

DOCKETED

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IEPR Commissioner Workshop

Draft Transportation Energy Demand Forecast

For the 2024 Integrated Energy Policy Report Update

Transportation Energy Forecasting Unit Staff
Advanced Electrification Analysis Branch
Energy Assessments Division
November 7, 2024

Transportation Energy Demand Forecast: Major Updates and Results

IEPR Commissioner Workshop
November 7, 2024



Andre Freeman

Supervisor, Transportation Energy Forecasting Unit



Acronyms and Initialisms

AATE – Additional Achievable Transportation Electrification

ACF – Advanced Clean Fleets

ACC2 – Advanced Clean Cars II

BEV – Battery Electric Vehicle

CARB – California Air Resources Board

CEC – California Energy Commission

DMV – Department of Motor Vehicles

EIA – U.S. Energy Information Administration

EMFAC – Emissions Factor Model

FZ – Forecast Zone

GWh – Gigawatt-hour

GVWR - Gross Vehicle Weight Rating

HSR – High Speed Rail

ICE – Internal Combustion Engine

ICT 2022 – Innovative Clean Transit Bus Inventory Report 2022

IEPR – Integrated Energy Policy Report

LD – Light-Duty

MDHD – Medium- and Heavy-Duty

MPGe – Miles per gallon equivalent

NTD – National Transit Database

PARMM – Passenger, Aviation, Rail, Marine, and Microtransit travel model

PA – (Utility) Planning Area

PHEV – Plug-in Hybrid Electric Vehicle

TE – Transportation Electrification

TWh – Terawatt-hour

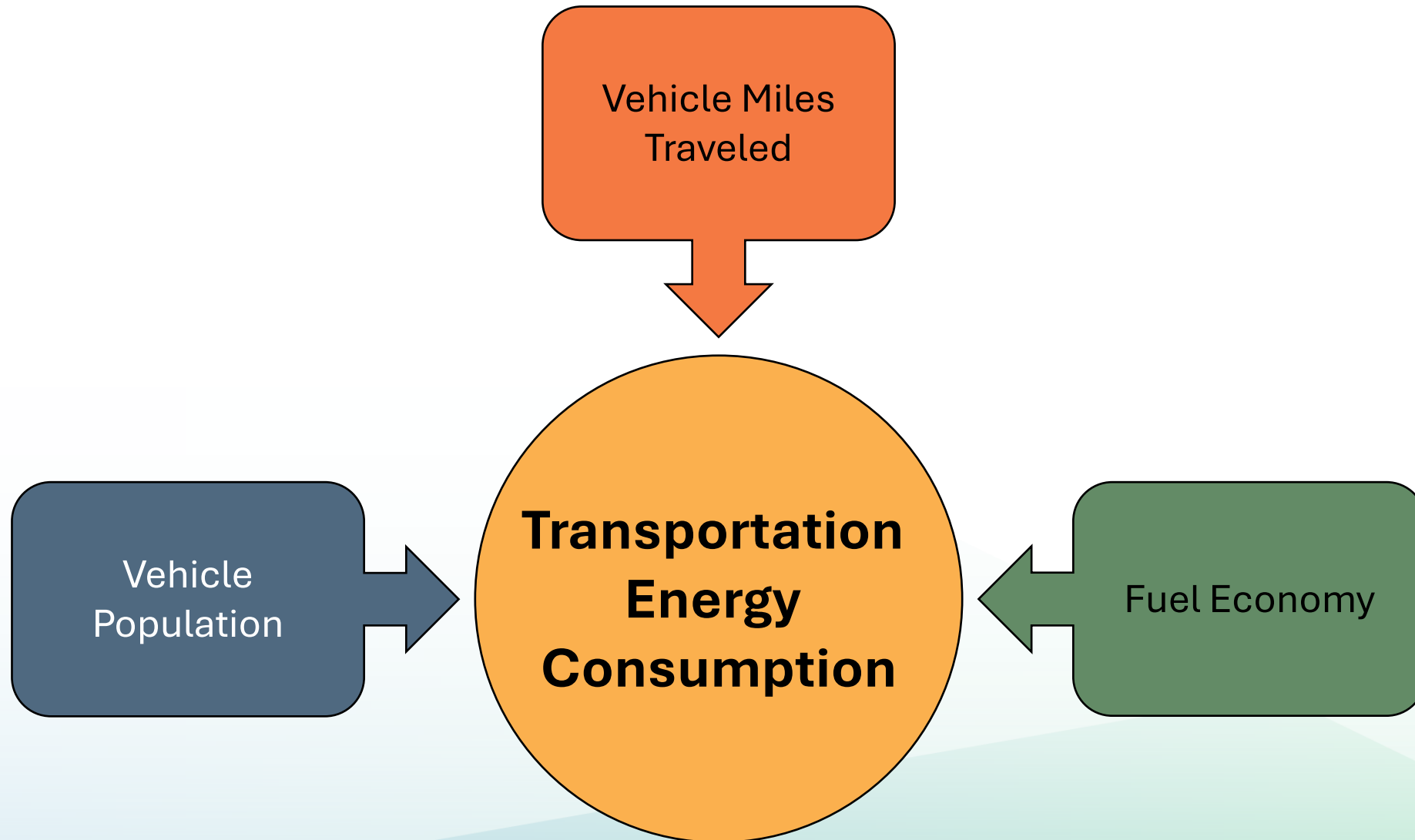
VMT – Vehicle Miles Traveled

ZEV – Zero-Emission Vehicle

Note: All charts, diagrams, and graphics, unless otherwise indicated, were developed by CEC staff.



Transportation Energy Consumption





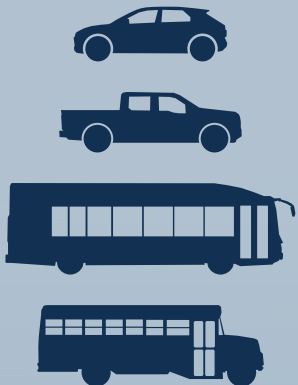
New Passenger Travel Model

PARMM Replaces Previous Transportation Forecast Models And Offers New Capabilities

- Clean Miles Standard Integration for Base and AATE 3
- LD Travel Improvements
- Connected and Autonomous Vehicles
- Transit Improvements
- Other New Modes and Scenario Options

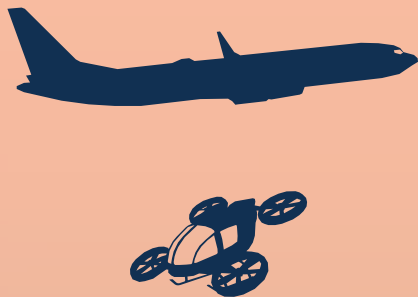
P

Passenger (Vehicles)



