

DOCKETED

Docket Number:	19-IEPR-03
Project Title:	Electricity and Natural Gas Demand Forecast
TN #:	229401
Document Title:	Electric Vehicle Forecast
Description:	Presentation by Mark Palmere, California Energy Commission
Filer:	Raquel Kravitz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/13/2019 3:25:46 PM
Docketed Date:	8/13/2019

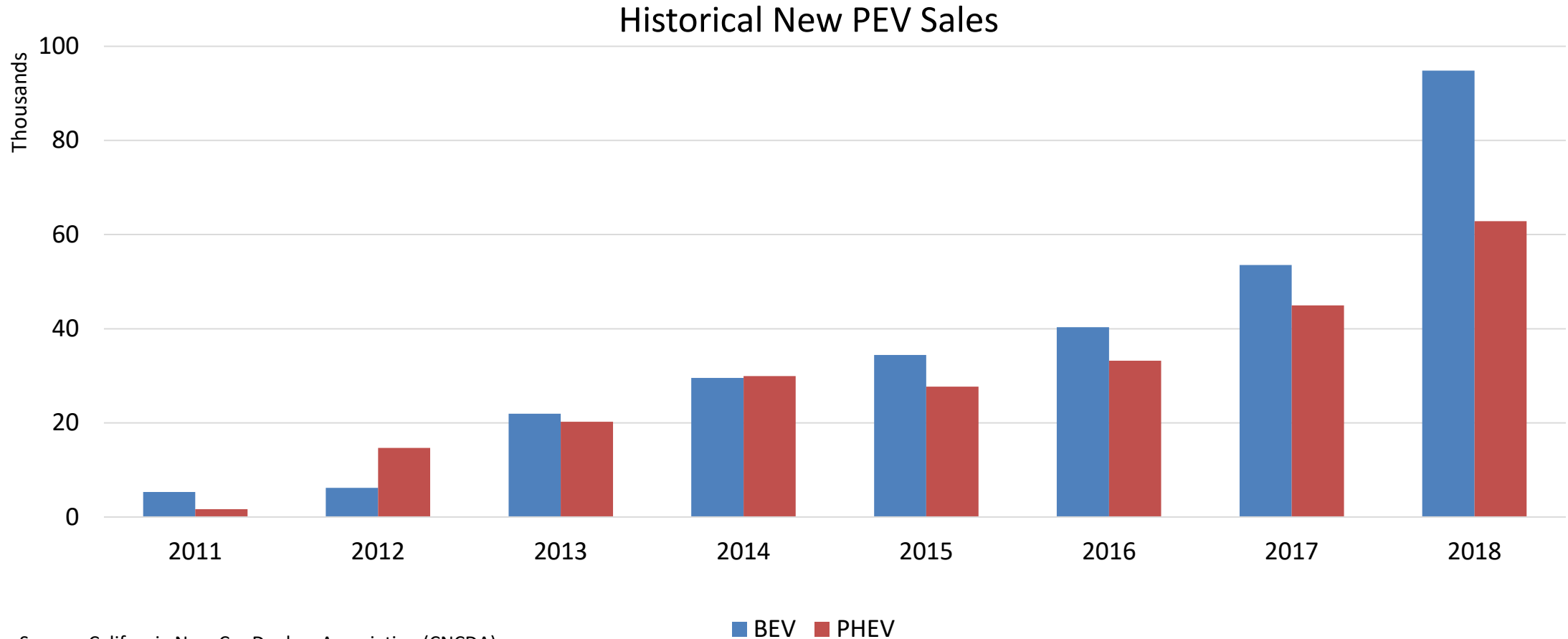
Transportation Electricity Demand Forecast



Mark Palmere
August 15, 2019
California Energy Commission



PEV Sales Have Been Rising Dramatically



Source: California New Car Dealers Association (CNCDA)



