

06-IEP-1A

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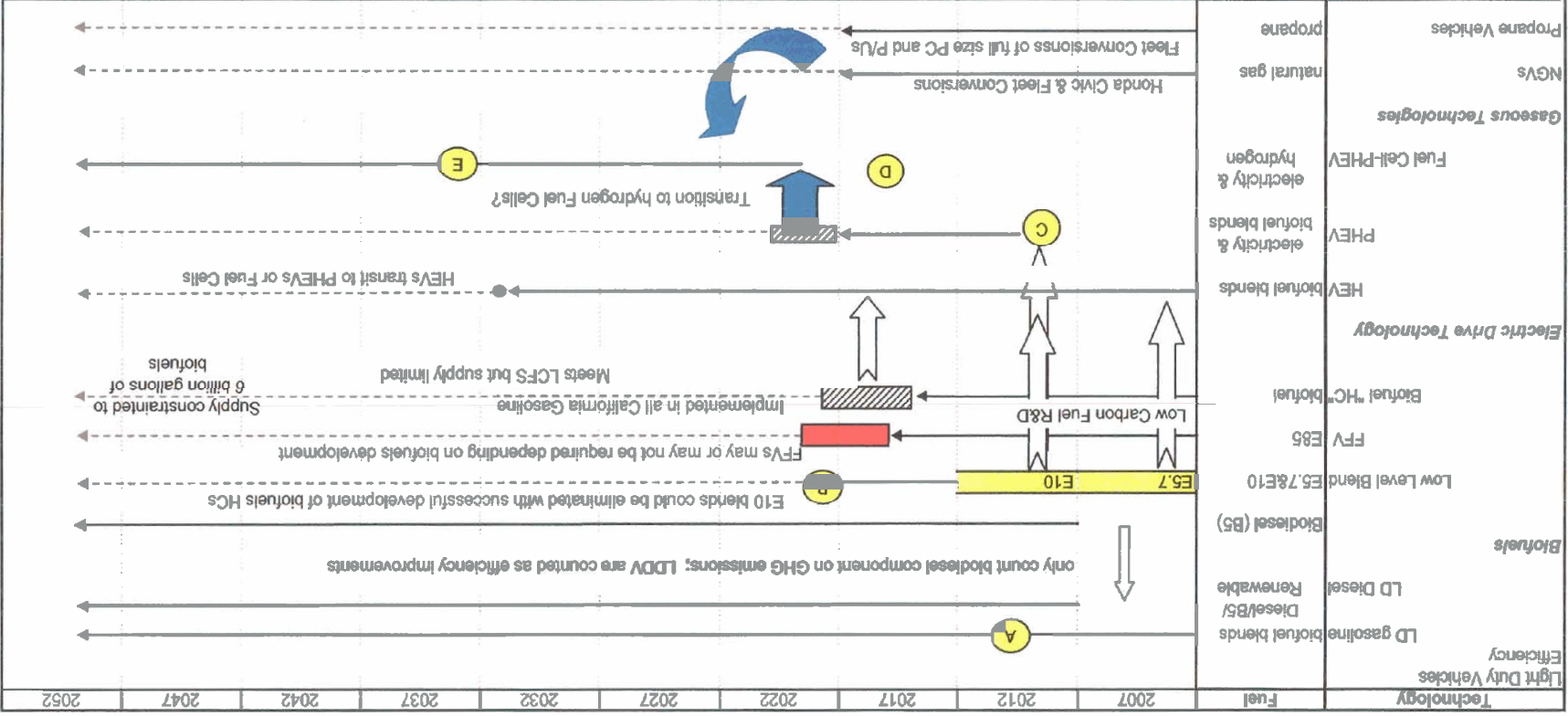
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State Alternative Fuels Plan