A

Aviation



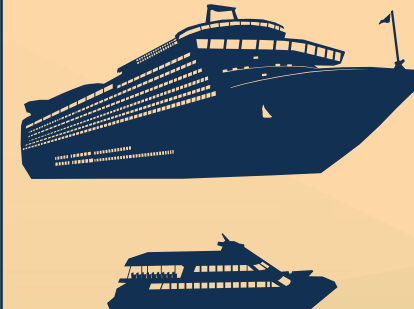
R

Rail



M

Marine



M

Microtransit



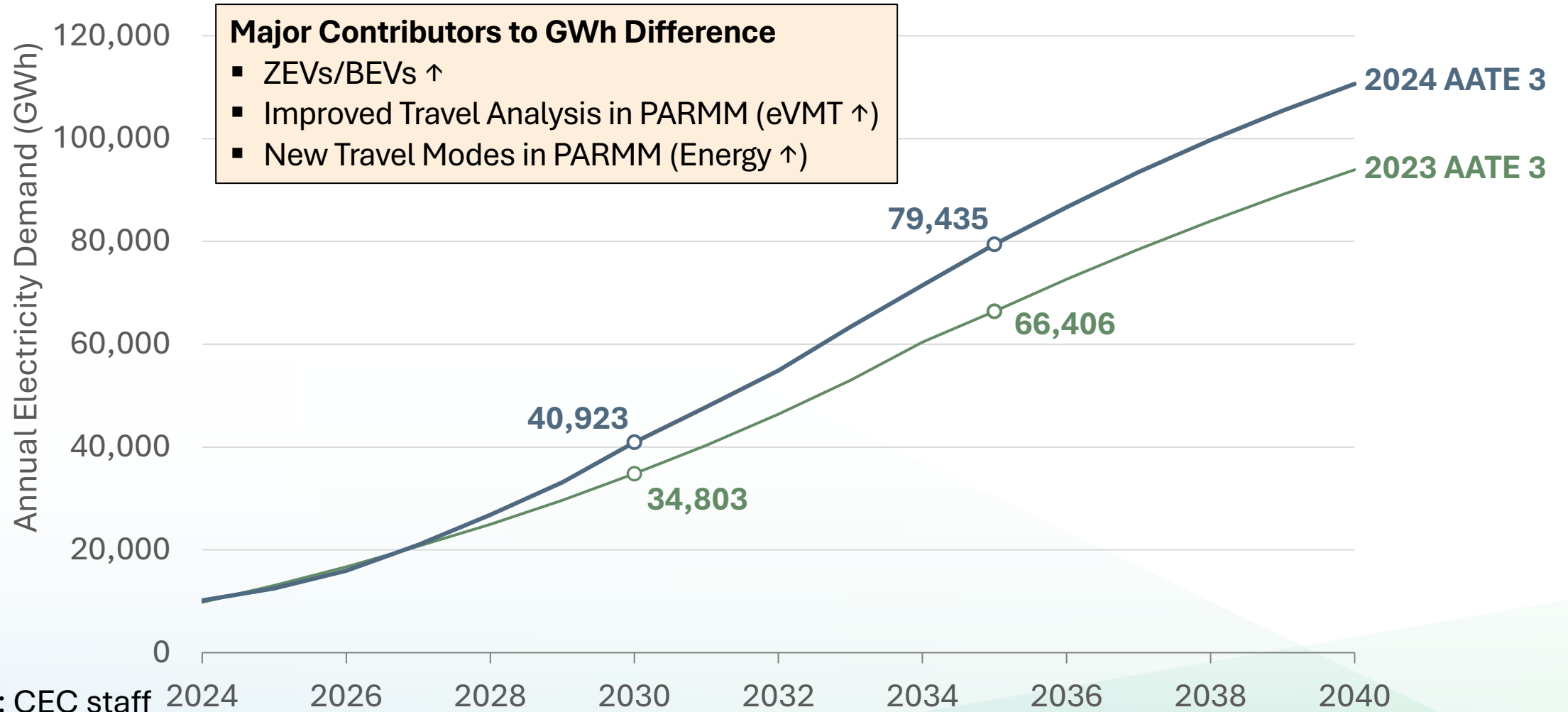


Other Updates

- In-Use Locomotive Regulation (freight rail, passenger rail)
- HSR Brightline
- Off-Road Improvements



Total Transportation Electrification Demand

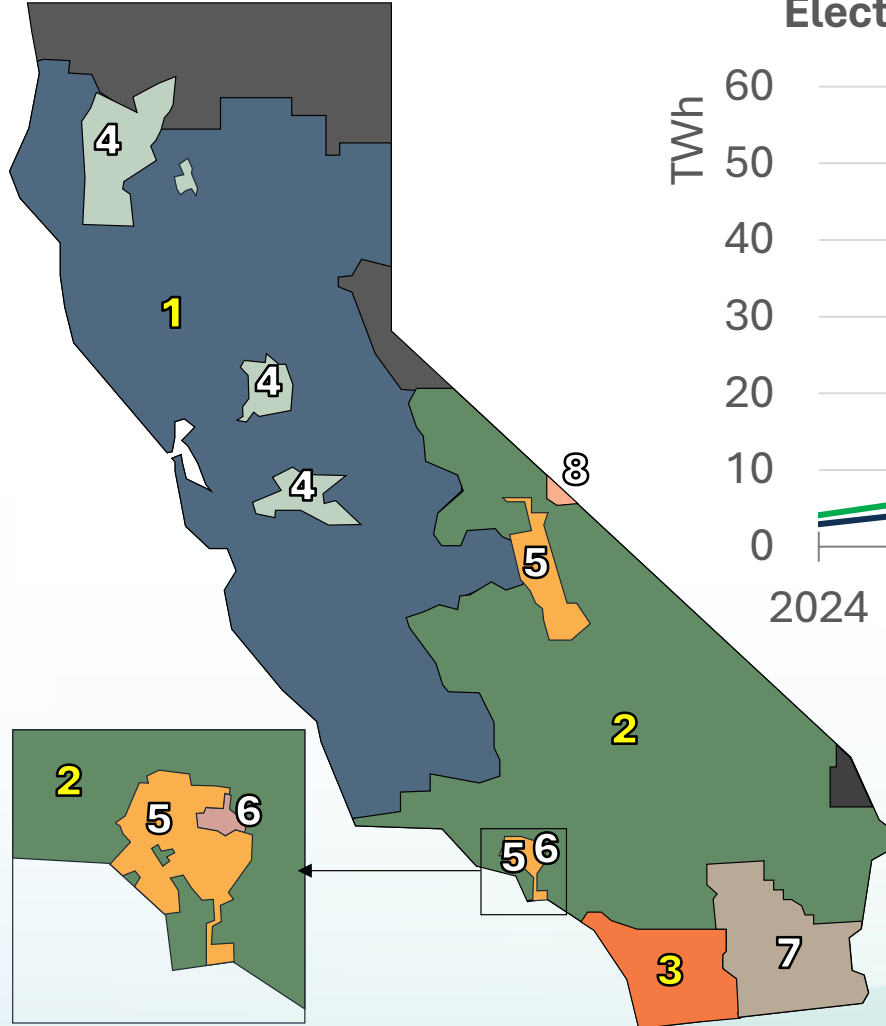


Note: Not all TE GWh demand is treated as a load modifier. Some TE is factored into baseline electricity consumption, such as off-road, high-speed rail, and other transportation modes.

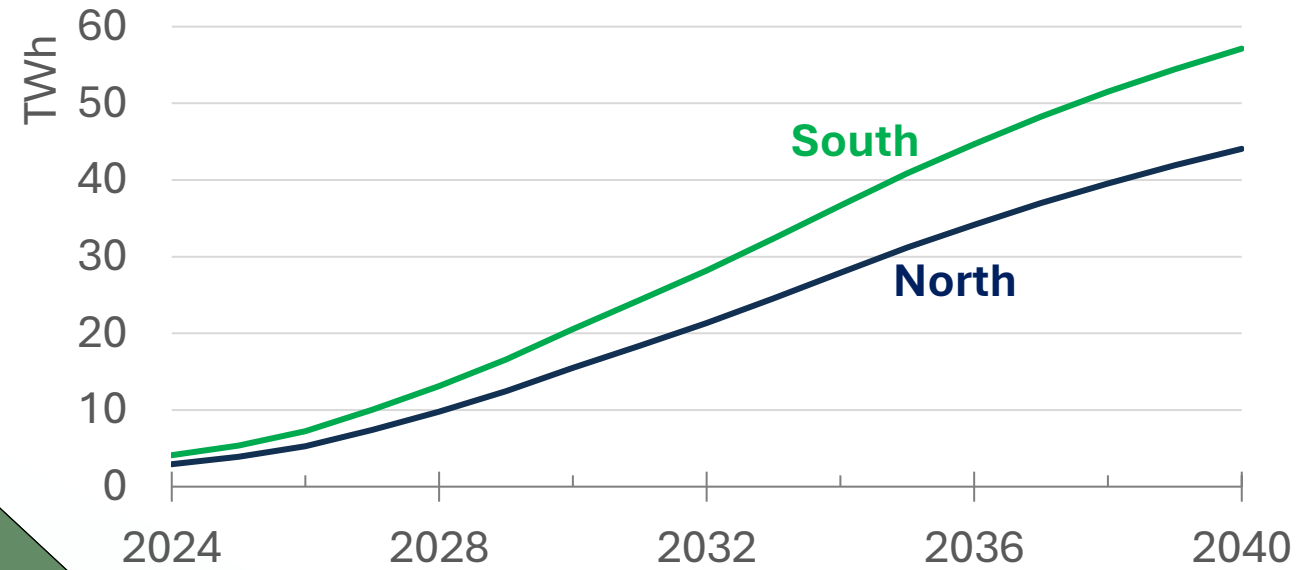


Assigning TWh to Northern and Southern Areas

PA	Name	North-South
1	PG&E	North
2	SCE	South
3	SDG&E	South
4	NCNC	North
5	LADWP	South
6	BUGL	South
7	IID	South
8	VEA	North