PEVs Rose to Account for 8 Percent of New Vehicle Sales in 2018

Historical PEV Share of Total New Vehicle Sales

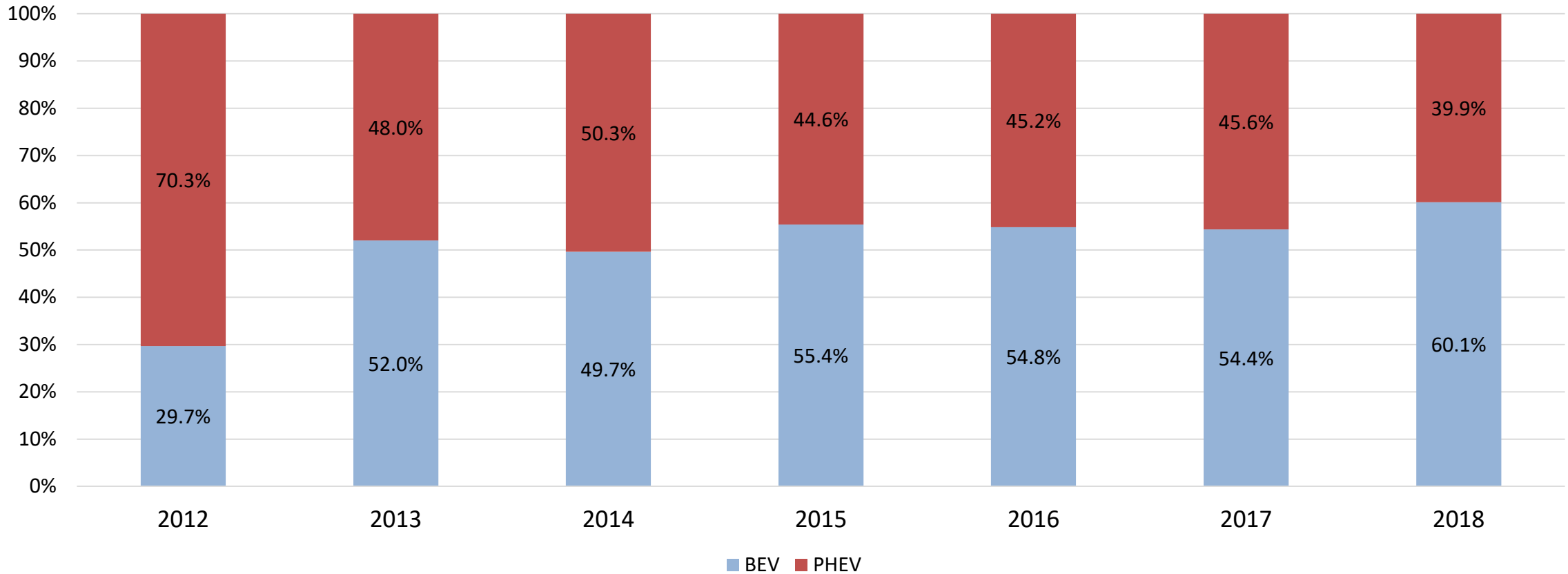
	2010	2011	2012	2013	2014	2015	2016	2017	2018
BEV	0.02%	0.43%	0.41%	1.28%	1.60%	1.68%	1.93%	2.62%	4.74%
PHEV	0.00%	0.14%	0.96%	1.18%	1.62%	1.35%	1.59%	2.20%	3.14%

Source: California New Car Dealers Association (CNCDA)



BEVs Have Begun Outselling PHEVs

Historical PEV New Vehicle Sales Fuel Type Ratio



Source: California New Car Dealers Association (CNCDA)



