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# Additional Achievable Transportation Electrification (AATE)

2022 Integrated Energy Policy Report

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# Additional Achievable Transportation Electrification (AATE): Synopsis

- AATE enables the expansion of the original IEPR forecasting approach used for transportation.
- **Managed forecasts** above the baseline are used for integration of supply-side policies that existing demand-side models cannot readily account for.
- AATE 2 and AATE 3 are managed forecasts that post-process some vehicle fuel types to align with sales proportions or population proportions stipulated by Advanced Clean Cars II and Advanced Clean Trucks.
- Because AATE 3 is the recommended scenario for planning and the baseline ZEV forecast is already high, staff do not anticipate significant impacts from removing AATE 1.



# **AATE: Light-Duty Vehicles**





# Light-Duty AATE Scenarios 2 and 3

- Preferences for body style (e.g., increasing consumer interest in SUVs or Pickups) are maintained, which allows for modeling energy consequences of such preferences under high ZEV policy scenarios.
- Total vehicle population across Baseline, AATE 2, and AATE 3 are the same – only fuel types of new vehicle sales change.

## Electricity Consequences for Plug-in Electric Vehicles (PEVs)

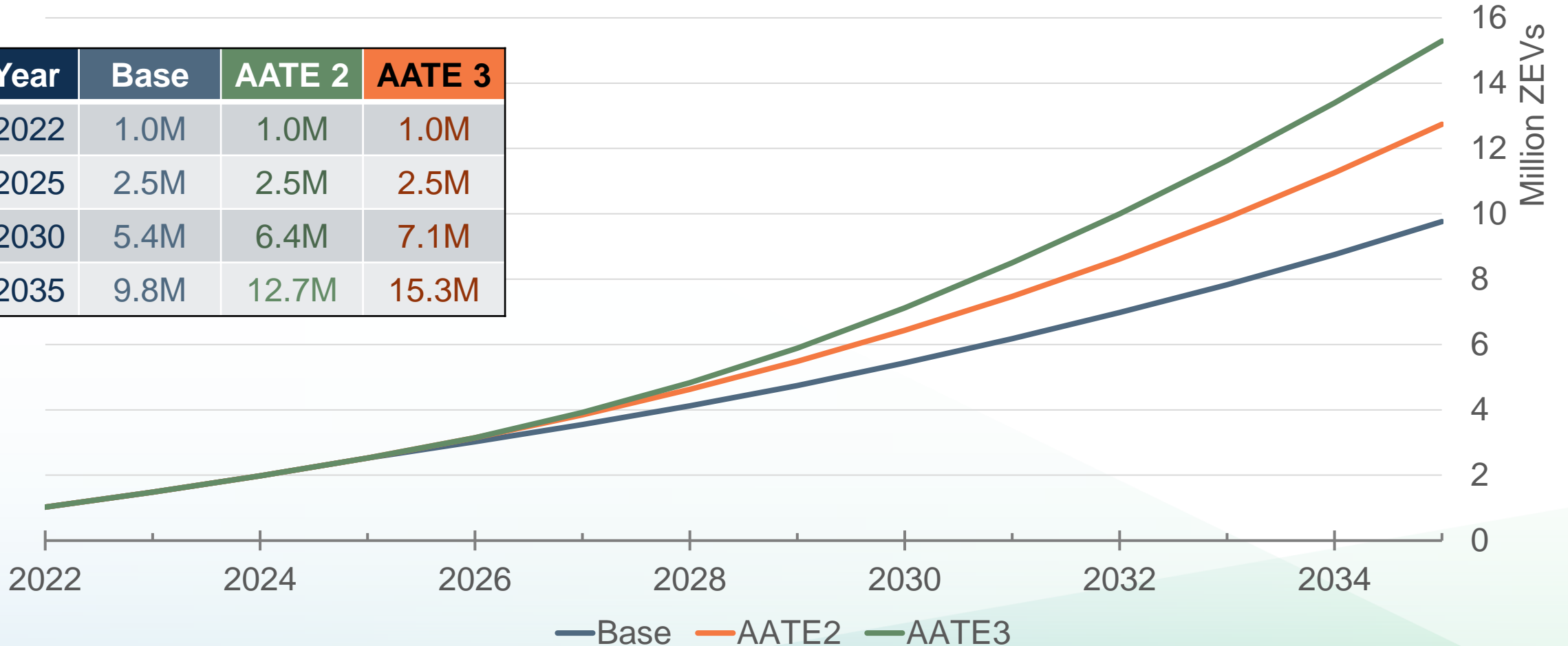
- Lower per vehicle electricity consumption from 2021 IEPR.
- Increased population-weighted PEV fuel economy.
- Improvements to VMT forecast.
- PHEV energy consumption improvements.