Electricity Demand by North-South Planning Areas

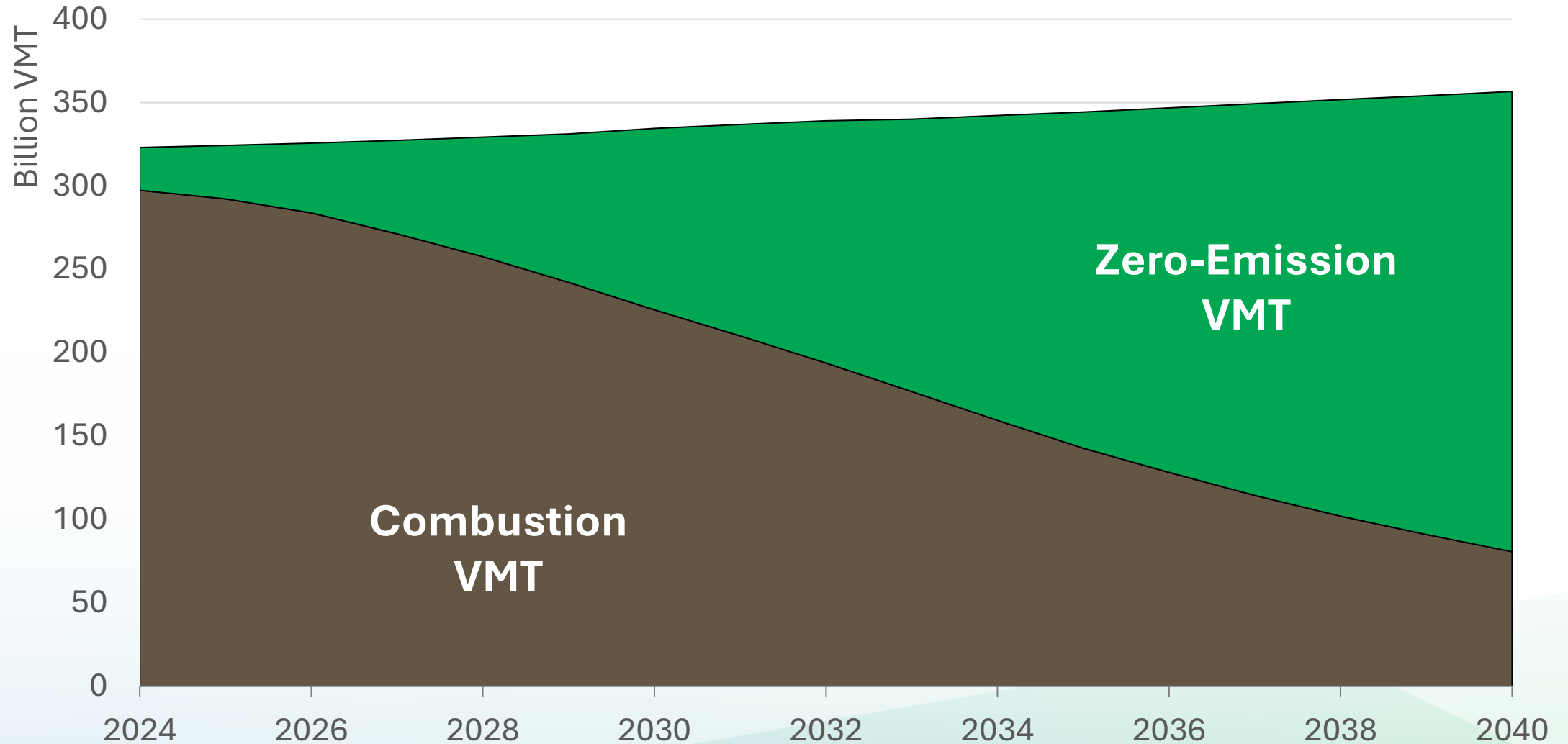


Source: CEC staff

Note: Not all TE TWh demand is assigned by planning area.



Comparing AATE 3 LD VMT by ZEV and ICE



Source: CEC staff

Light-Duty Updates and Results

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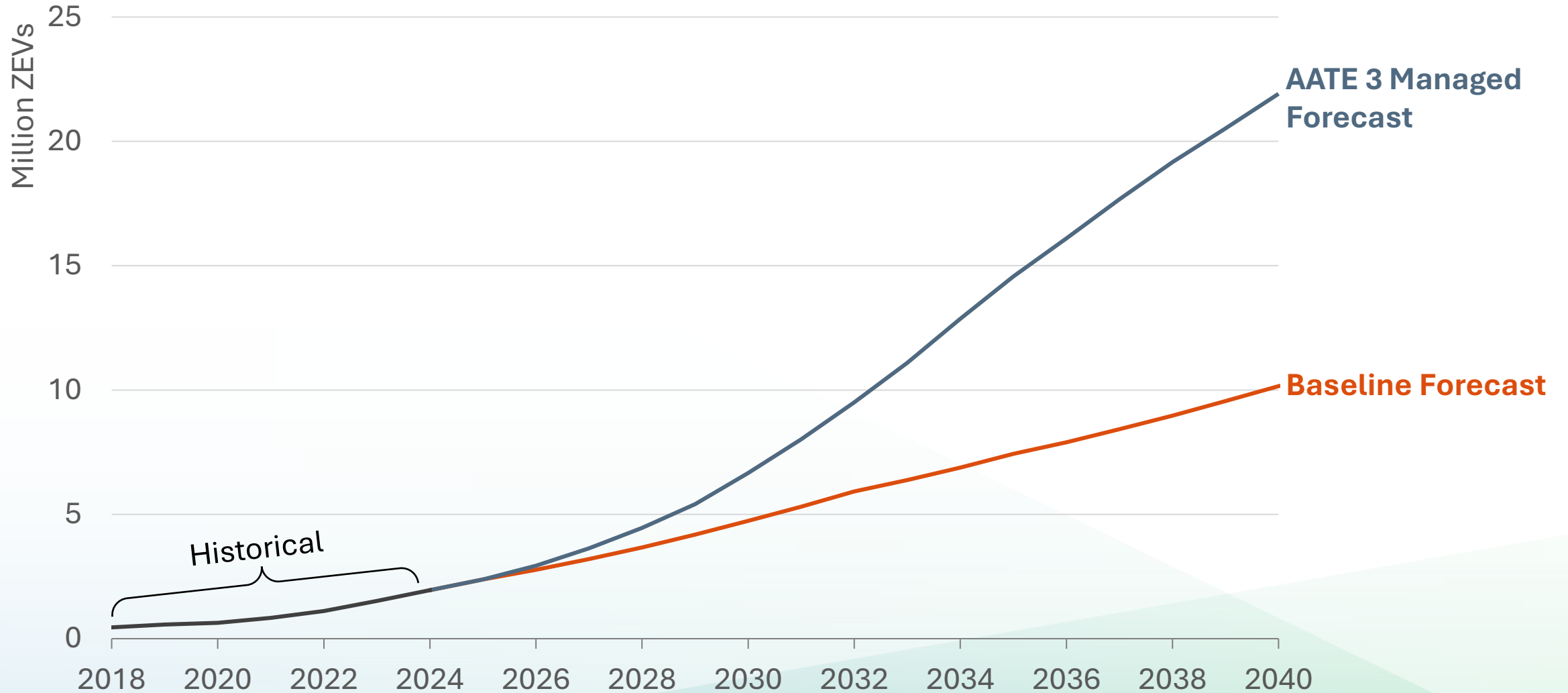
IEPR 2024 to LD Population Models

Light-Duty Models	Baseline Forecast	AATE Scenario 3
Personal Vehicle Choice, Commercial Vehicle Choice, Government, Rental	<ul style="list-style-type: none">Standard Updates and Calibration: Economic, Demographic, 2023 vehicle populationUpdated Vehicle Attributes: range, price, MPGeRevised fuel price forecast	<ul style="list-style-type: none">ACC2 Post-Process Modification to New Vehicle Sales

* The Federal Highway Administration and U.S. Census Bureau assign Class 2b vehicles as “light-duty” in addition to CEC. The U.S. Environmental Protection Agency and California Air Resources Board classify Class 2b as “medium-duty passenger vehicles.” See <https://afdc.energy.gov/data/10380> for more information.