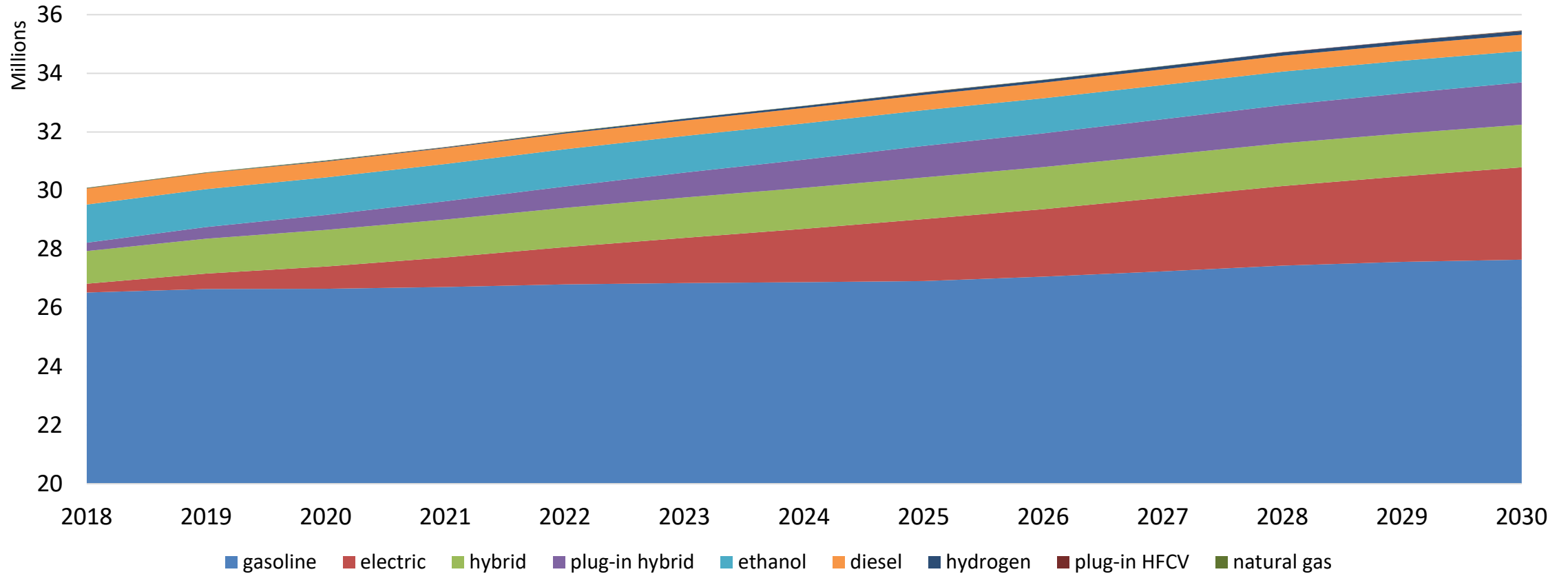
Vehicle Attributes Inform CEC Forecasts of New Vehicle Sales

- Attributes used in “vehicle choice” decisions
- Account for regulatory requirements
- Base year and projections through 2030
- Light-duty vehicle attributes
 - Range
 - Retail Price
 - Fuel Economy
 - Acceleration
 - # of Makes/Models
 - Refueling Time
 - Maintenance Costs
 - Cargo Capacity



Gasoline Continues to be Most Popular Fuel Type, But Electric Continues to Increase

Forecast Vehicle Population by Fuel Type, High Case



Source: Energy Commission



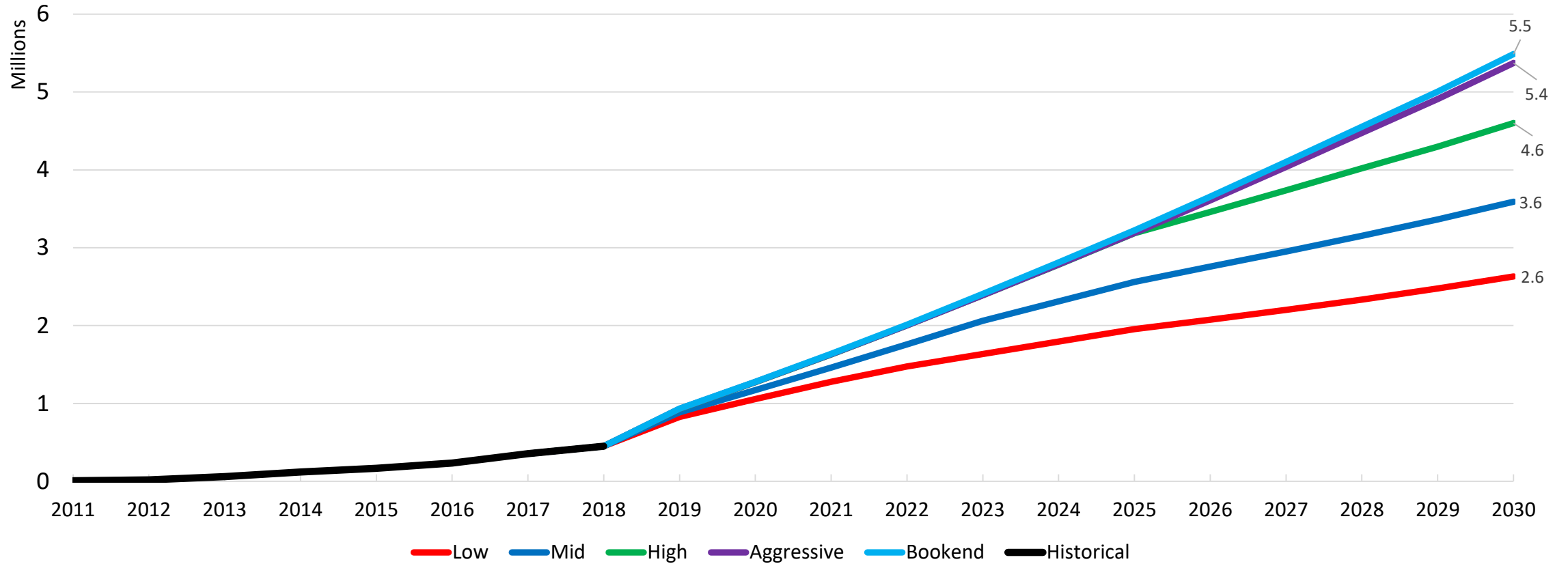
2019 IEPR PEV Scenarios Reflect Expectations of Market