# Light-Duty ZEV Stock: Scenario Comparisons

Managed Forecast Results for Light-Duty ZEVs

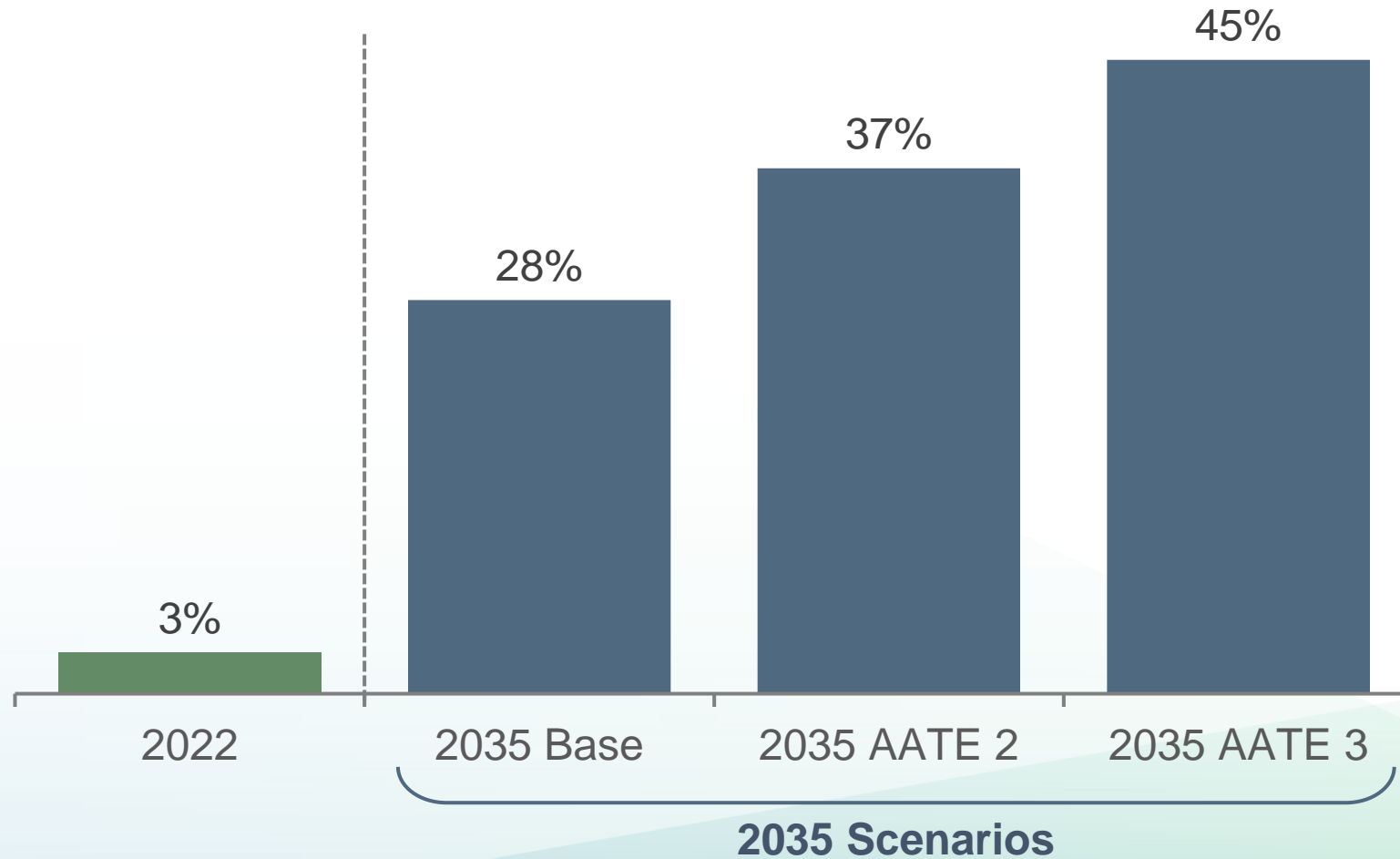
Year	Base	AATE 2	AATE 3
2022	1.0M	1.0M	1.0M
2025	2.5M	2.5M	2.5M
2030	5.4M	6.4M	7.1M
2035	9.8M	12.7M	15.3M