Moderate Growth Case Examples of Fuel Mixes

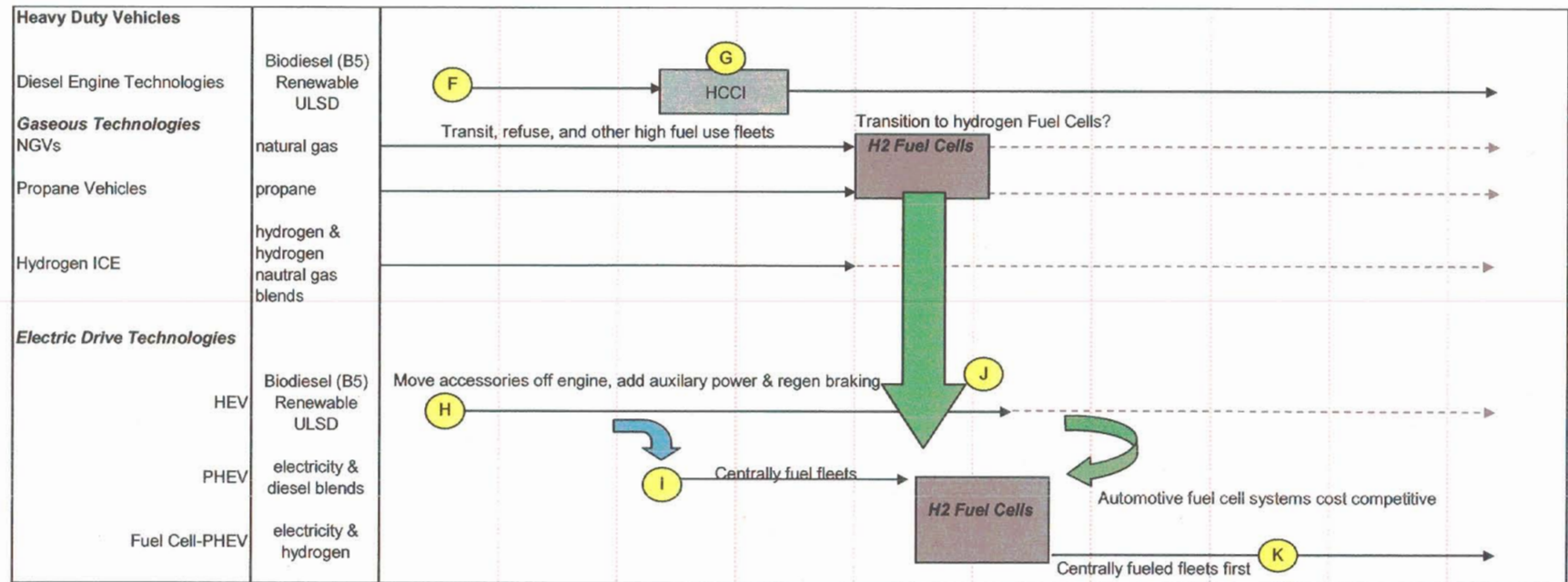
Alternative Fuel Technology Road Map, 2007 through 2050



Major Technical Milestones Light Duty Vehicles

- A gasoline approaches diesel efficiencies with HCCI type technologies 2012-2017
- B biofuel "HC" standardized by oil companies to meet LCFS in 2020
- C Lithium Ion battery developed for IHEV applications and ICE PHEVs available in 2012
- D hydrogen FC technologies achieve "cost" targets for mass production; local gaseous hydrogen production using steam reformed natural gas 2020-2035
- E centralized hydrogen production and distribution 2035-2040