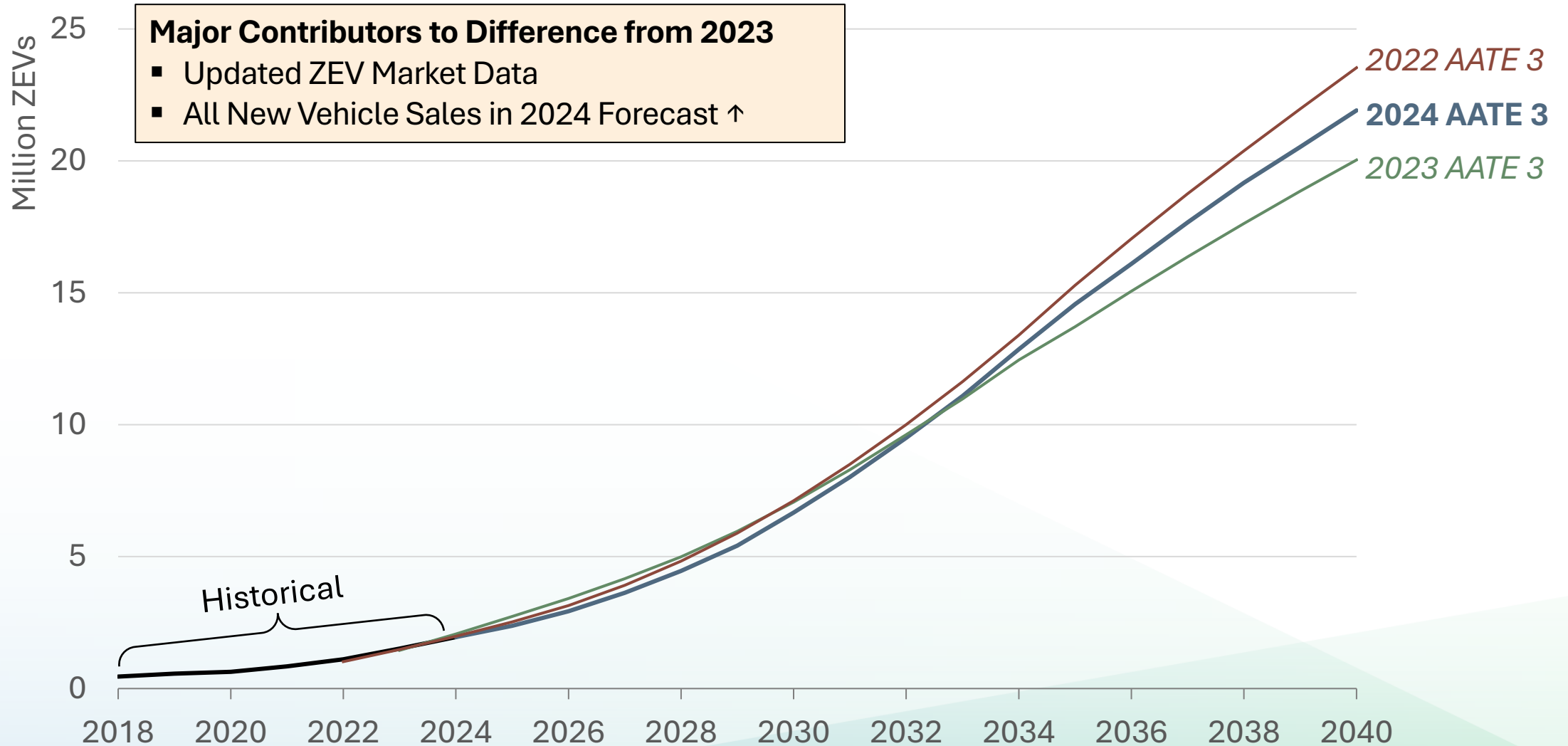
LD ZEV Population Forecast



Source: CEC staff



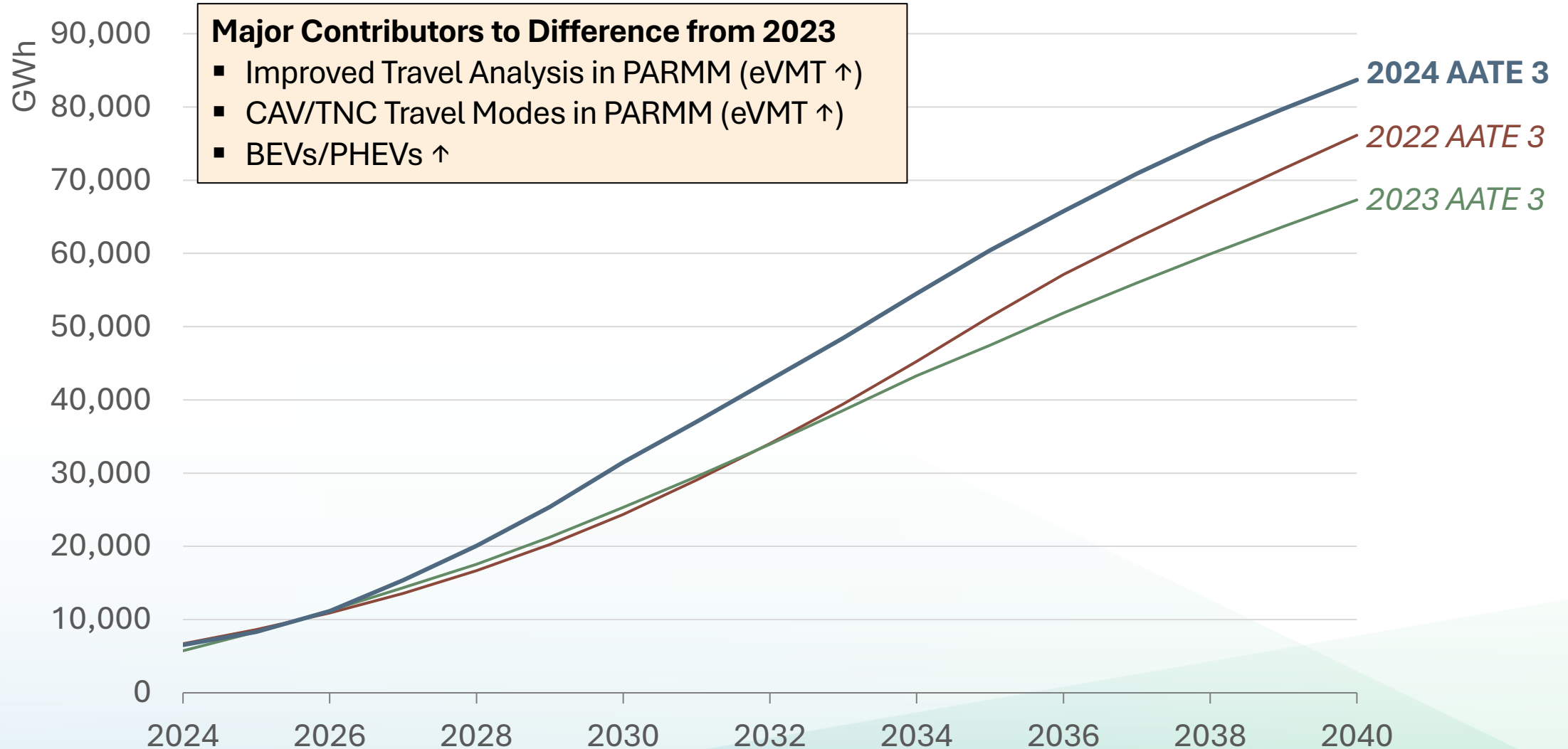
LD ZEV Population Comparison of Previous AATE 3 Managed Forecasts