INPUTS	Low	Reference	High	Aggressive	Bookend
PREFERENCES					
Consumers' PEV Preference	Constant at 2017 Level	Increase with PEV market growth	Increase with PEV market growth	Increase with PEV market growth	Increase with PEV market growth
INCENTIVES					
Federal Tax Credit	Decreasing starting 2019, Eliminated after 2022	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019	Decreasing starting 2019
State Rebate	To 2025	To 2025	To 2025	To 2030 for BEV/FCV	To 2030 for BEV/FCV
HOV Lane Access	To 2021	To 2023	To 2025	To 2025 for PHEV, to 2030 for BEV/FCV	To 2025 for PHEV, to 2030 for BEV/FCV
ATTRIBUTES					
Availability of PEVs (in 2030)	PEV models available in 11 of 15 BEV and 14 of 15 PHEV classes	PEV models available in 12 of 15 BEV and 14 of 15 PHEV classes	PEV models available in 13 of 15 BEV and 14 of 15 PHEV classes	PEV models available in 13 of 15 BEV and 14 of 15 PHEV classes	Models available: BEV in 15, PHEV in 14, FCV in 8, PHFCV in 7 CEC LDV classes
Vehicle / Battery Price (by 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 ~\$70/kWh
Max Range (Midsize, 2030)	~333 miles	~341 miles	~341 miles	~341 miles	~341 miles
Refuel Time (2030)	15 -21 min	15 -21 min	10-16 min	10-16 min	10-16 min
Time to Station (2030)	7-8 min	Same as gasoline	Same as gasoline	Same as gasoline by 2025	Same as gasoline by 2025
FORECAST RESULTS					
2030 ZEV Population	2.7 million	3.7 million	4.7 million	5.5 million	5.7 million



