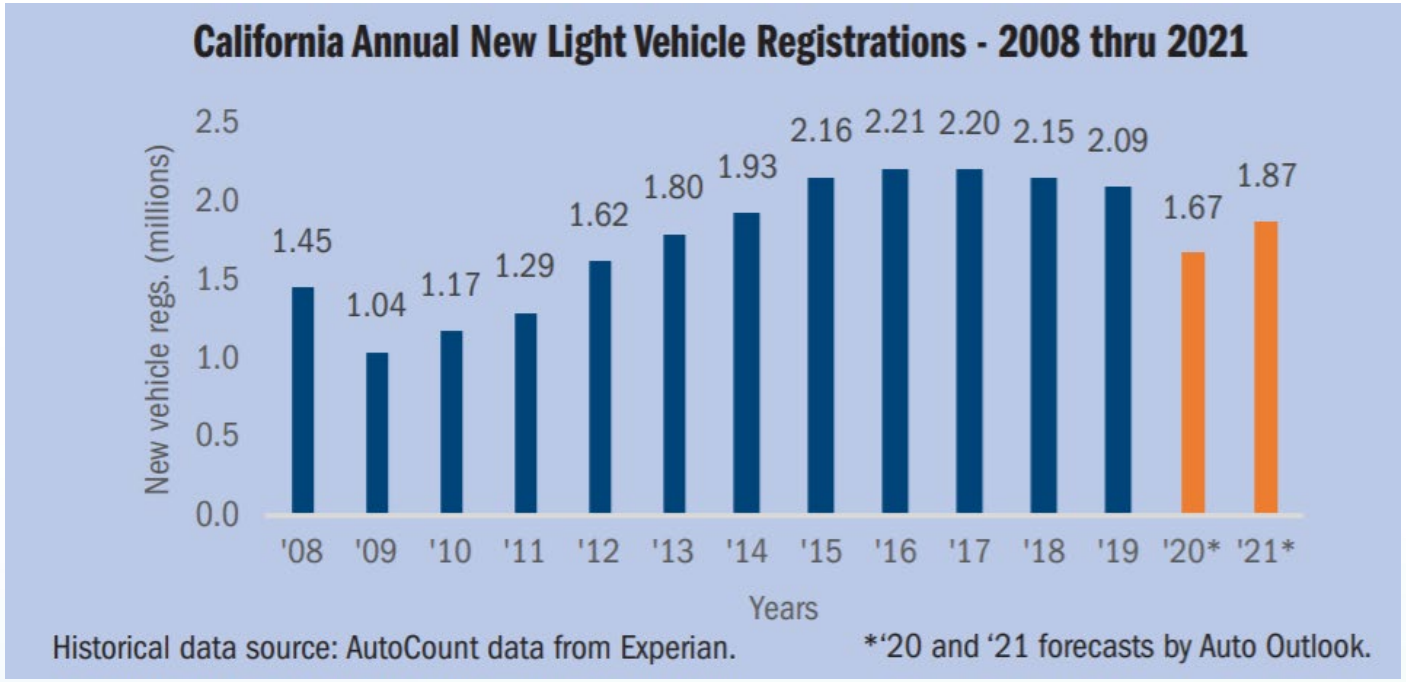
2020 IEPR Workshop
December 3, 2020

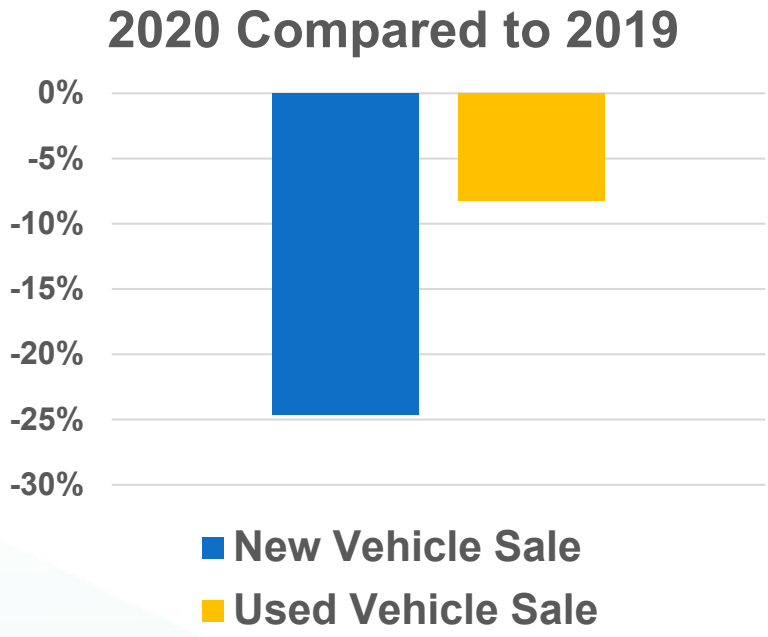
Aniss Bahreinian and Mark Palmere

Overview

- COVID Impact on Light Duty Vehicle (LDV) Market
- LDV Models, Inputs and Scenarios
- ZEV Scenario Outlines
- Light Duty ZEV Forecast
- Appendix: Other Light Duty Forecast

COVID Impact Projected to Linger Through 2022





Source: CNCDA, California Auto Outlook, Q3 2020

Still ZEV Sales Share Has Been Rising

Year	BEV	FCEV	PHEV	Total ZEV	ZEV Market Share
2016	37,629	960	34,094	72,683	3.29%
2017	45,972	2,123	45,492	93,587	4.29%
2018	95,048	2,396	59,699	157,143	6.98%
2019	94,603	2,084	50,660	147,347	6.84%
2020 (through Sept.)	76,789	735	27,575	105,099	7.73%

Source: Energy Commission Staff Analysis of DMV Data

Light Duty Vehicle Market Segmentation

Light duty vehicle market is divided into four segments, each represented by a separate and different model:

1. Residential
2. Commercial
3. Government
4. Rental

Key Inputs:

- Economic and Demographic: Household Population, GSP and Personal Income
- Government incentives: Federal Tax Credit, HOV lane Access, California Vehicle Rebate, Clean Fuel Rewards.
- Vehicle Attributes: MPG, Price, Range, Fuel Cost per Mile, Acceleration, Refueling Time, … etc.
- Consumer Preferences (Residential and Commercial models only)

Key Light Duty Vehicle Demand Forecast Drivers

Fleet Size & New Vehicle Sales

Economic & Demographic Factors

Fleet Composition

- Vehicle Attributes
- Federal and Statewide Incentives
- Consumer Preferences

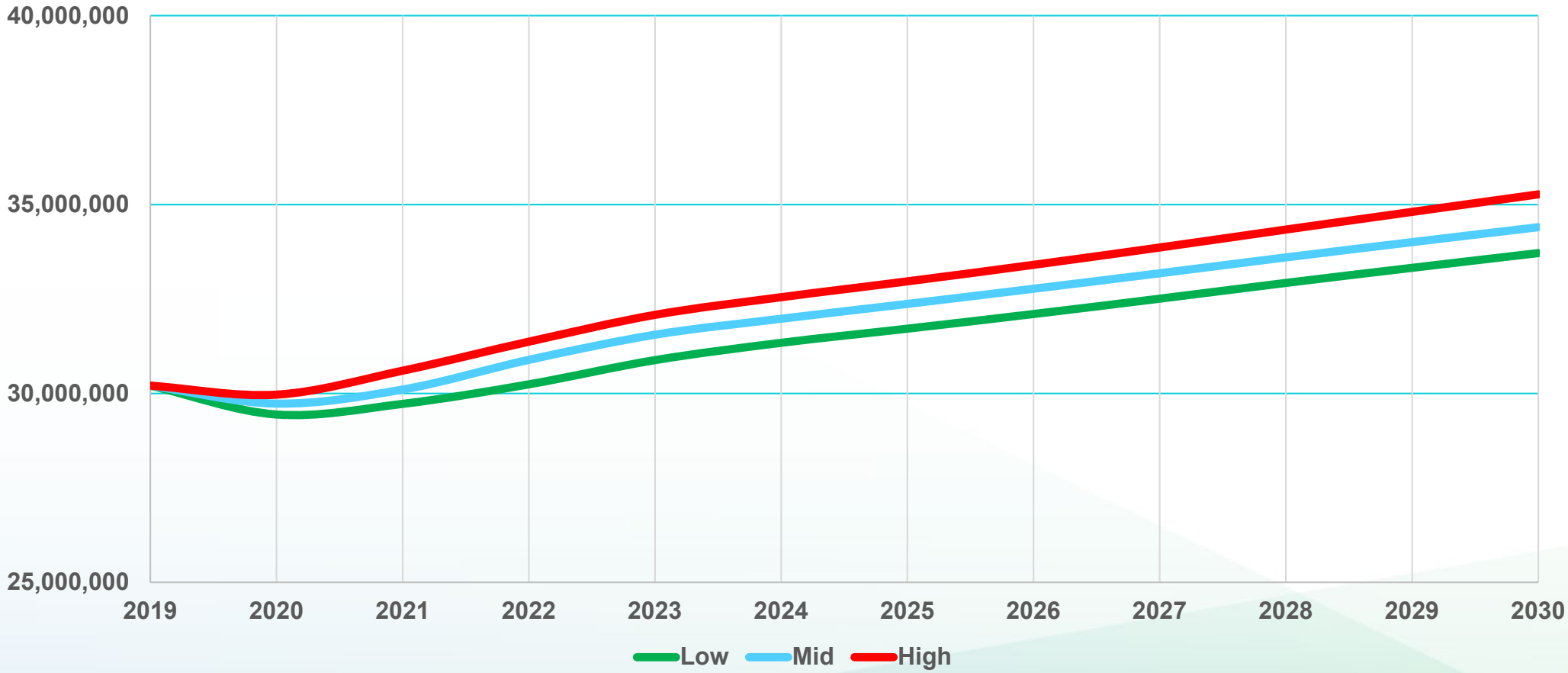
Key Input Changes Compared with 2019 IEPR Forecast

- Updated economic and demographic forecasts,
- Updated fuel price forecast,
- Updated vehicle attribute forecasts.

Incentive Changes

- CA Vehicle Rebate Program (CVRP) amount reduced by $500,
- CVRP data on actual distribution of rebates was used to make downward adjustment to the rebate amount,
- Added Clean Fuel Rewards to the CVRP for ZEVs.

