Transportation Electrification in the Energy Commission's 2016-2026 IEPR Demand Forecast

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Background: IEPR Demand Forecast

- Full forecast every two years (odd-numbered years)
- Forecast update in even-numbered years
  - Limited update: Econ-demo and historic consumption
- Forecast used in LTPP, TPP, ISO Flexibility Studies, CPUC-ISO Resource Adequacy
- Forecast done individually for 8 planning areas

Background: IEPR Demand Forecast

- Forecasts by sector
  - Residential, commercial, industrial, agriculture/water pumping, and other
- Transportation electricity forecasts provided by Transportation Unit in Demand Analysis Office
  - Transportation electricity combined with other sectors
- Three demand cases: high, mid, and low

Transportation Electrification Categories

- Light-duty vehicles (BEV and PHEV)
- Medium and heavy-duty on-road vehicles
- Transit
- High-speed rail
- Port electrification
- Other: truck stops, forklifts, truck refrigeration units, airport ground support, hybrid work trucks

Light-Duty Vehicles

- Forecasted using vehicle choice model
  - Choices defined by size, body type, fuel type, and vintage, and technology
  - EVs compete with gasoline and other fuel types
  - “Utility” of each vehicle type depends on vehicle attributes (fuel cost, price, performance, etc.)
- EVs in mid demand case consistent with ARB ZEV mandates

Medium and Heavy Duty Vehicles

- EV and other AFV penetration forecasted using Argonne Truck 5 Model
- Market penetration based on fuel savings and vehicle cost
- Model analyzes a baseline (gasoline or diesel) and up to three alternatives
- EVs limited to GVWR 4-6 truck classes

Transit

- Transit bus EV penetration guided by the ARB's *Advanced Clean Transit Proposal*
- Also guided by local studies, including King County
- Electric penetration mainly for trolley buses (Stock of 375 in mid case by 2026)
- Also limited penetration of standard buses (Stock of 50 by 2026)
- No rail electrification

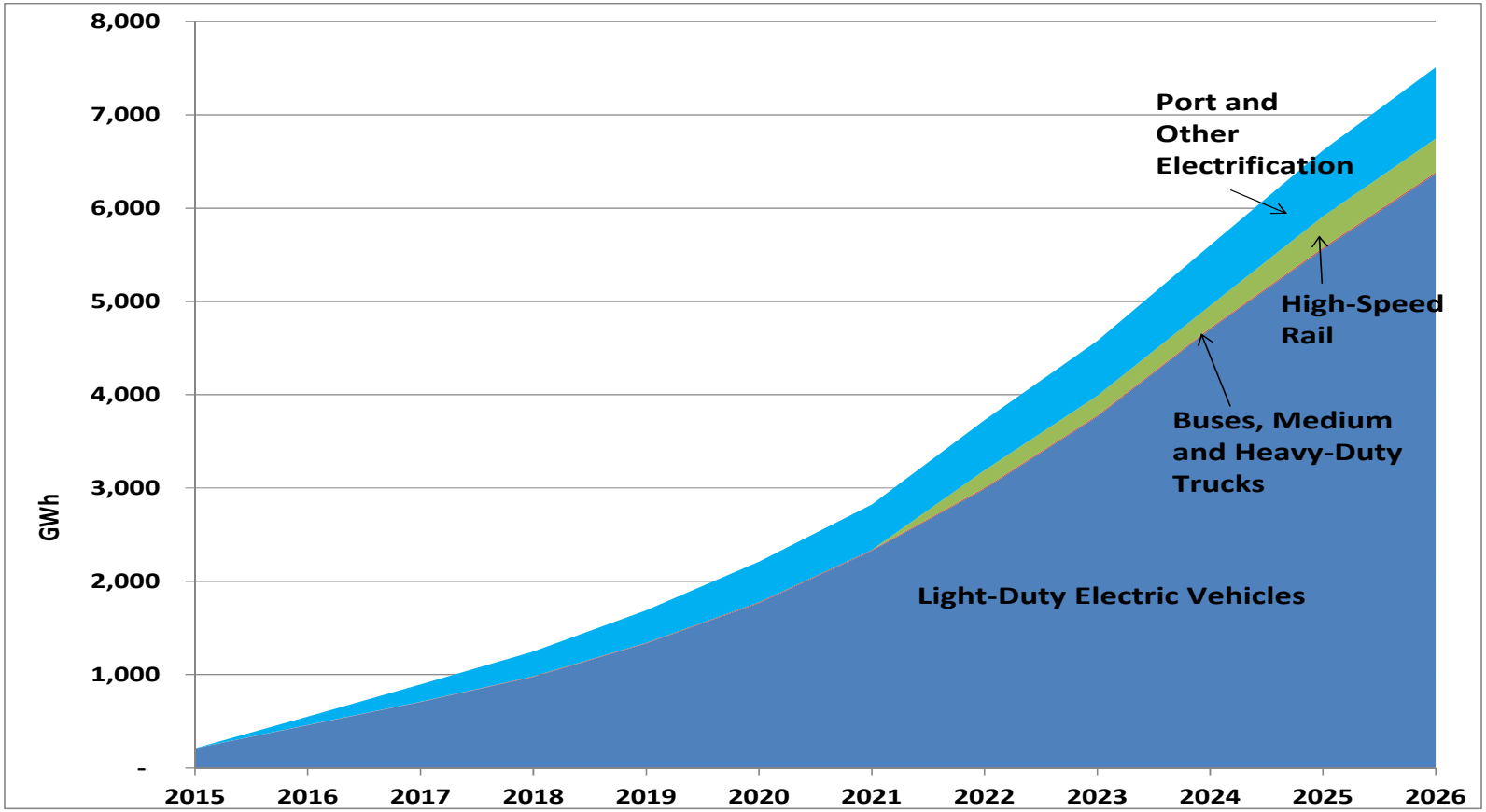
High-Speed Rail

- Forecast provided by the California High-Speed Rail authority
- Scheduled to begin operation in 2022
- Only considered initial operation section: Merced to San Fernando Valley
- Split into PG&E and SCE service territories based on track miles

Port and Other Electrification

- Analysis by UC Davis/Aspen Environmental Group
- First projects total stock for each application
- Estimates of electric penetration for each application
  - Uses current reports, recent trends, and regulations
  - Discussions with stakeholders, including Port Authorities and utilities

Impacts (Incremental) on Electricity Consumption



More Information

http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-10/TN210539_20160226T101946_Transportation_Energy_Demand_Forecast_20162026.pdf

http://www.energy.ca.gov/2015_energypolicy/documents/2015-11-24_presentations.html

Thank You!