PEVs Surpass 3.5 Million in Mid Case, 4.5 Million in High Case

Preliminary PEV Stock Forecast, Statewide

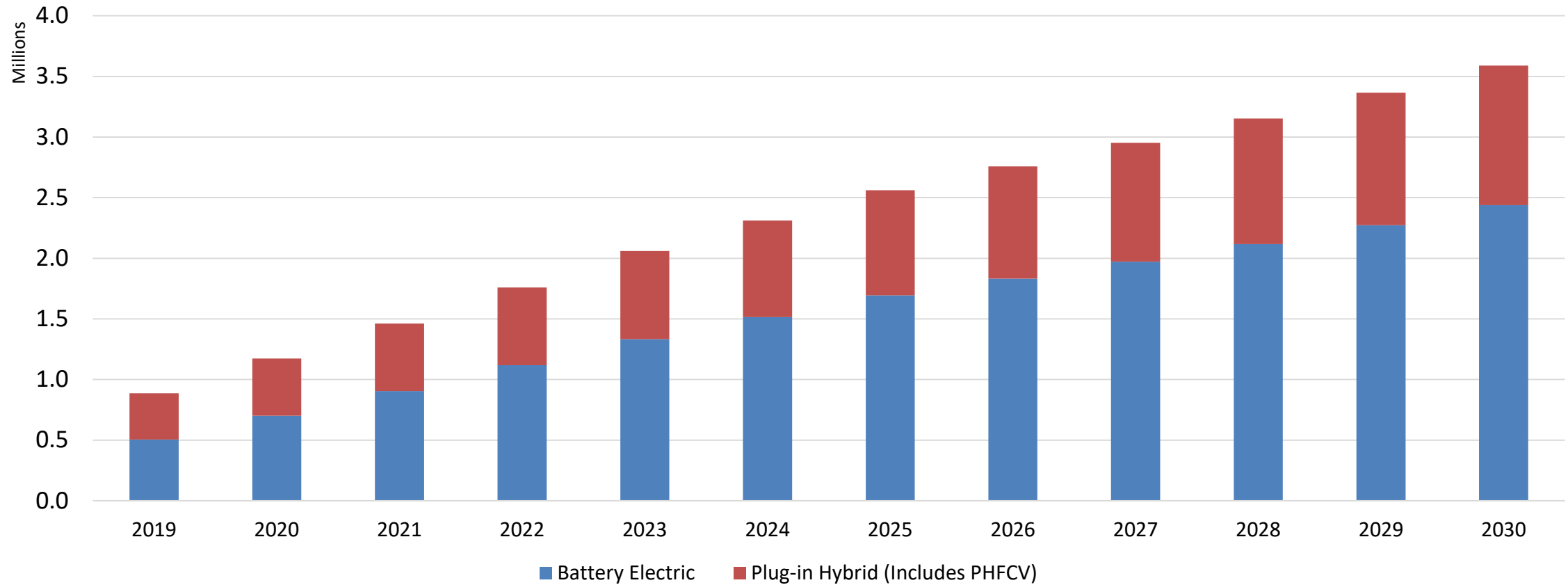


Source: Energy Commission



BEVs Increase Margin Over PHEVs

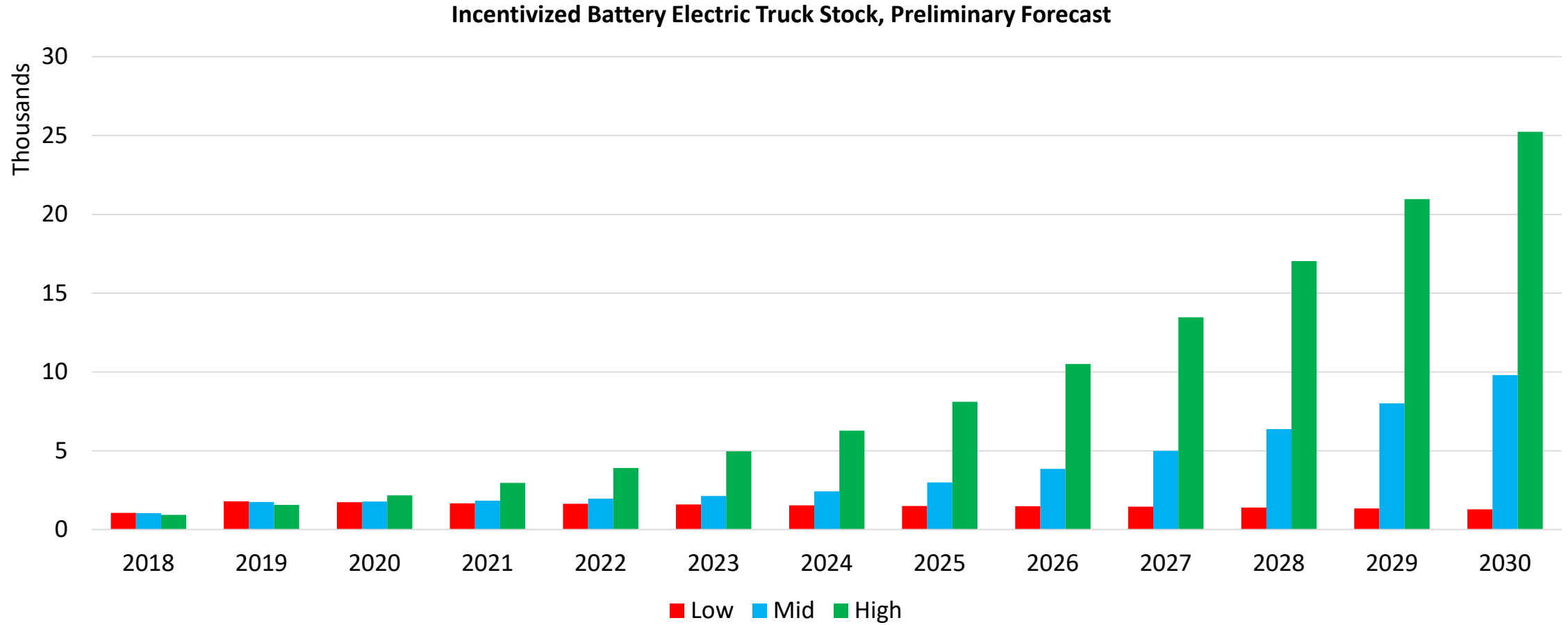
Forecast PEV Stock by Fuel Type, Mid Case