Light Duty Vehicle Population Forecast



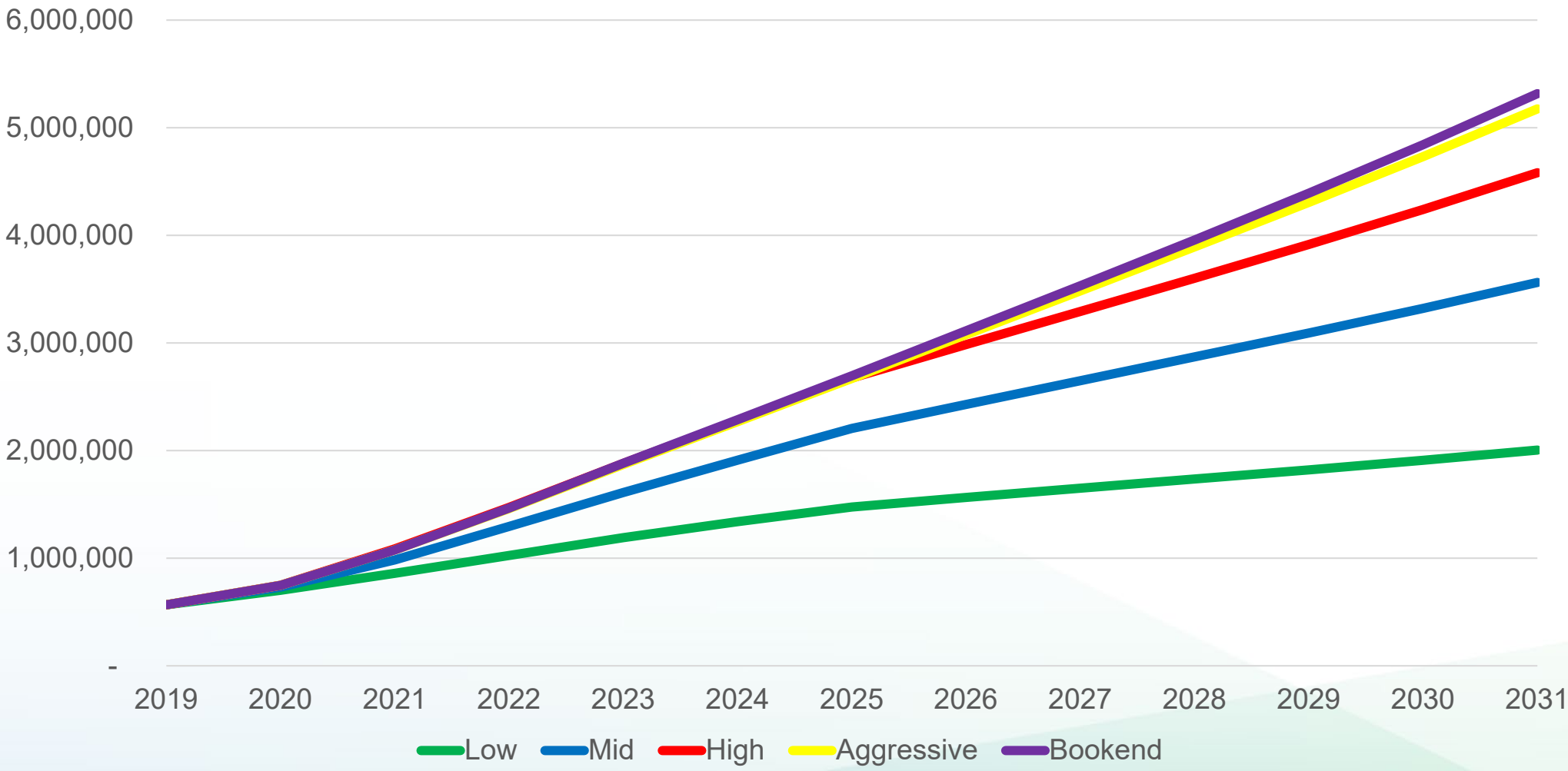
Source: Energy Commission Staff Analysis

2020 IEPR Light Duty ZEV Scenarios

	2020 IEPR Light Duty ZEV Scenarios				
INPUTS	**Low**	**Mid**	**High**	**Aggressive**	**Bookend**
PREFERENCES					
Consumers' ZEV Preference	Constant at 2017 Level	Increase with ZEV market growth	Increase with ZEV market growth	Increase with ZEV market growth	Increase with ZEV market growth
INCENTIVES					
Federal Tax Credit	Eliminated after 2019	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019
California Rebate (CVRP)	To 2025	To 2025	To 2025	To 2030	To 2030
Clean Fuel Rewards	2021 To 2030	2021 To 2030	2021 To 2030	2021 To 2030	2021 To 2030
HOV Lane Access	To 2021	To 2023	To 2025	To 2030	To 2030
Fuel Prices					
Electricity Rates	High Residential & Commercial Rates	Mid Residential & Commercial Rates	Low Residential & Commercial Rates	Low Residential & Commercial Rates	Low Residential & Commercial Rates
Hydrogen Prices	High NREL Prices	Mid NREL Prices	Low NREL Prices	Low NREL Prices	Low NREL Prices
2030 MY ATTRIBUTES					
Number of LDV classes with 2030 ZEV Model Year	BEV in 10, PHEV in 10, and FCEV in 4 CEC LDV classes	BEV in 16, PHEV in 14, FCEV in 6 and PHFCV in 2 CEC LDV classes	BEV in 16, PHEV in 15, FCEV in 6 and PHFCV in 2 CEC LDV classes	BEV in 16, PHEV in 15, FCEV in 6 and PHFCV in 2 CEC LDV classes	BEV in 16, PHEV in 15, FCEV in 10, and PHFCV in 7 CEC LDV classes
Vehicle Price/ Battery Price (2030)	PEV prices based on battery price declining to ~$120/kWh	PEV prices based on battery price declining to ~$100/kWh	PEV prices based on battery price declining to ~$80/kWh	PEV prices based on battery price declining to ~$70/kWh	PEV prices based on battery price declining to ~$62/kWh
Max EV Range (2030)	~385 miles BEV ~460 miles FCV	~385 miles BEV ~460 miles FCV	~385 miles BEV ~460 miles FCV	~385 miles BEV ~460 miles FCV	~385 miles BEV ~460 miles FCV
Refuel Time (2030)	15 -21 min PEV 5 min FCV	15 -21 min PEV 5 min FCV	10-16 min PEV 5 min FCV	10-16 min PEV 5 min FCV	10-16 min 5 min FCV