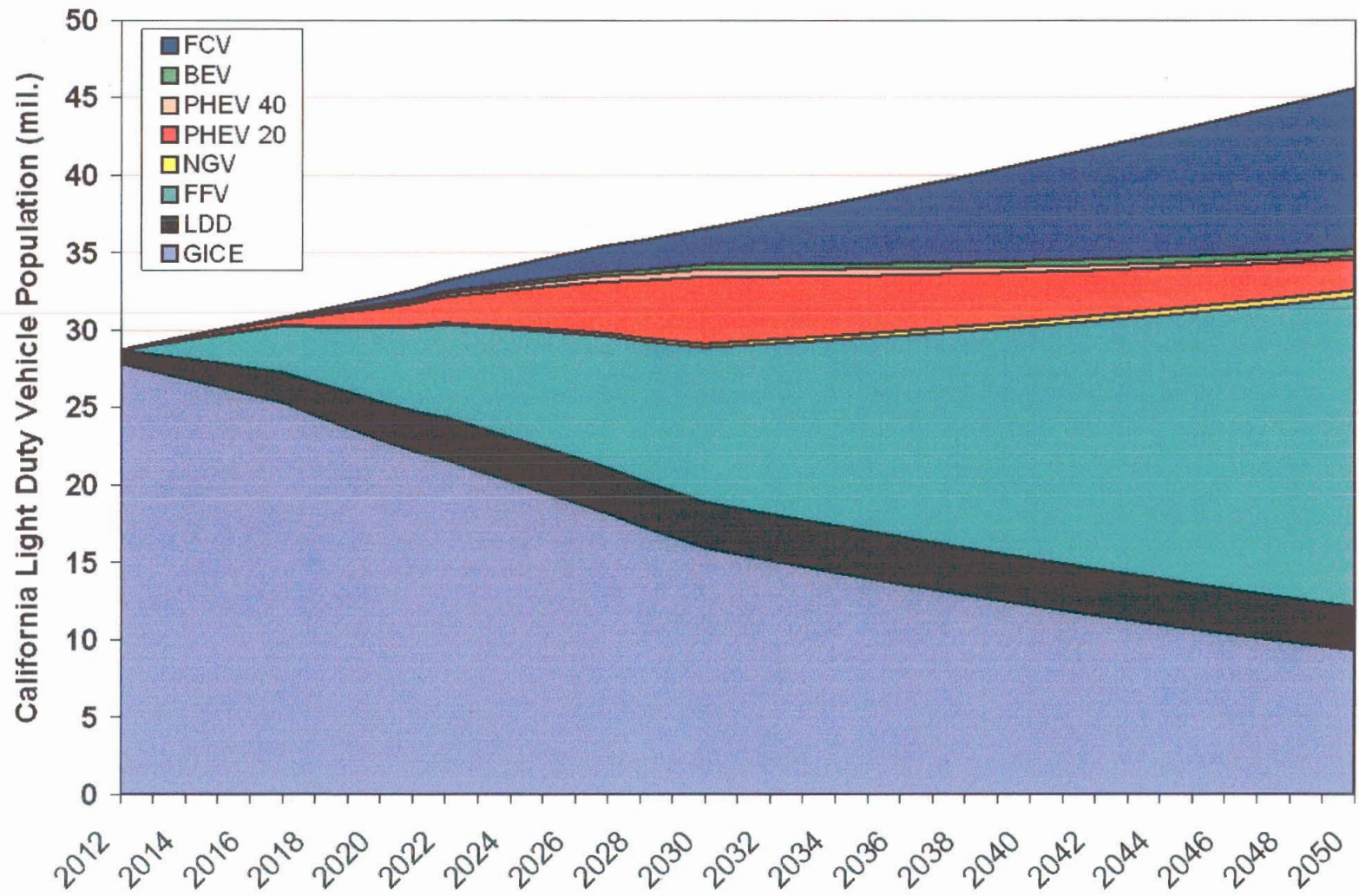
Alternative Fuel Technology Road Map, 2007 through 2050 Continued