Source: Energy Commission



Electric Truck Population is Forecast to Increase Significantly in Mid and High Cases



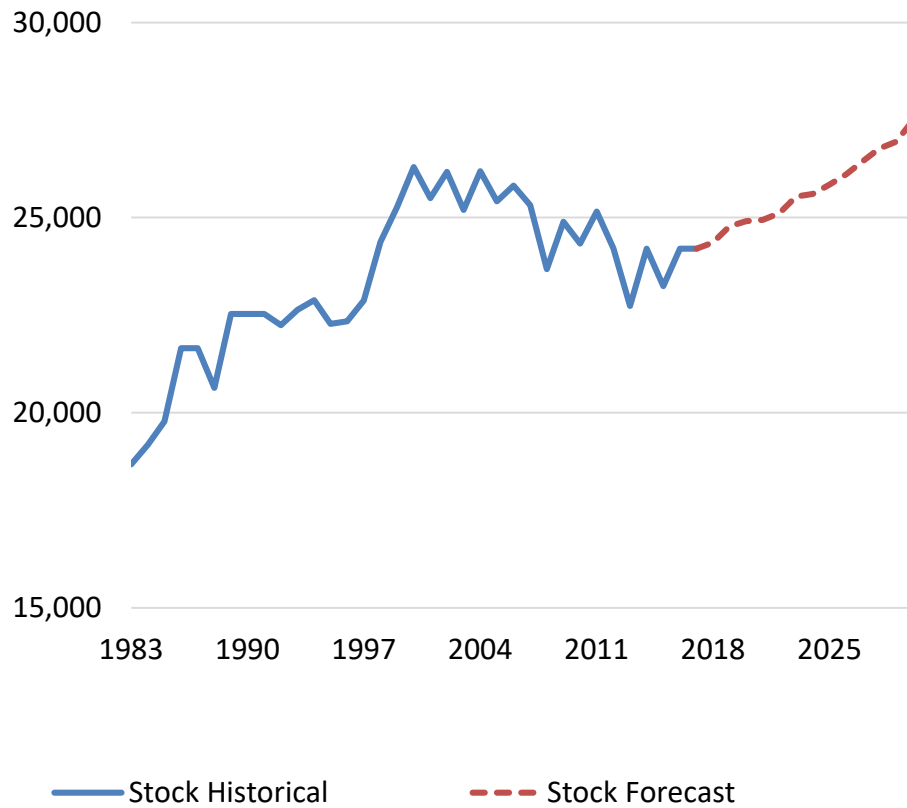
Source: Energy Commission



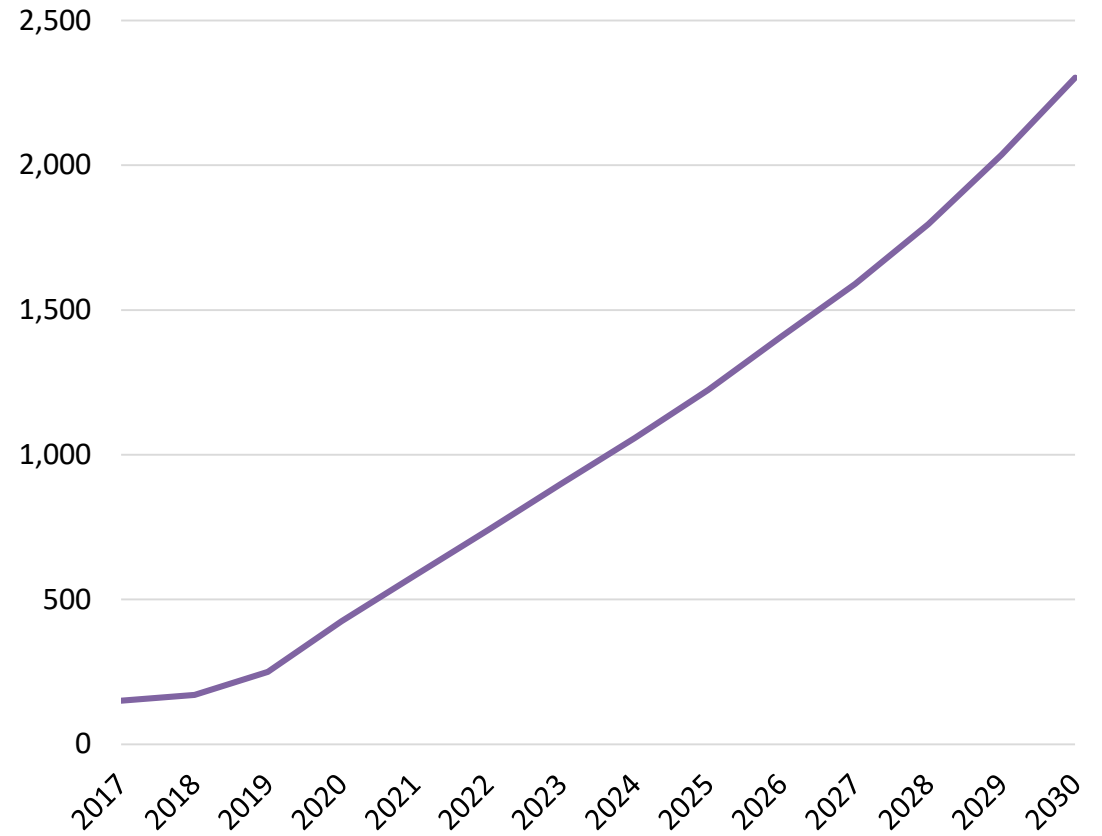
Policy is Favorable Towards Expansion of Electric School Bus Population