# Light-Duty Zero-Emission Vehicle Miles Traveled (VMT)

Zero-Emission VMT as a Proportion of Total VMT





# AATE: Freight Trucks







# Zero-Emission Truck Inputs and Assumptions

	Baseline	AATE 2	AATE 3
CARB Regulations	Advanced Clean Trucks (ACT), other existing rules	Advanced Clean Trucks, other existing rules	Advanced Clean Fleets, ACT, and other existing rules
Regional Regulations	SCAQMD Truck and Bus rules	Implicit for refuse trucks and urban transit buses	Same as MID Case
HVIP (all years)	Voucher amounts scaled to incremental truck price, to comply with ACT	Same as Baseline	Same as Baseline
Inflation Reduction Act	\$7,500 for Class 3 and \$40,000 for Classes 6 and 7; ends after 2031	Same as Baseline	Same as Baseline
Hydrogen Price	NREL mid price	NREL mid price	NREL mid price
Electricity Rates	Commercial Rates, Mid	Commercial Rates, Mid	Commercial Rates, Mid
BEV Truck Prices given battery pack price in 2035	BEV prices based on battery price \$488/kWh in 2021, declines to \$73/kWh in 2035	Baseline truck prices plus 5%	Same as Baseline
Miles Per Gallon	Same as Mid for IEPR 2021, based on ICF(2021) and KGD(2019)	Same as Baseline	Same as Baseline



# Additional Achievable Transportation Electrification: Medium- and Heavy-Duty Trucks

## AATE 2

- Based on baseline scenario, with High case truck prices (optimistic)