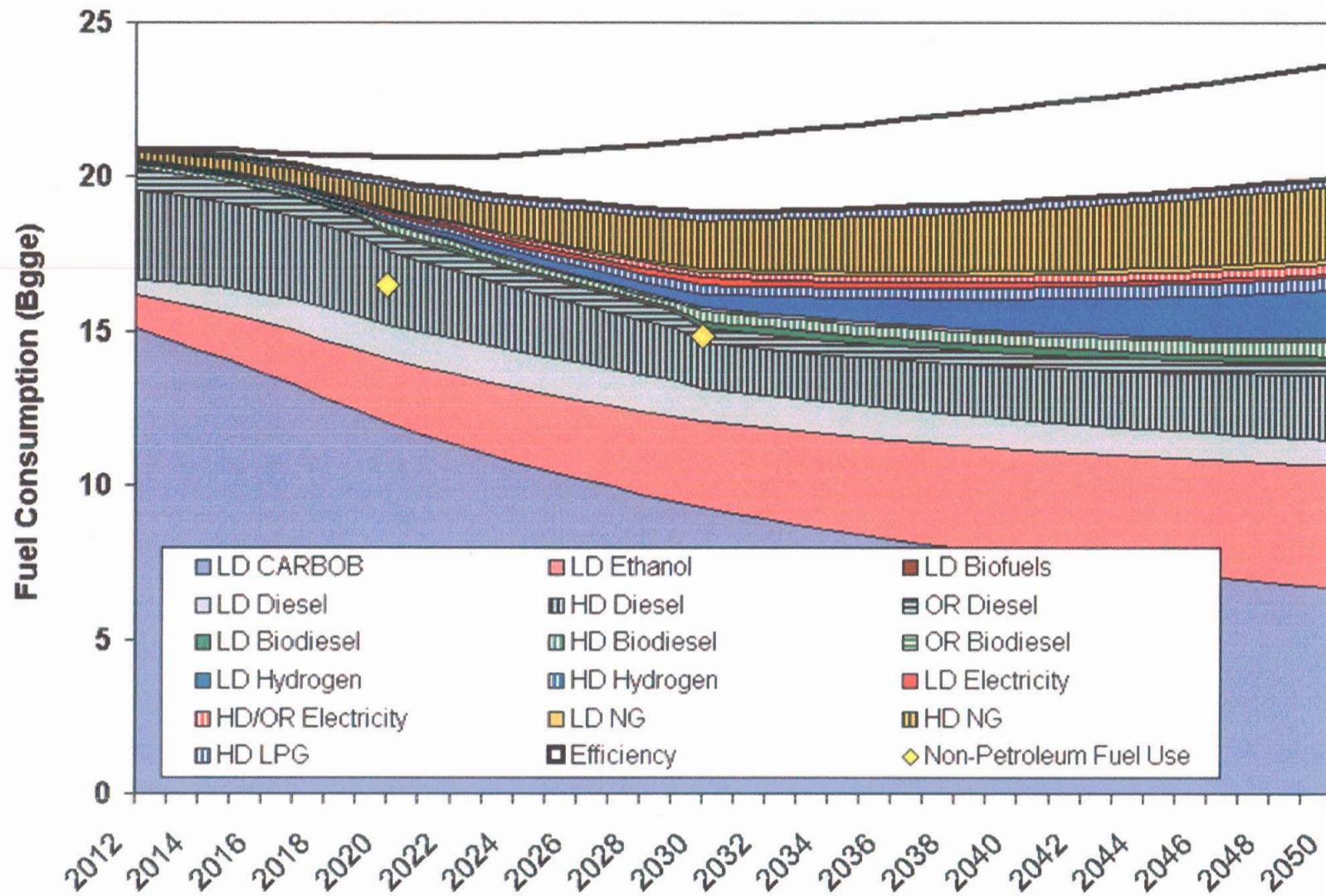
Major Technical Milestones Heavy Duty Vehicles

- F Biodiesel/renewable diesel added to California ULSD spec 2012
- G Diesel technology starts transition to HCCI 2017
- H Hybrid technology starts to be incorporated in vehicle platforms
- I Lithium Ion battery technology advances PHEV technology to vehicle platforms
- J fuel cell costs competitive with diesel ICEs, fuel cell technology moves to heavy duty niche market
- K centralized hydrogen production broadens infrastructure and vehicle applications