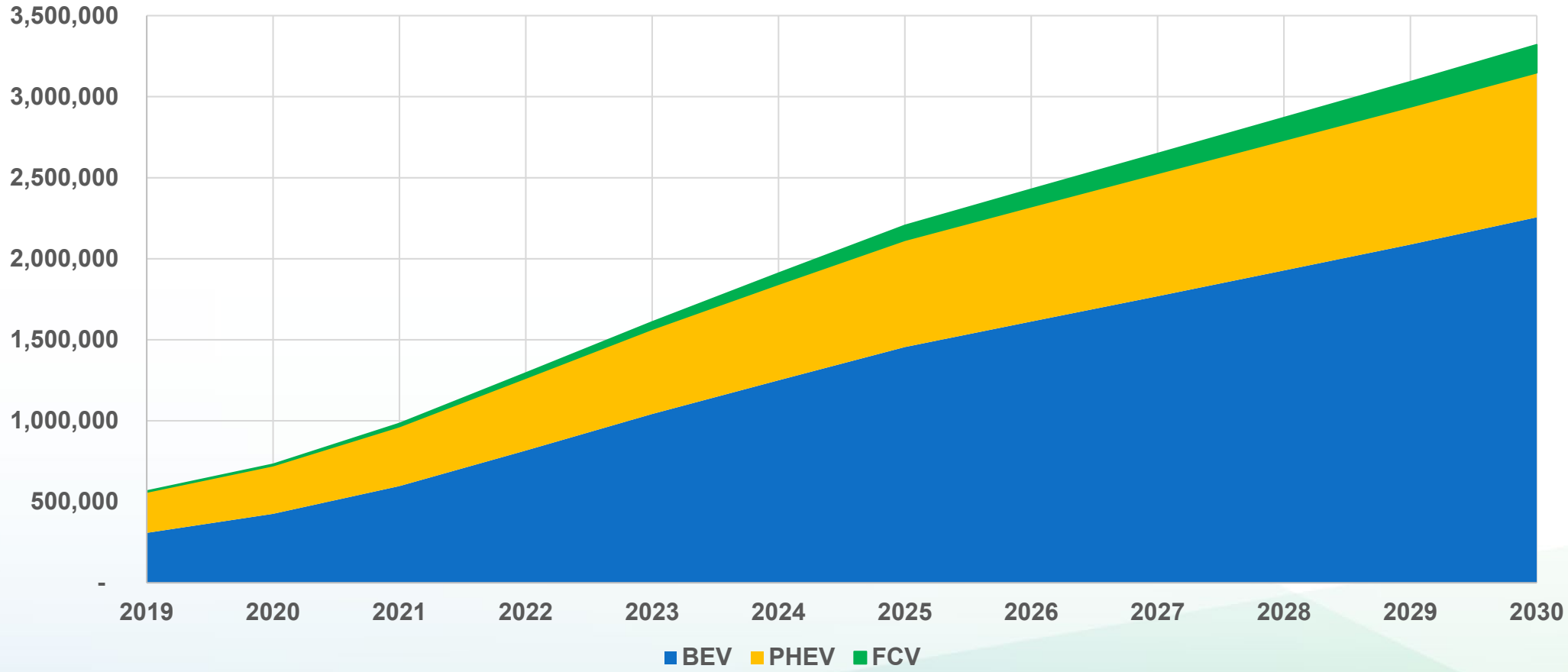
Light Duty ZEV Stock Forecast

Light Duty ZEV Stock Forecast by Scenario



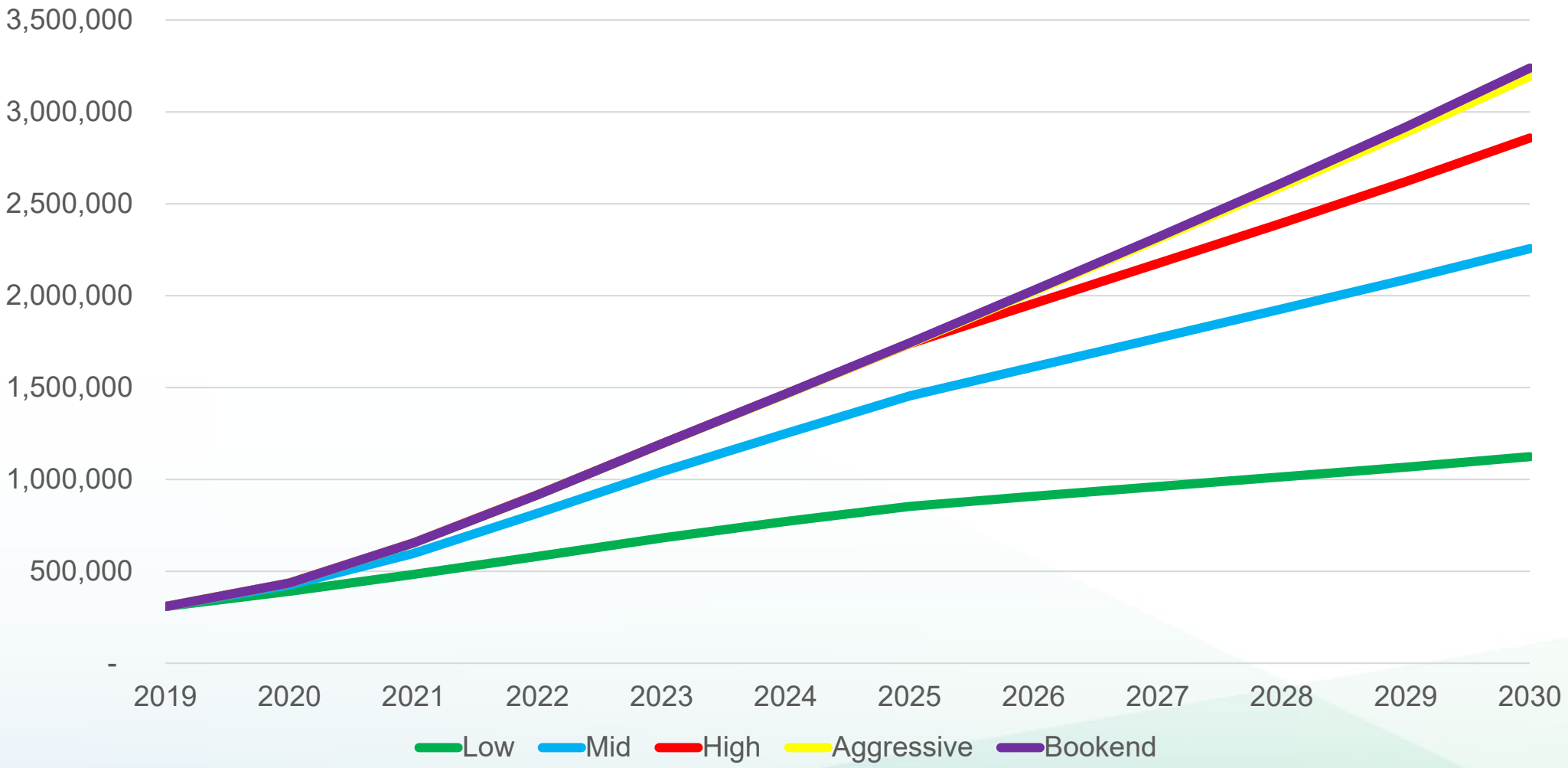
Source: Energy Commission Staff Analysis