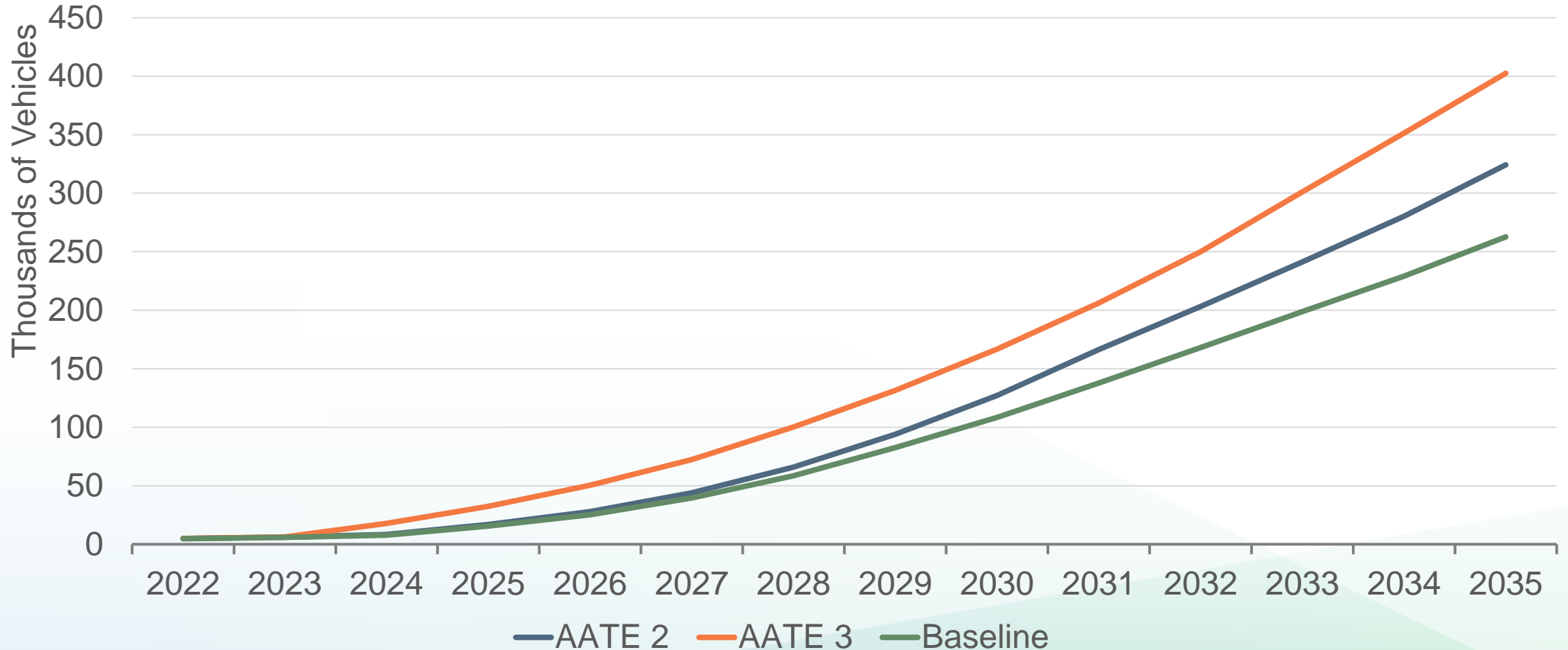
## AATE 3

- Based on CARB ACF scenario (ACT and ACF)
  - CARB ACF ZEV percentage outcome
    - AATE 3 applies maximum ZEV share between CARB ACF scenario and CEC's Truck Choice and Freight Model
  - CARB data disaggregated to CEC fuel type shares using baseline forecast



# AATE Zero-Emission Truck and Bus Stock

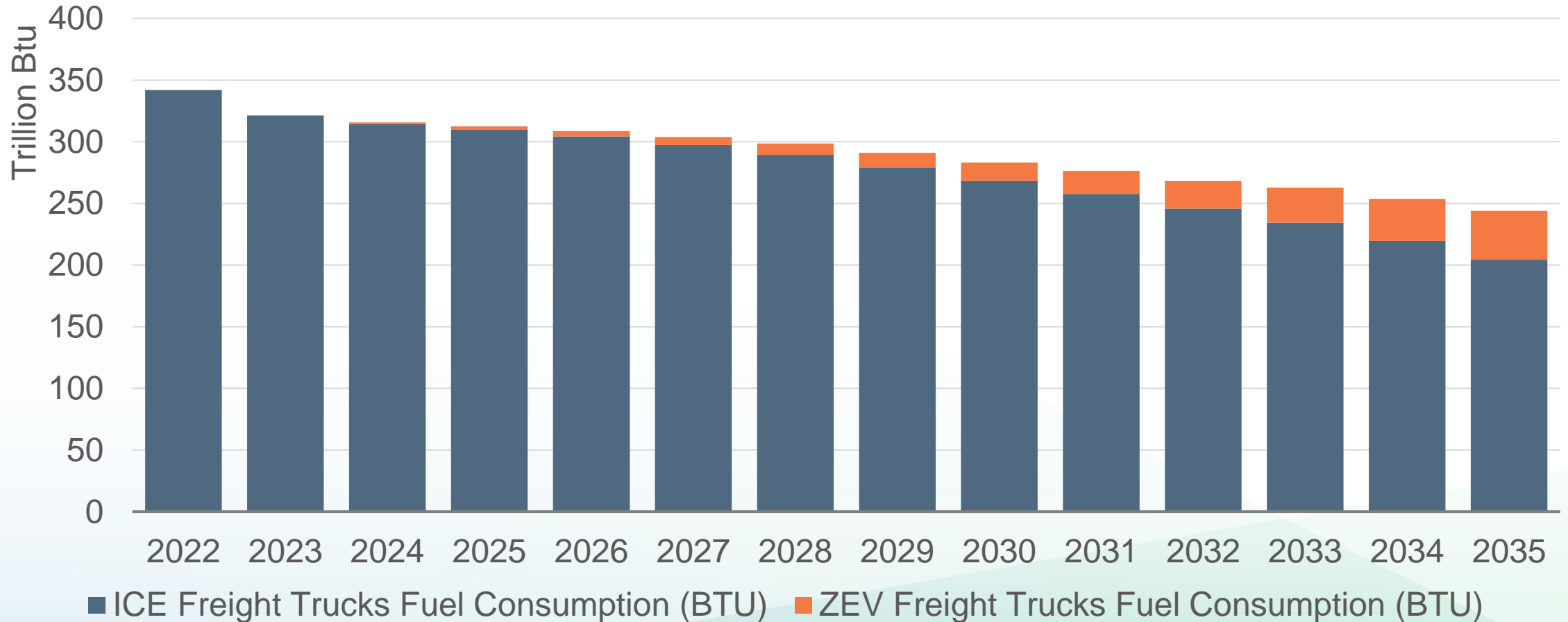
## Scenario Comparison of Zero-Emission Truck and Bus Stock