Source: CEC staff



LD ZEV AATE 3 Electricity Demand



Source: CEC staff

Medium- and Heavy-Duty Updates and Results

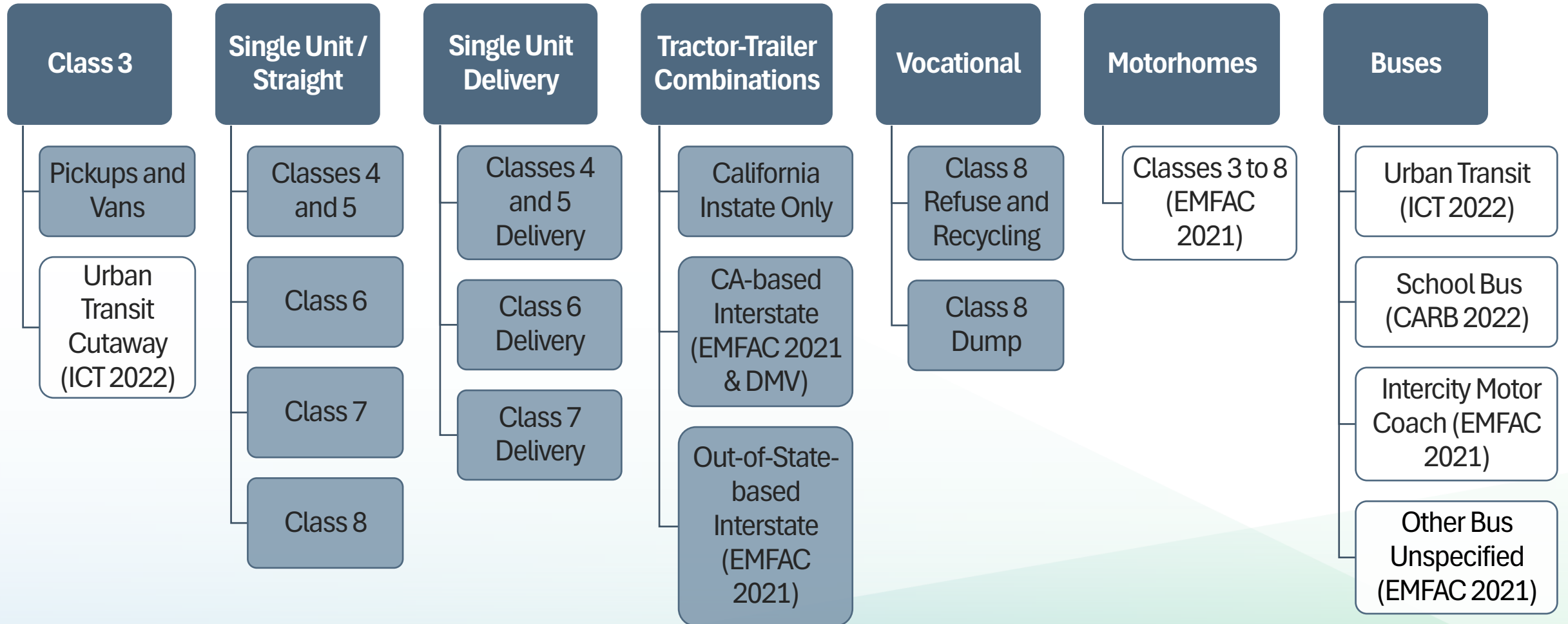
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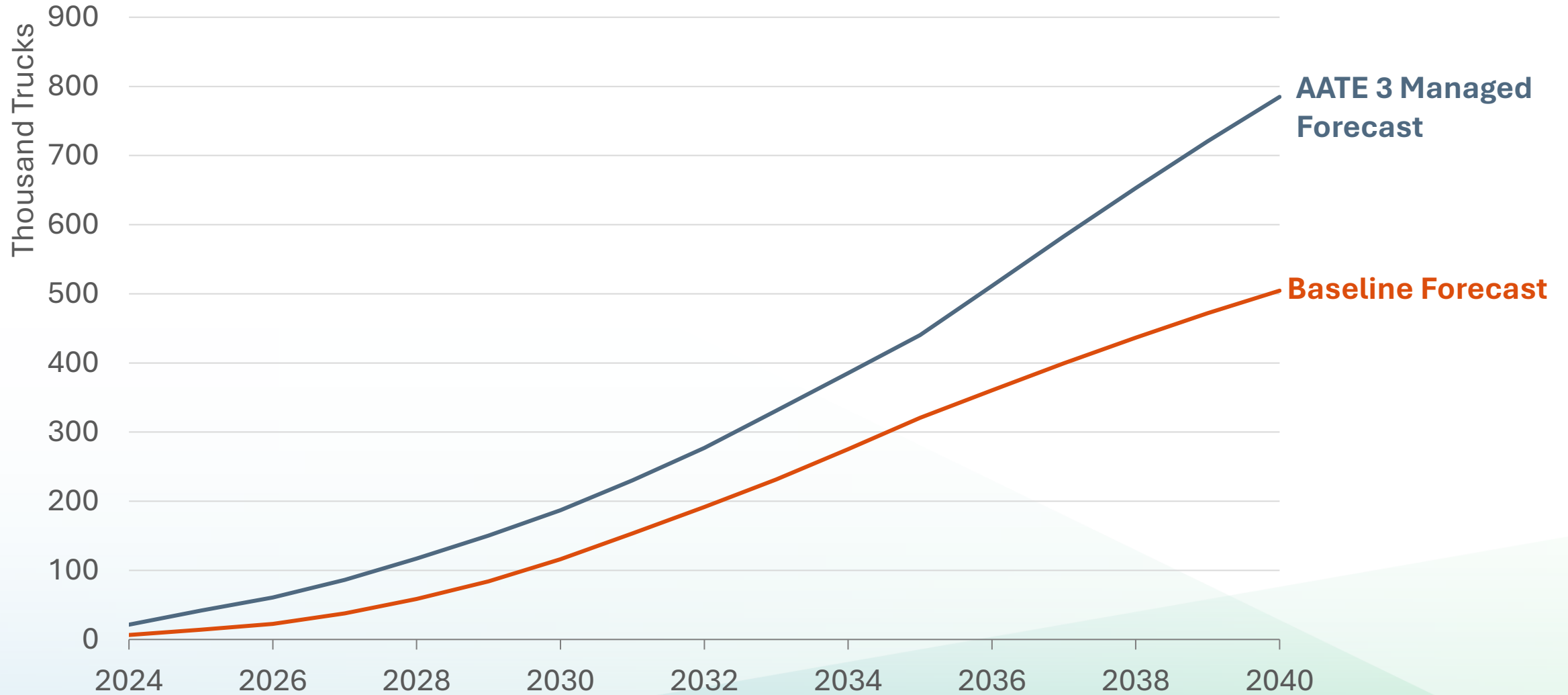


MDHD Vehicle Classes





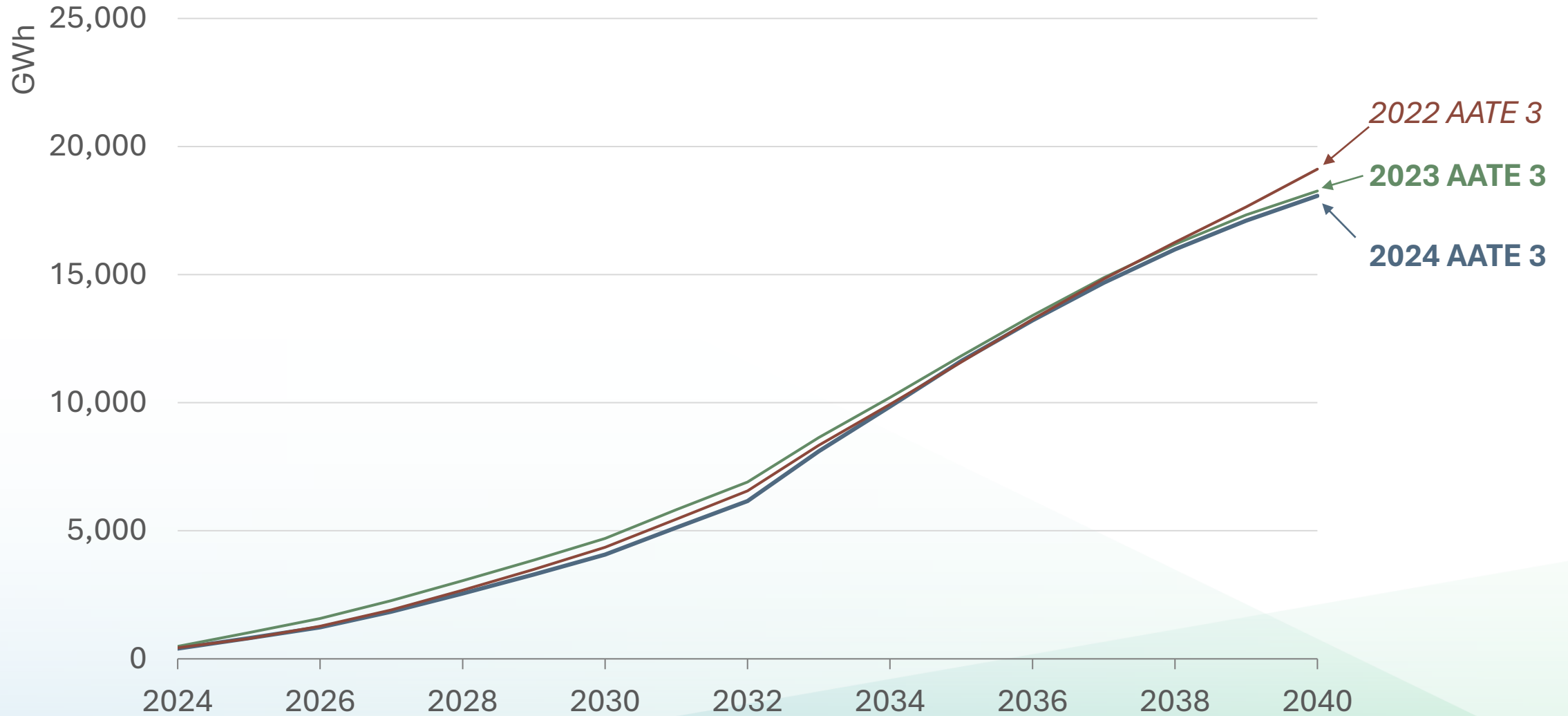
ZEV MDHD Truck Stock Forecast



Source: CEC staff



BEV MDHD Electricity Demand



Source: CEC staff



Transportation Energy Forecasting Team

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Thank You!