Light Duty ZEV Stock Forecast by Fuel Type: Mid Case



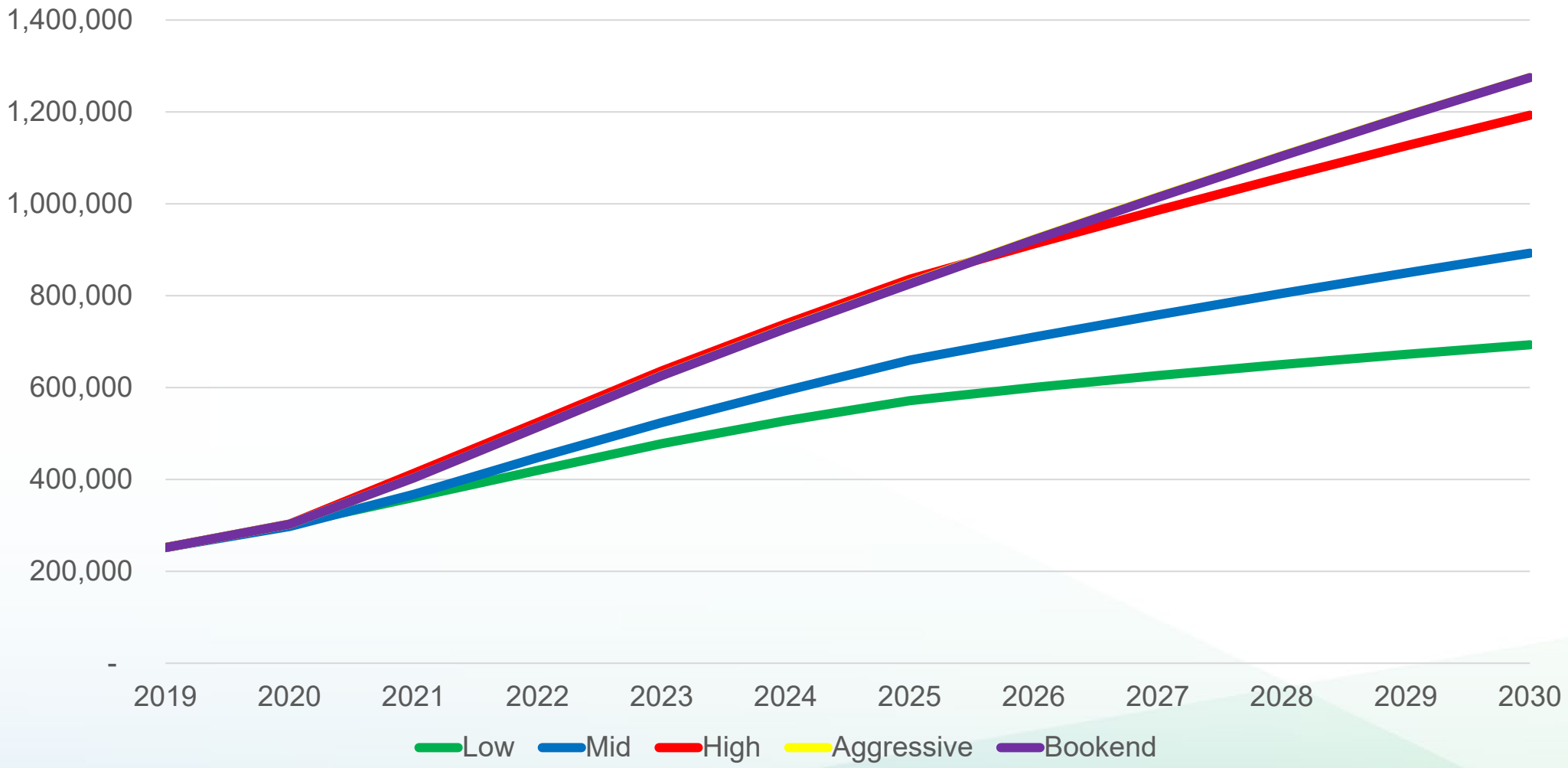
Source: Energy Commission Staff Analysis

Light Duty Battery Electric Vehicle Stock Forecast



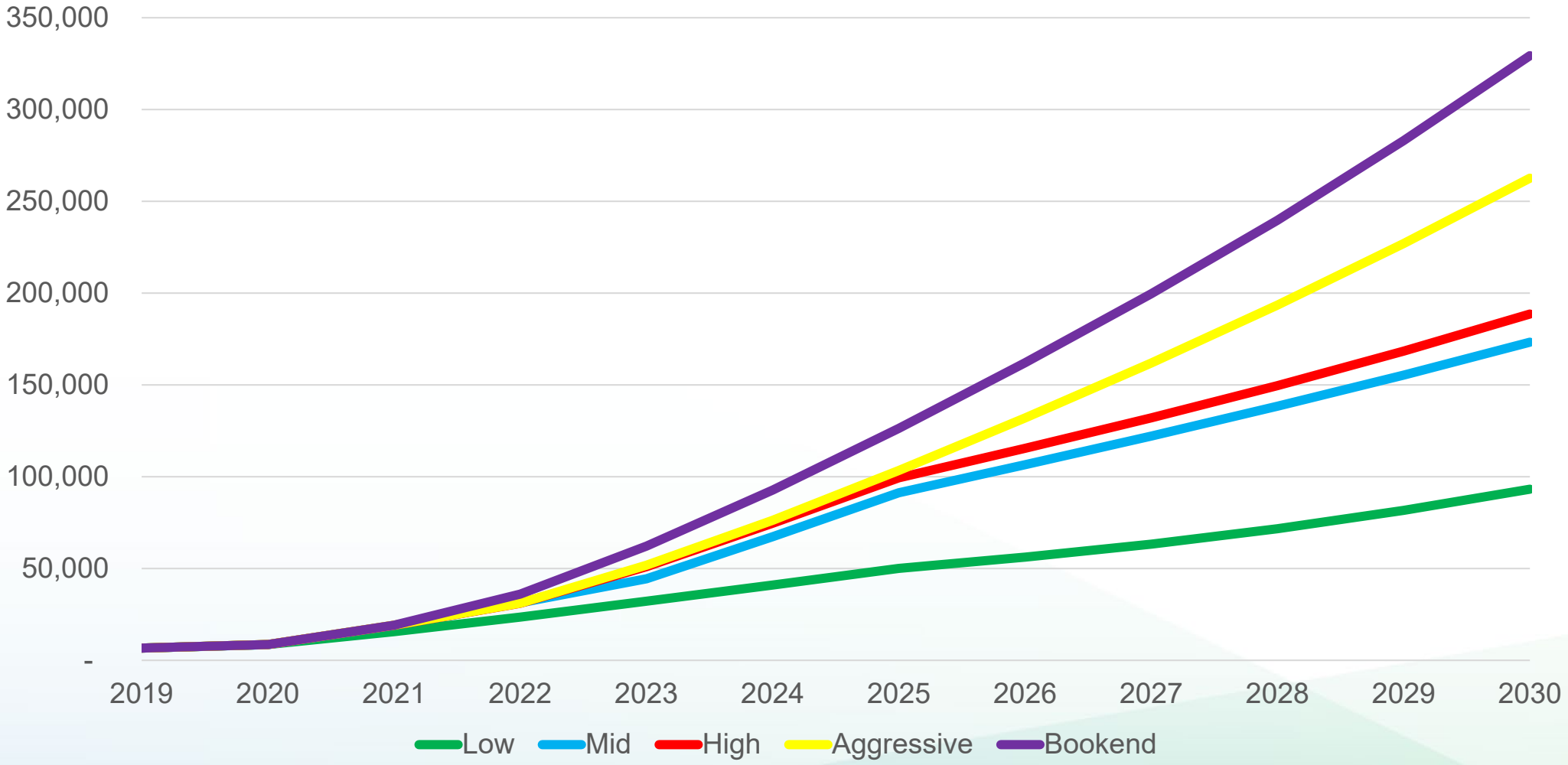
Source: Energy Commission Staff Analysis