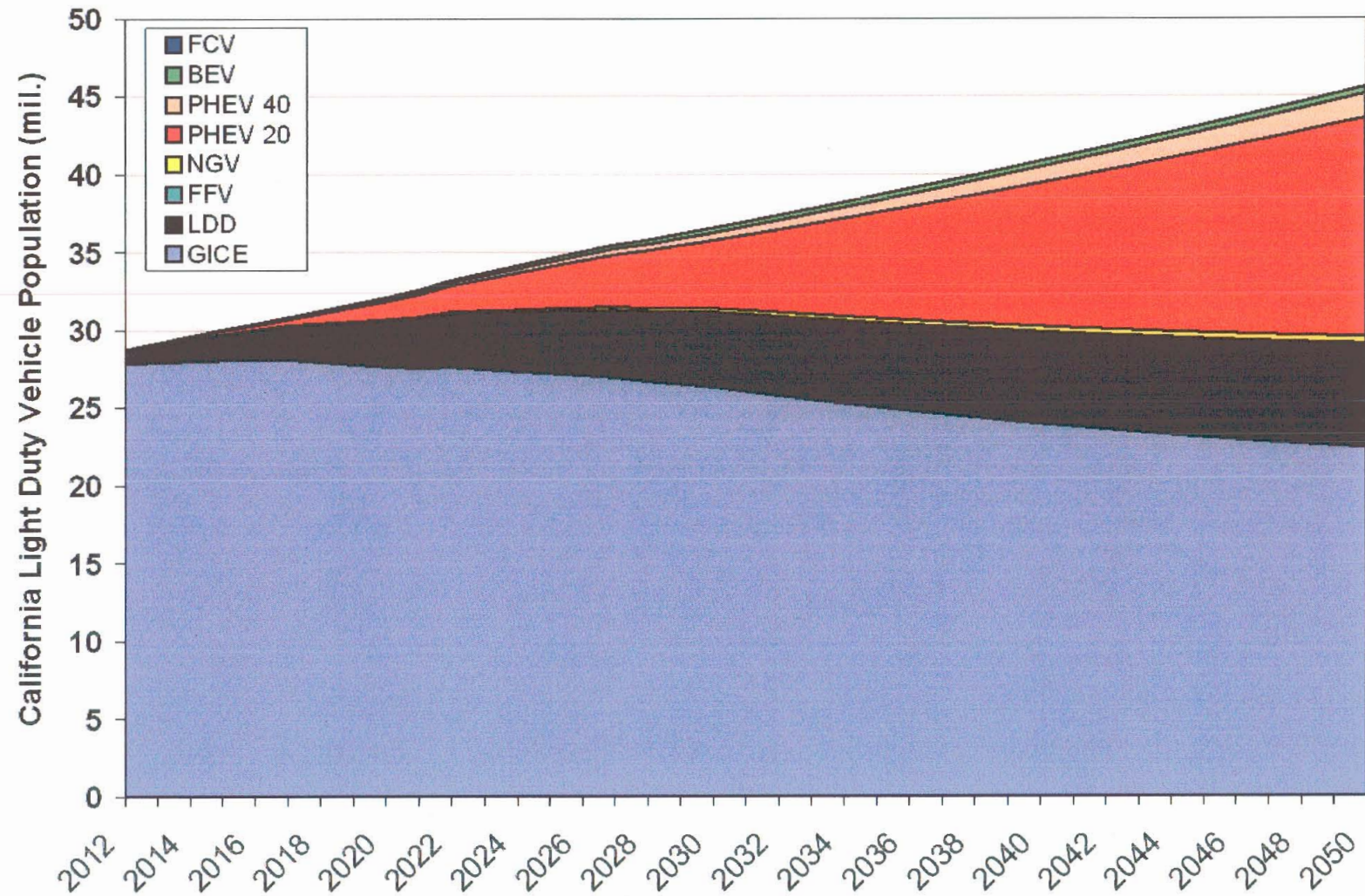
Vehicle Population Results for Example 1