Questions via Email

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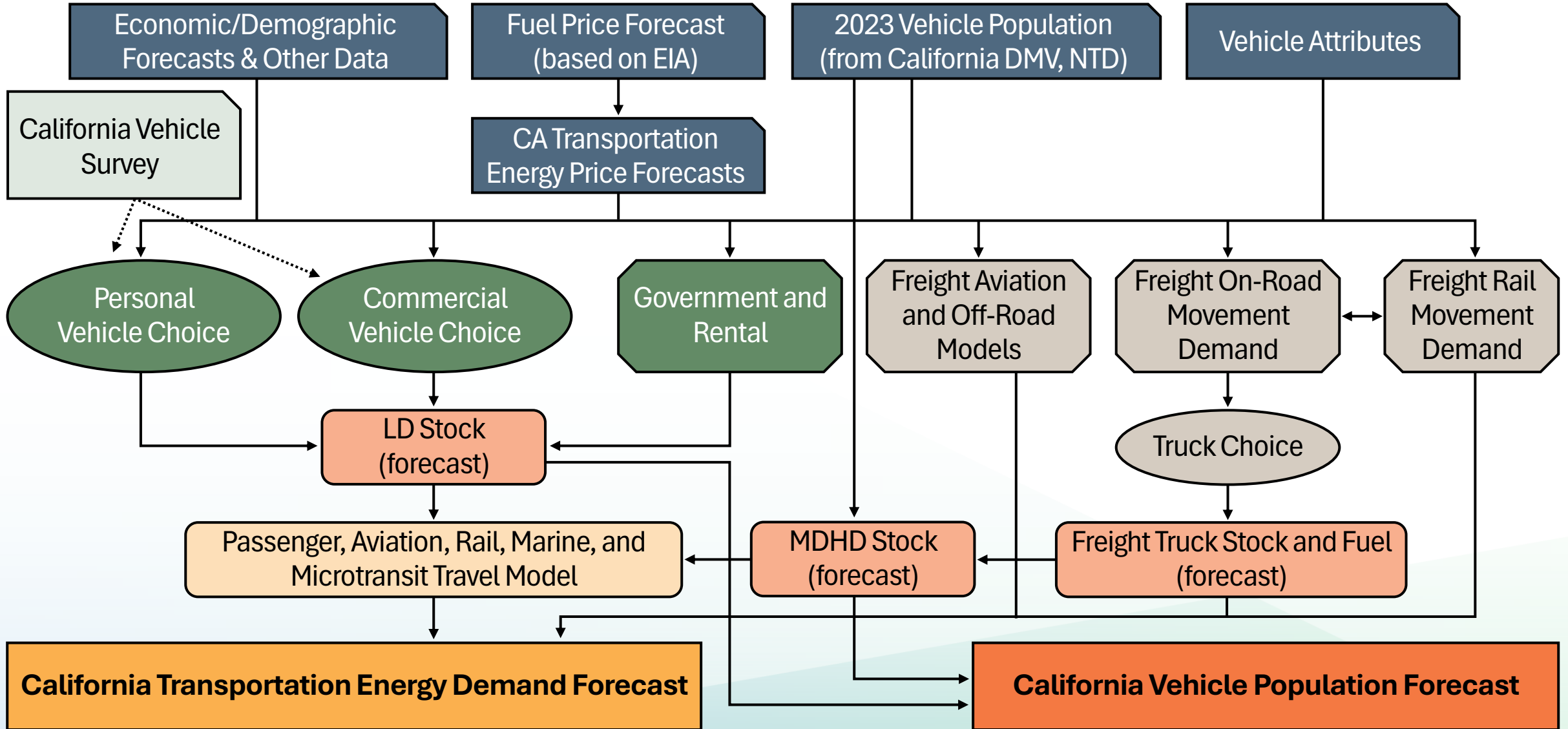


Transportation Energy Demand Forecast Appendix



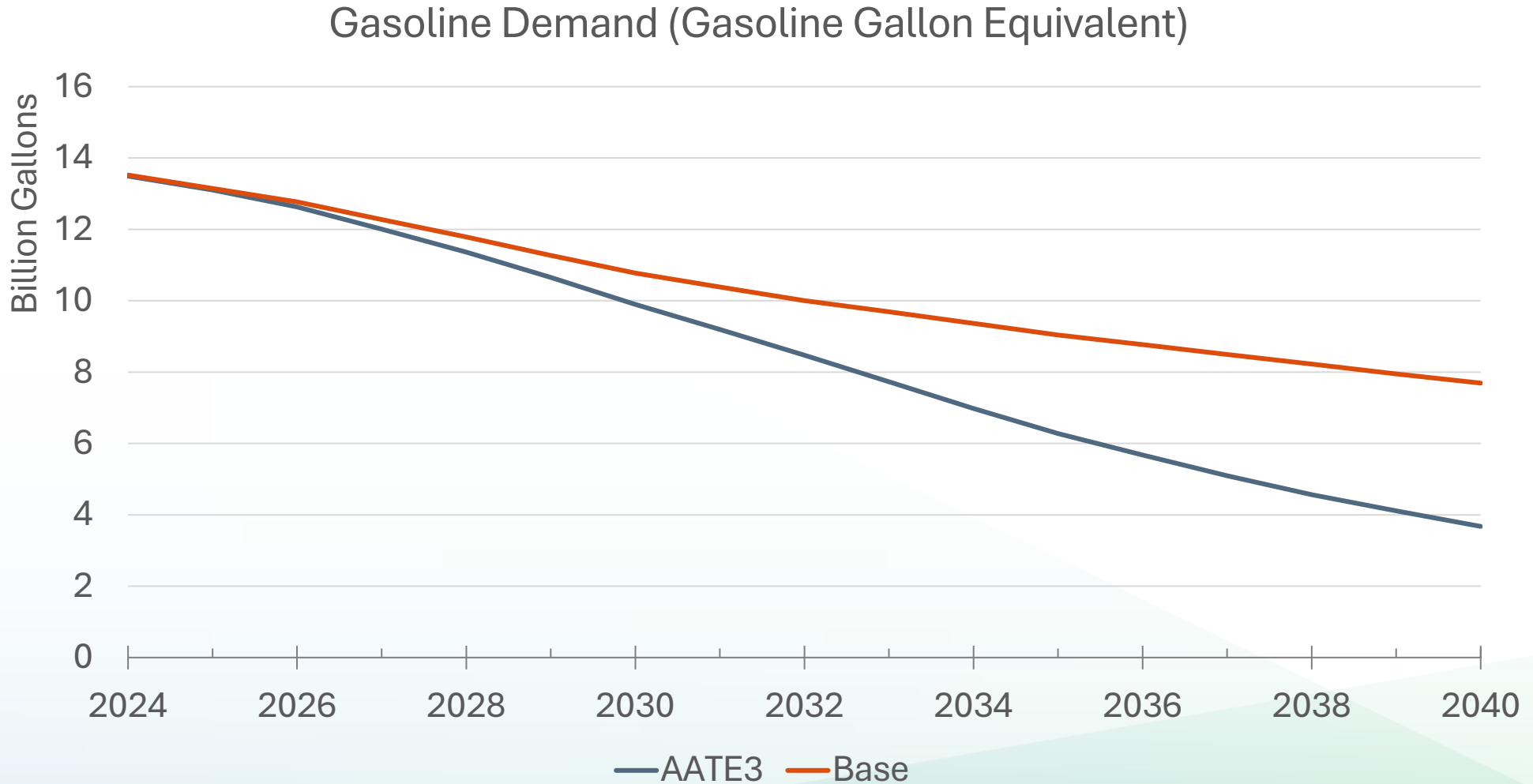


Transportation Energy Demand Forecast





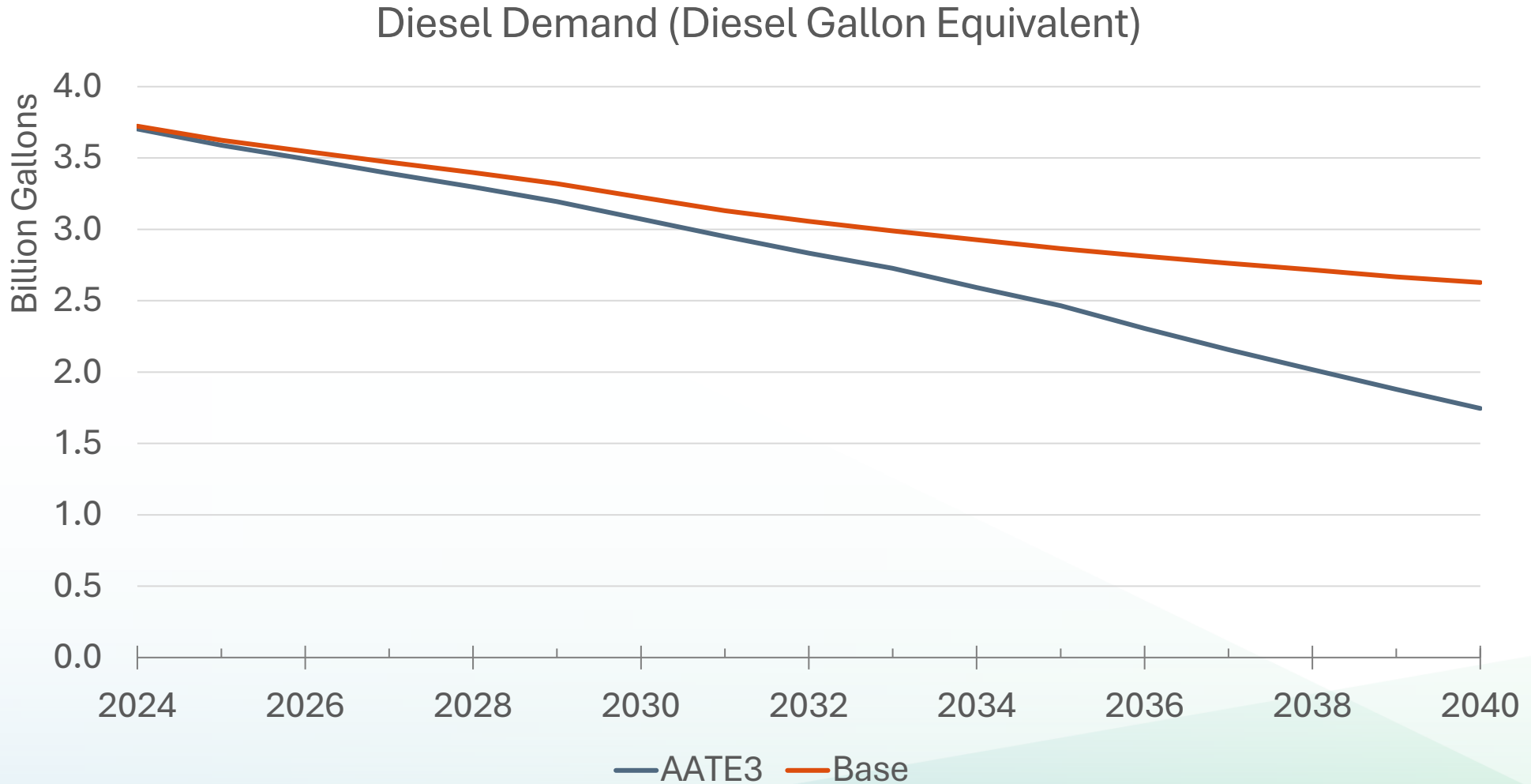
Gasoline Demand Forecast (Gasoline Gallon Equivalent)