Light Duty Plug-in Hybrid Vehicle Stock Forecast



Source: Energy Commission Staff Analysis

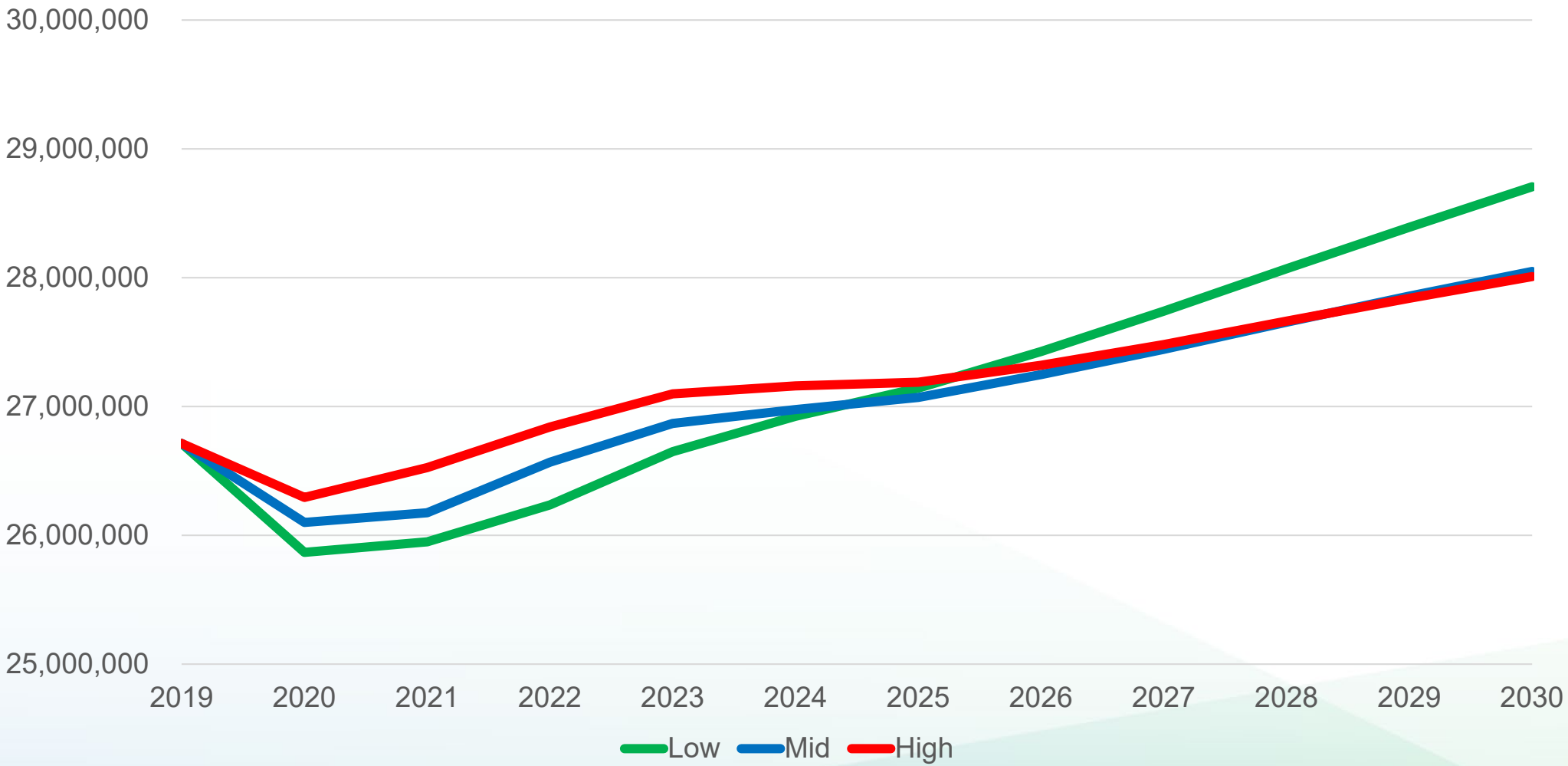
Light Duty Fuel Cell Vehicle Stock Forecast