California School Bus Population



School Bus, Electric

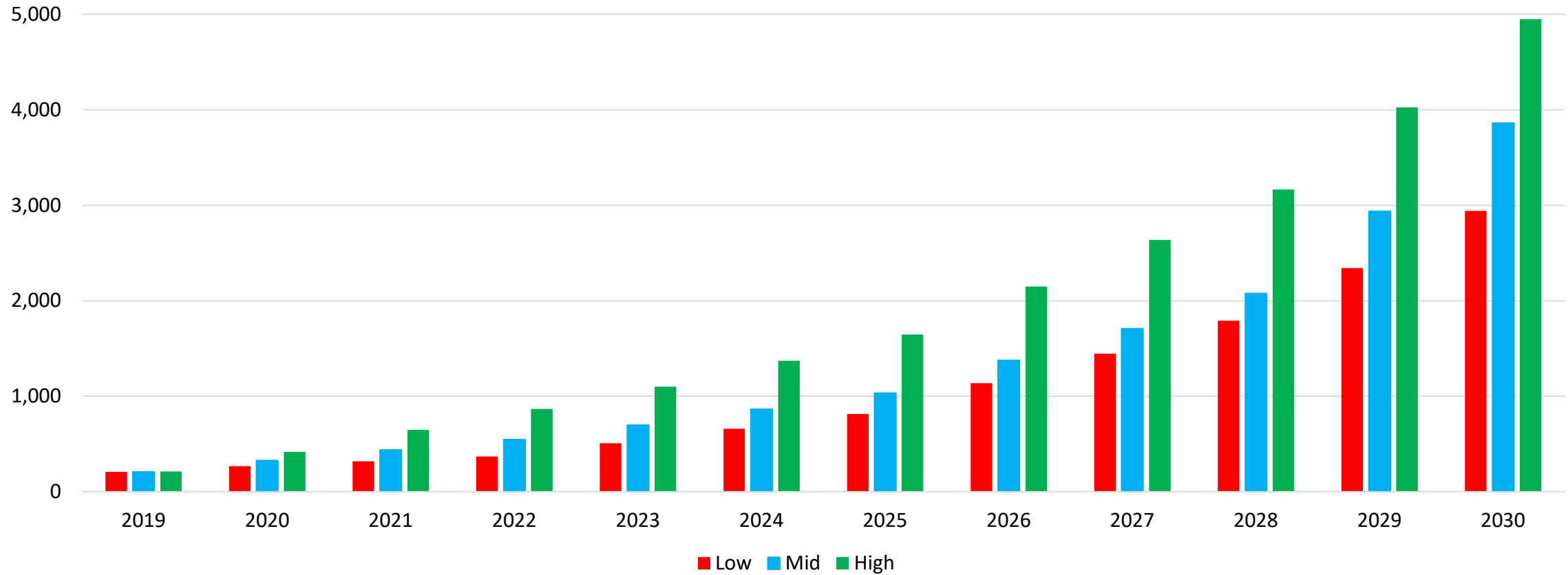


Source: CHP Historical Data, Energy Commission



Electric Transit Buses See Gains in All Cases

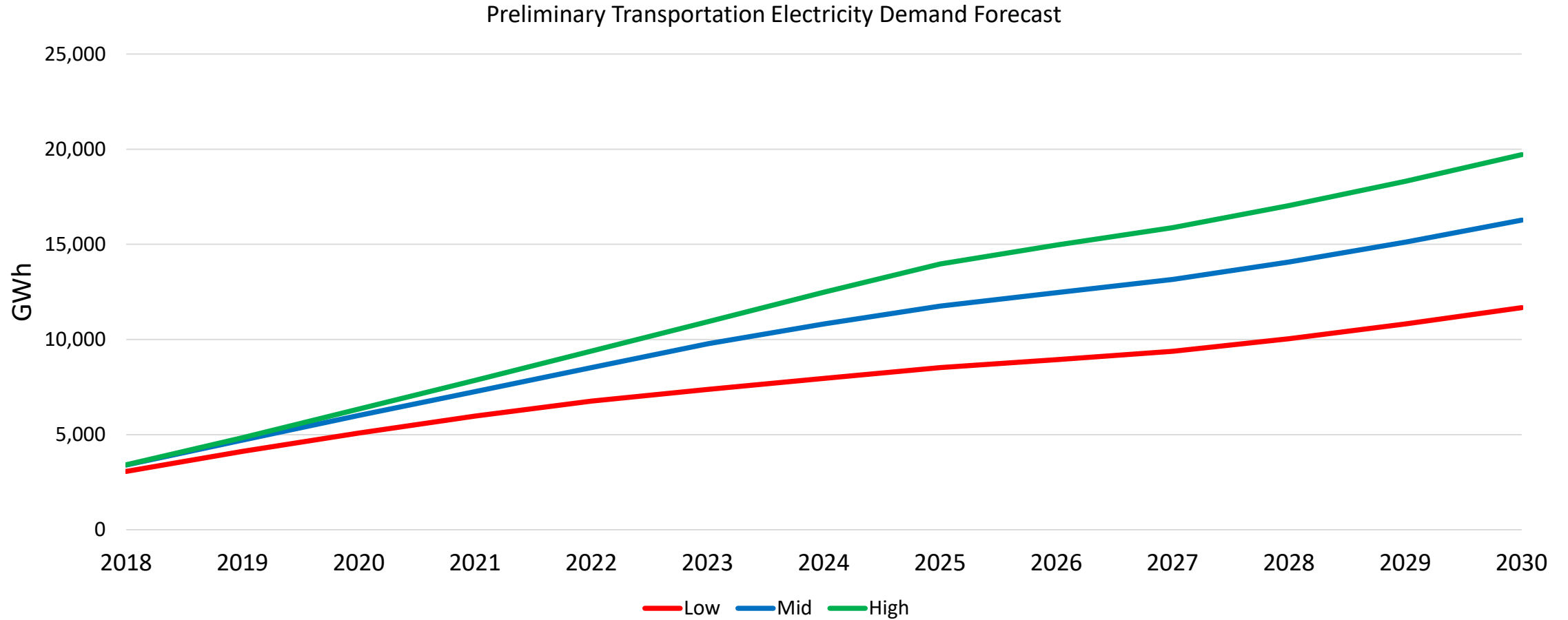
Battery Electric Urban Transit Bus Stock 2019-2030



Source: Energy Commission



Transportation Electricity Demand is Forecast to More Than Triple by 2030



Source: Energy Commission



Transportation Forecasting Team

- Heidi Javanbakht, Supervisor
 - Heidi.Javanbakht@energy.ca.gov
- Aniss Bahreinian, Lead Transportation Forecaster
 - Aniss.Bahreinian@energy.ca.gov
- Mark Palmere, Light Duty Vehicles
 - Mark.Palmere@energy.ca.gov
- Bob McBride, Freight, VMT
 - Bob.McBride@energy.ca.gov
- Jesse Gage, DMV Analysis, Aviation
 - Jesse.Gage@energy.ca.gov
- Elena Giyenko, ZEV Incentives, Other Bus
 - Elena.Giyenko@energy.ca.gov
- Ysbrand van der Werf, Fuel Prices, Urban Travel
 - Ysbrand.vanderWerf@energy.ca.gov
- Sudhakar Konala, ZEV Attributes
 - Sudhakar.Konala@energy.ca.gov