Source: CEC staff



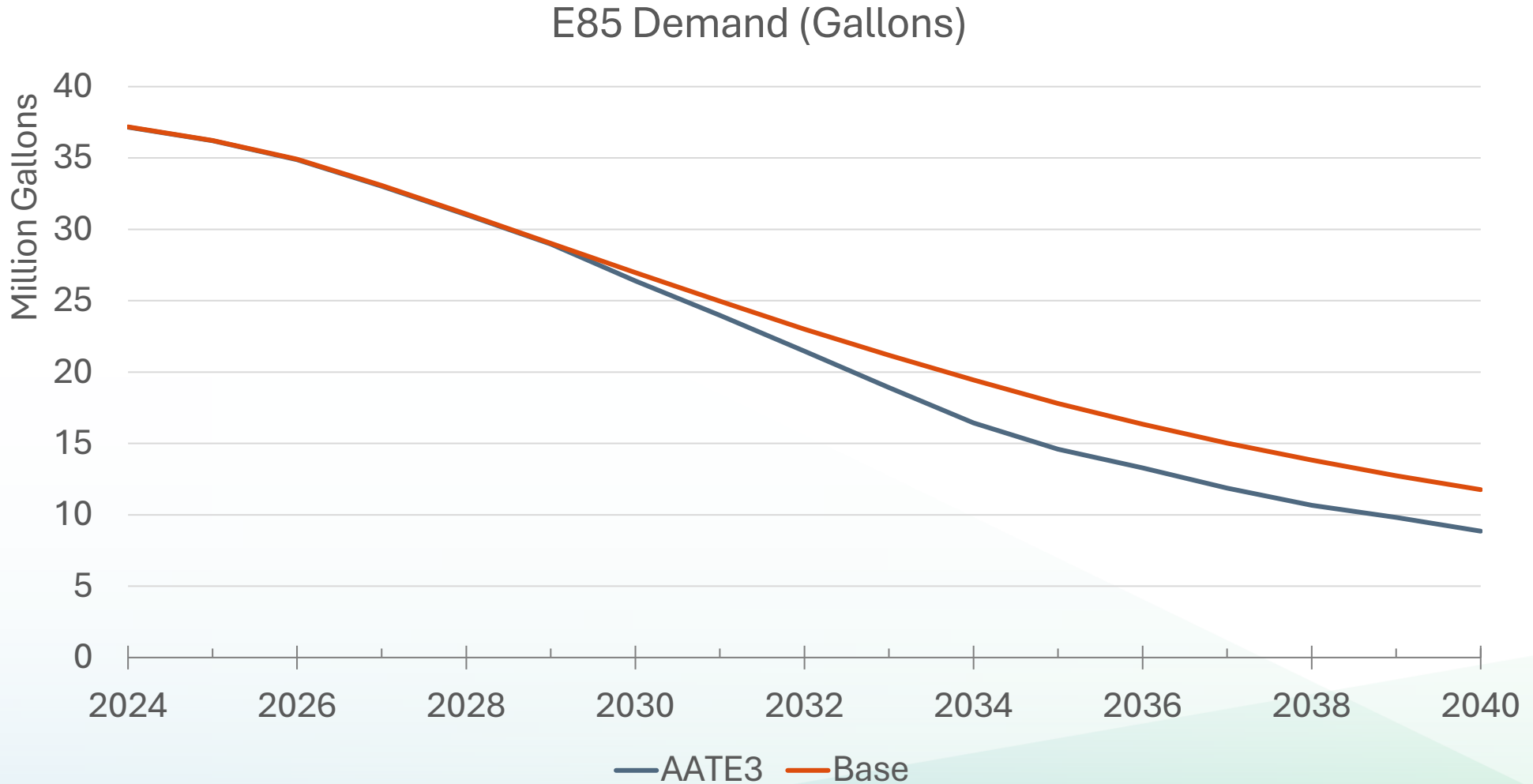
Diesel Demand Forecast (Diesel Gallon Equivalent)



Source: CEC staff



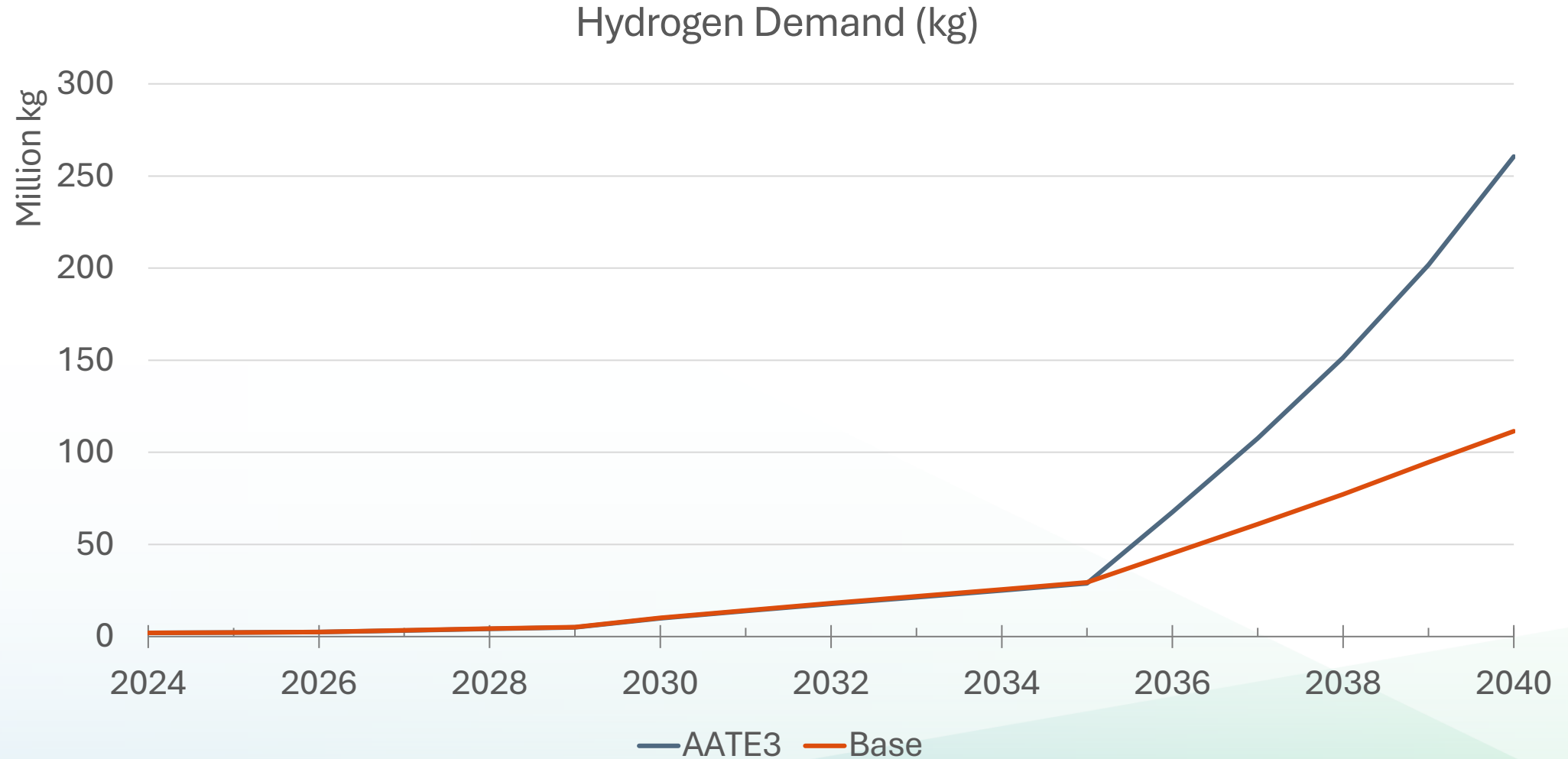
E85 Demand Forecast (Gallons of E85)