Source: Energy Commission Staff Analysis

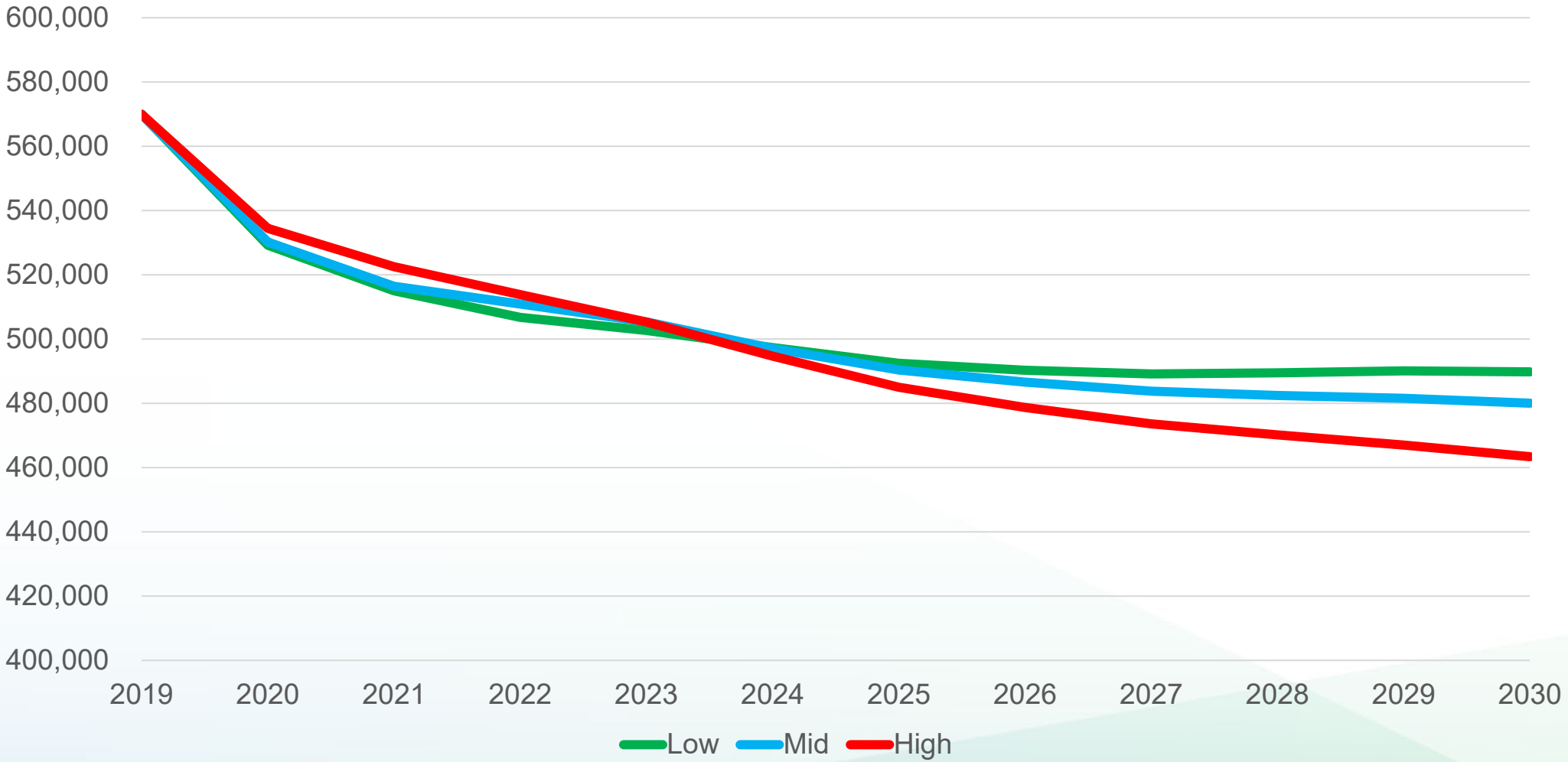
ICE Vehicle Stock Forecast

Light Duty Gasoline Vehicle Stock Forecast



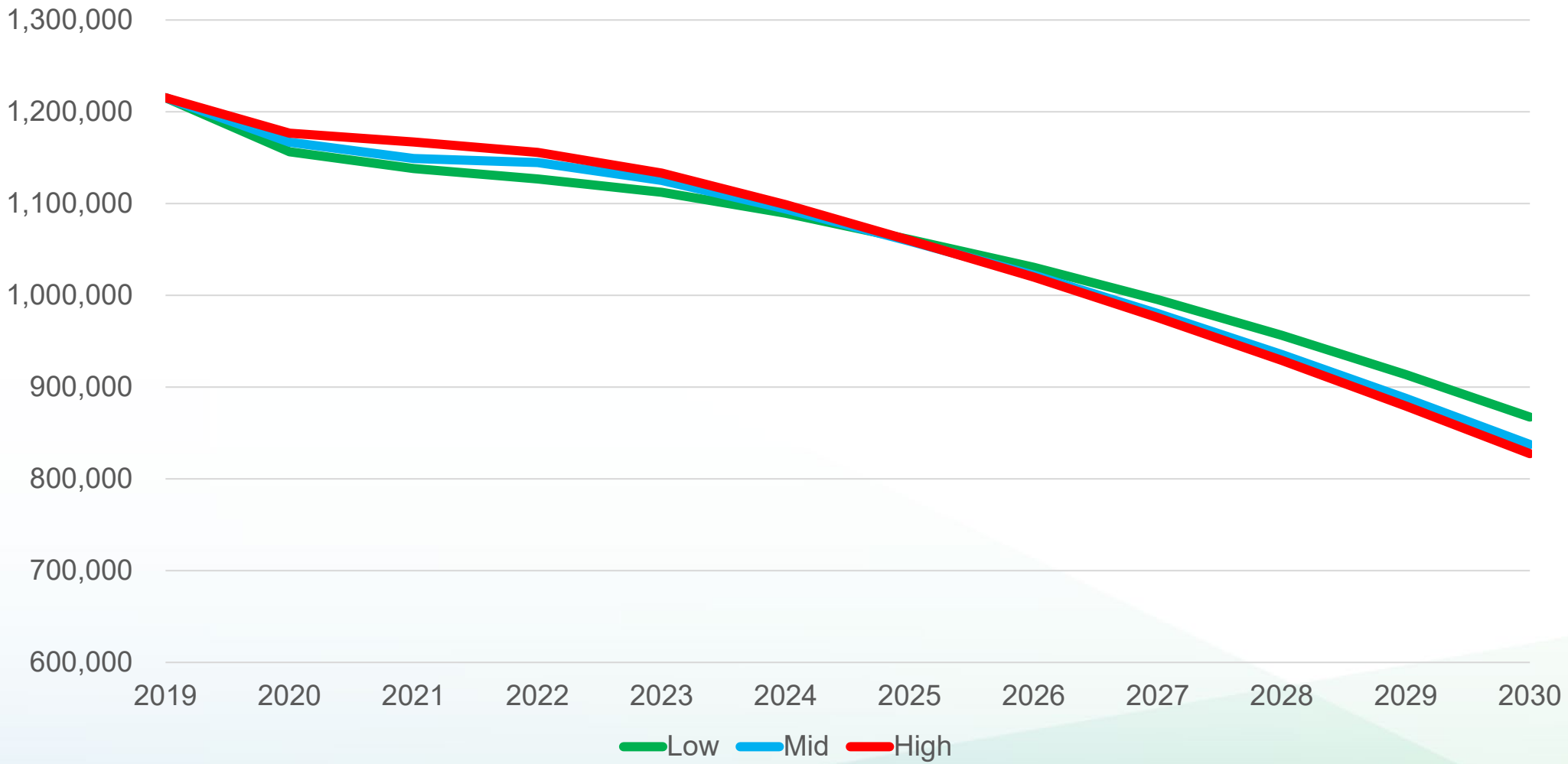
Source: Energy Commission Staff Analysis