# AATE 3 Freight Truck Fuel Consumption

Freight Truck Fuel Consumption (British Thermal Units, Btu)  
AATE 3



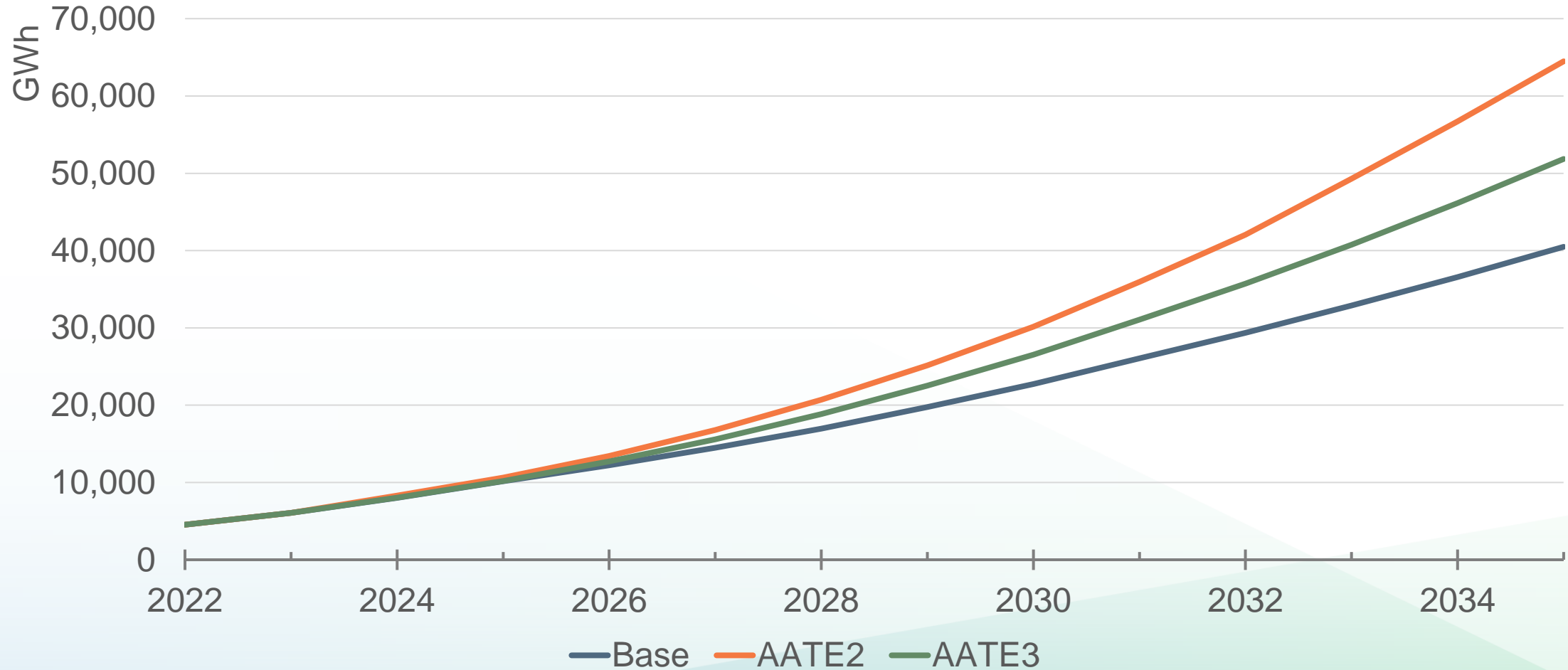


# AATE 3 Main Takeaways



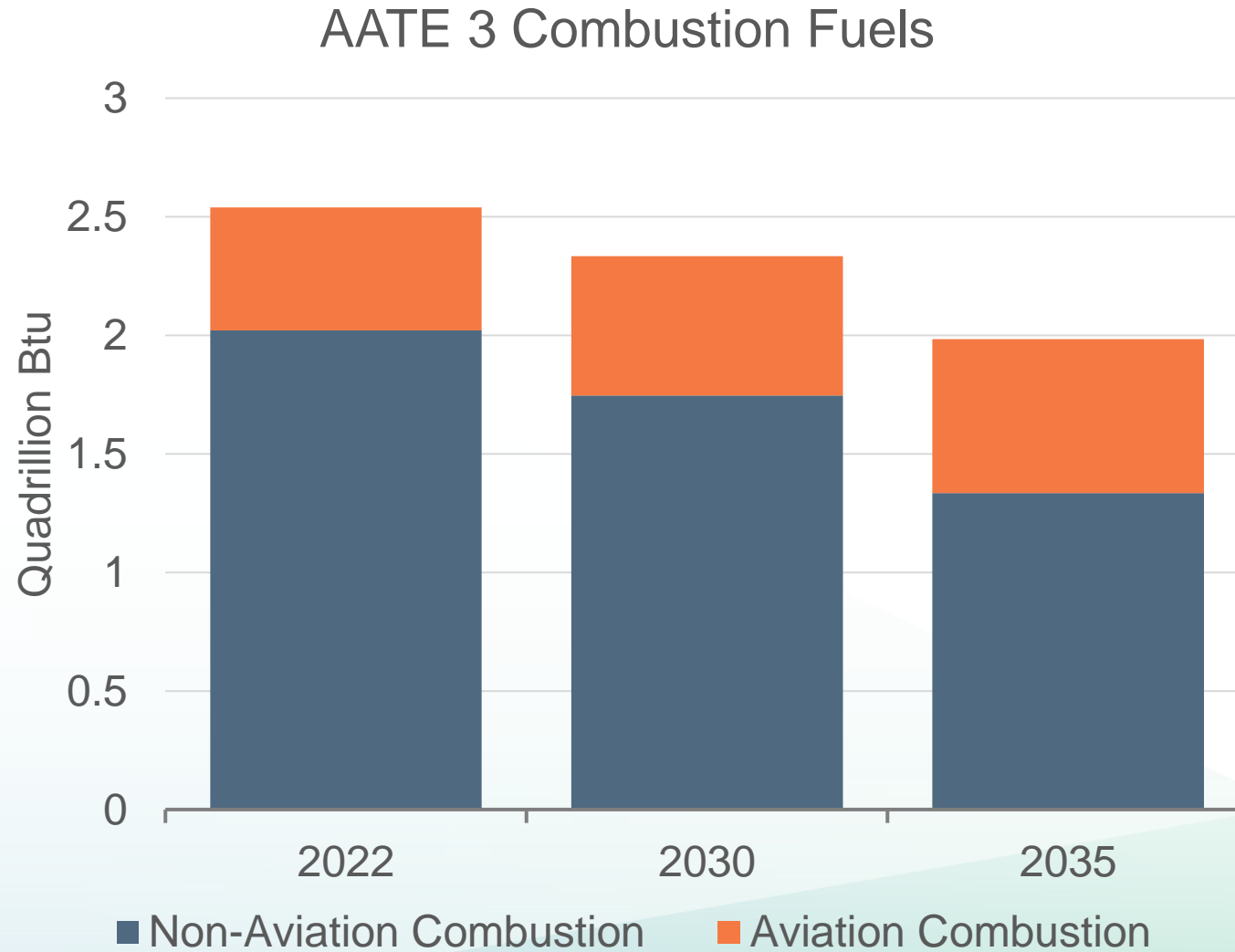
# Scenario Comparisons of Transportation Electrification

## Transportation Electrification Demand





# Combustion Fuels Decline





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# Thank You!

Questions Via Email

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# Appendix





# Truck Stock Comparison: CEC Forecast and CARB ACF Scenario

Comparison of MDHD GVWR3 to GVWR8 Truck Stock Forecasts

Calendar Year	CARB Baseline (ACT Only) Total ZETs	CARB ACT + ACF Total ZETs	CEC Baseline Total ZETs	AATE 2 Total ZETs	AATE 3 Total ZETs
2024	2,271	13,892	4,397	4,882	14,350
2025	5,801	25,376	11,214	12,542	28,067
2026	10,522	40,466	19,898	22,546	44,932
2027	17,460	62,188	33,767	37,975	66,386
2028	27,393	84,526	51,485	58,652	92,917
2029	40,490	113,341	73,950	85,363	122,866
2030	56,650	146,820	98,146	116,844	156,379
2031	76,138	185,461	126,512	154,961	194,780
2032	97,419	225,802	155,056	189,961	236,838
2033	120,497	265,821	184,468	226,627	286,561
2034	145,280	311,533	213,383	264,430	335,516
2035	171,394	360,109	245,747	307,138	385,452