Source: CEC staff



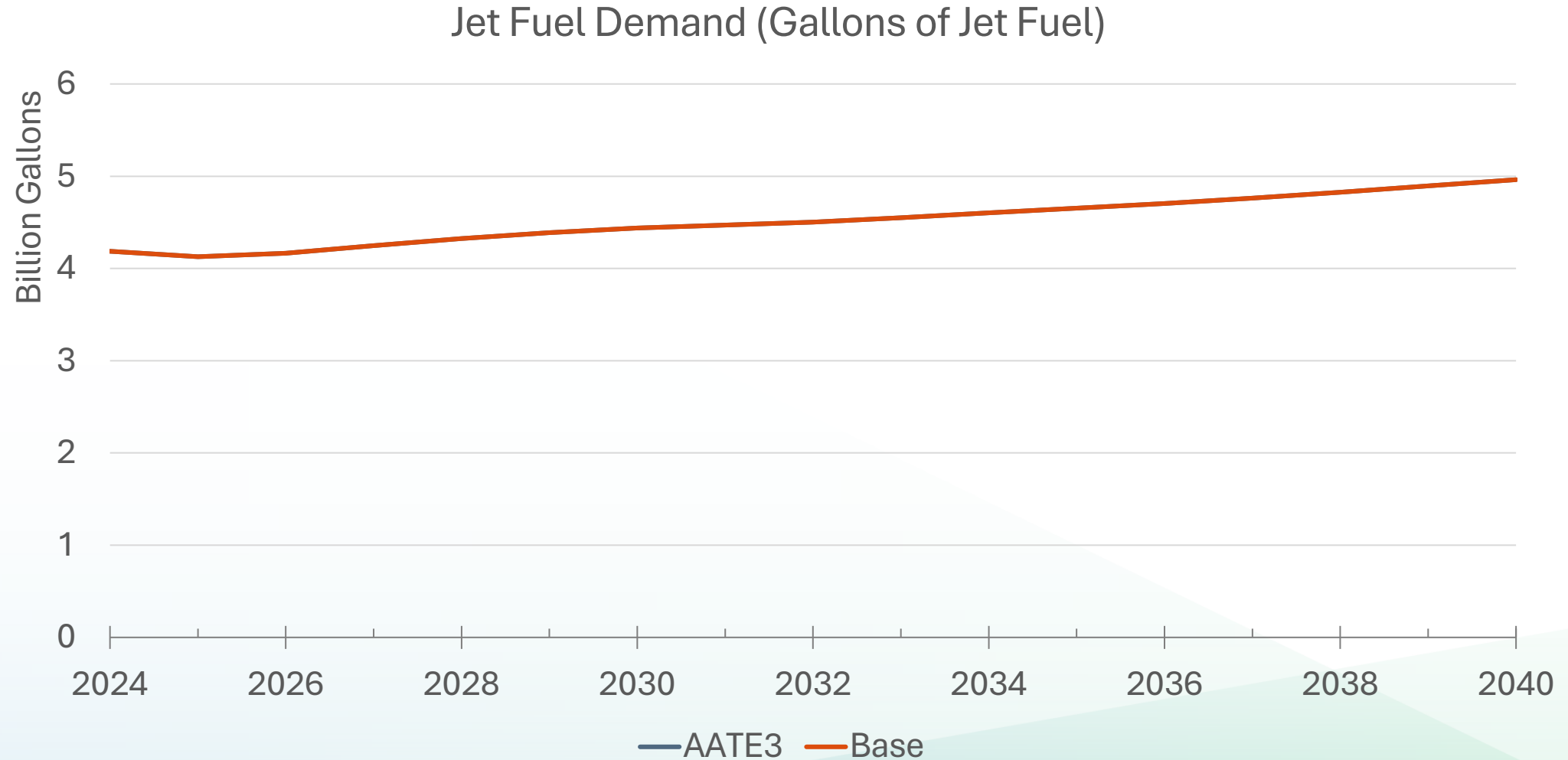
Hydrogen Demand Forecast (kg)



Source: CEC staff



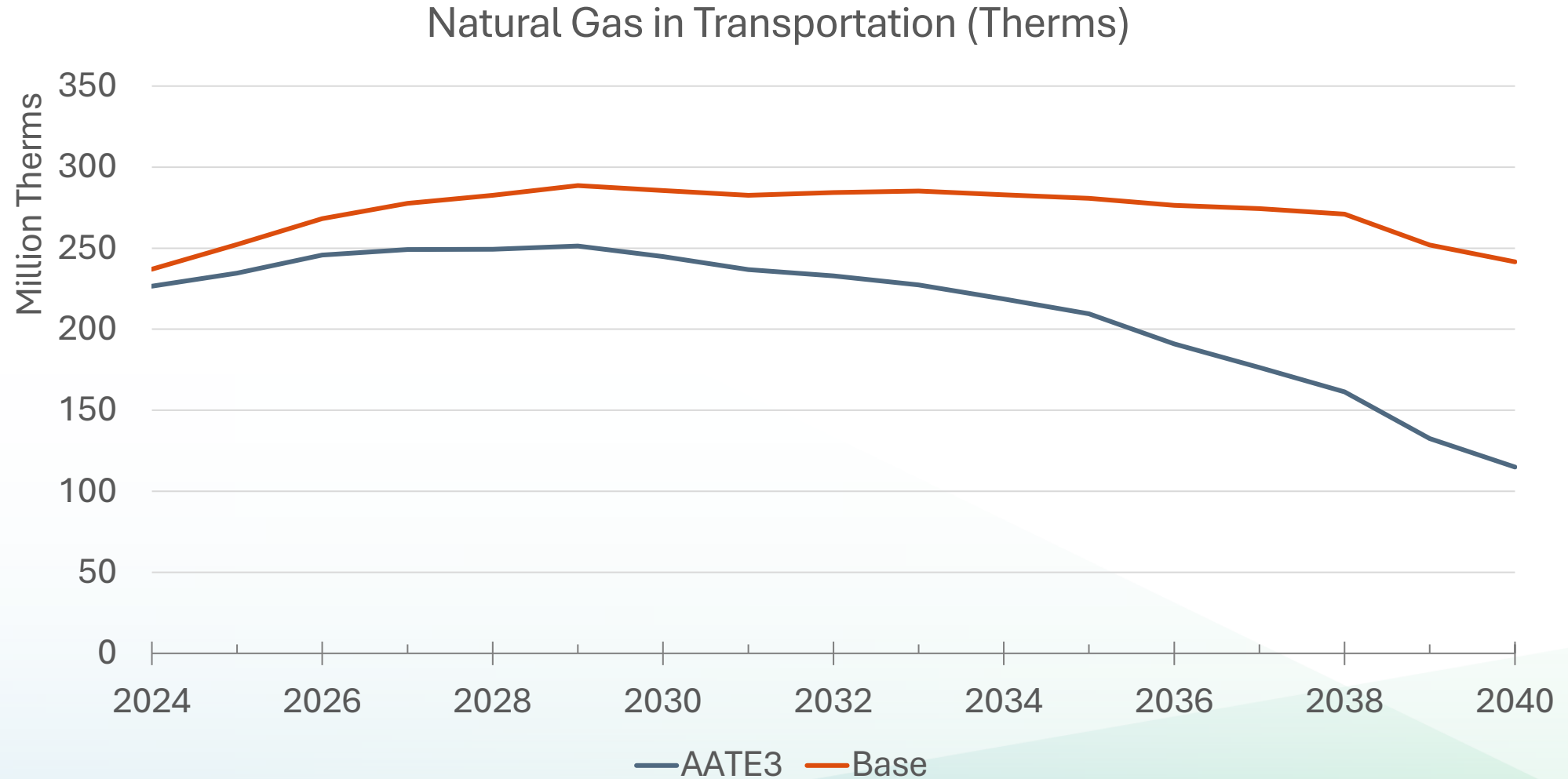
Jet Fuel Demand Forecast (Gallons of Jet Fuel)



Source: CEC staff



Natural Gas Demand Forecast (Therms, Transportation Only)



Source: CEC staff