Light Duty Diesel Vehicle Stock Forecast



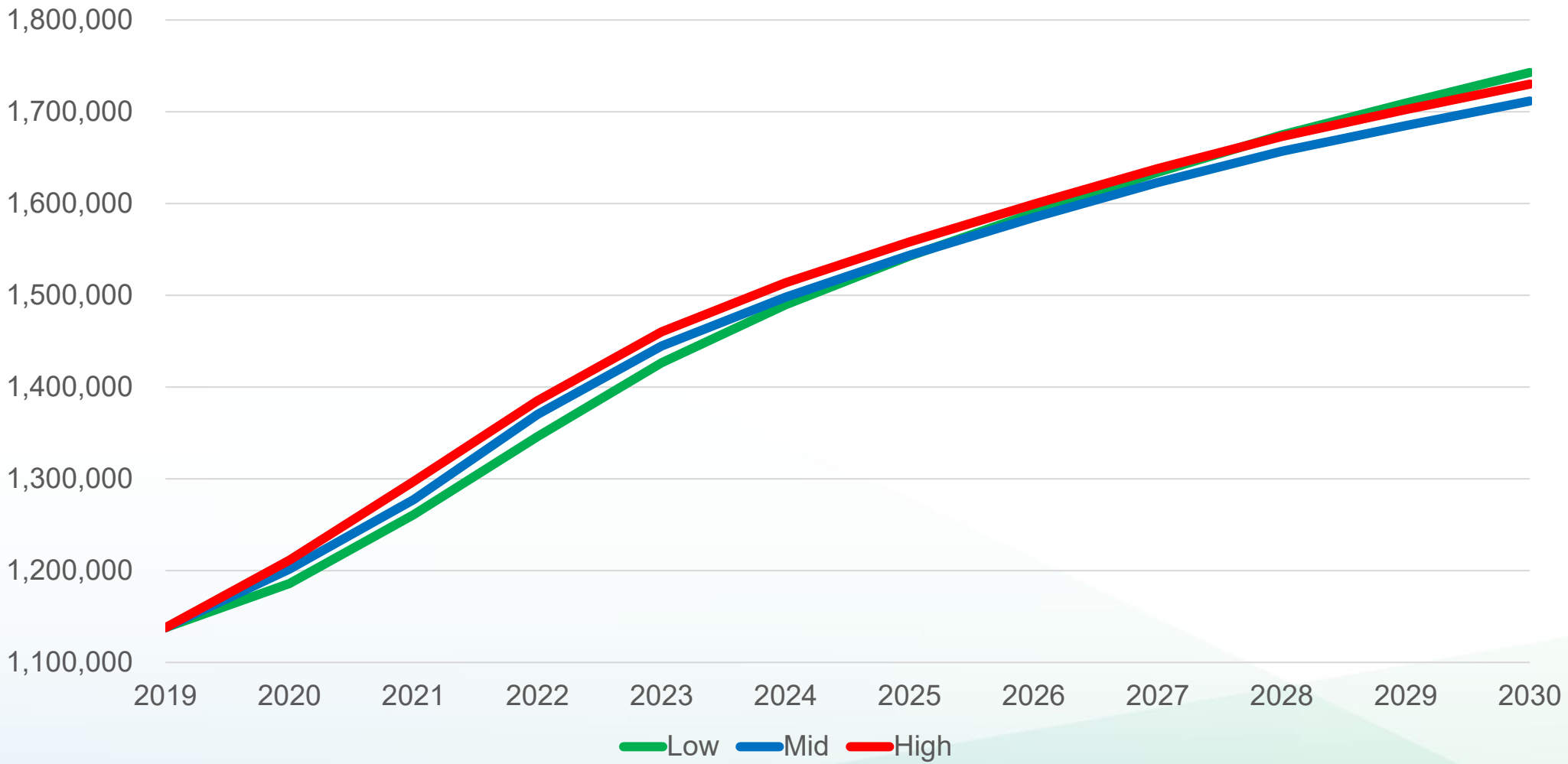
Source: Energy Commission Staff Analysis

Light Duty Flex-Fuel Vehicle Stock Forecast



Source: Energy Commission Staff Analysis

Light Duty Hybrid Vehicle Stock Forecast



Source: Energy Commission Staff Analysis

Thank You!