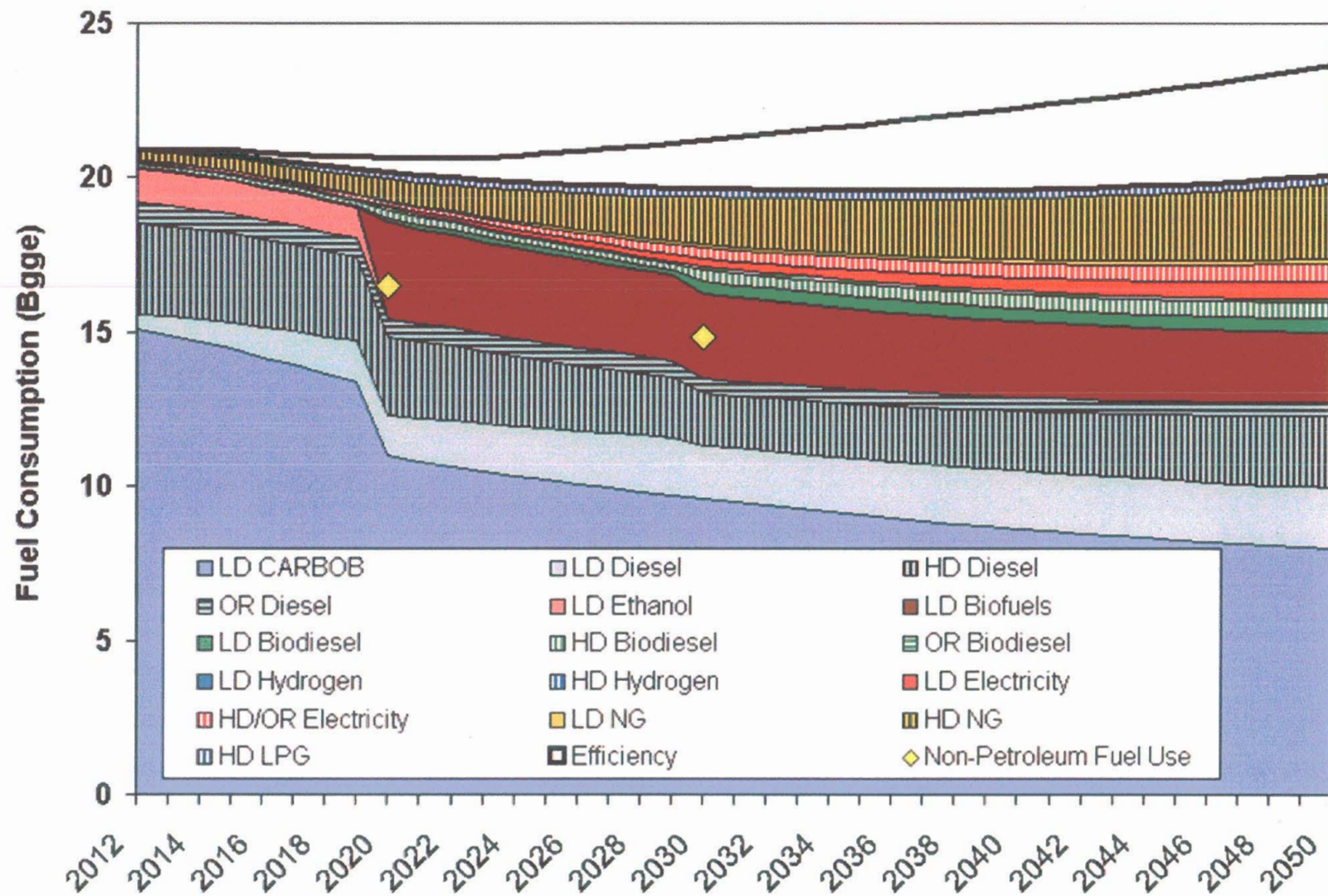
All Vehicles Mix - Fuel Consumption for Example 1



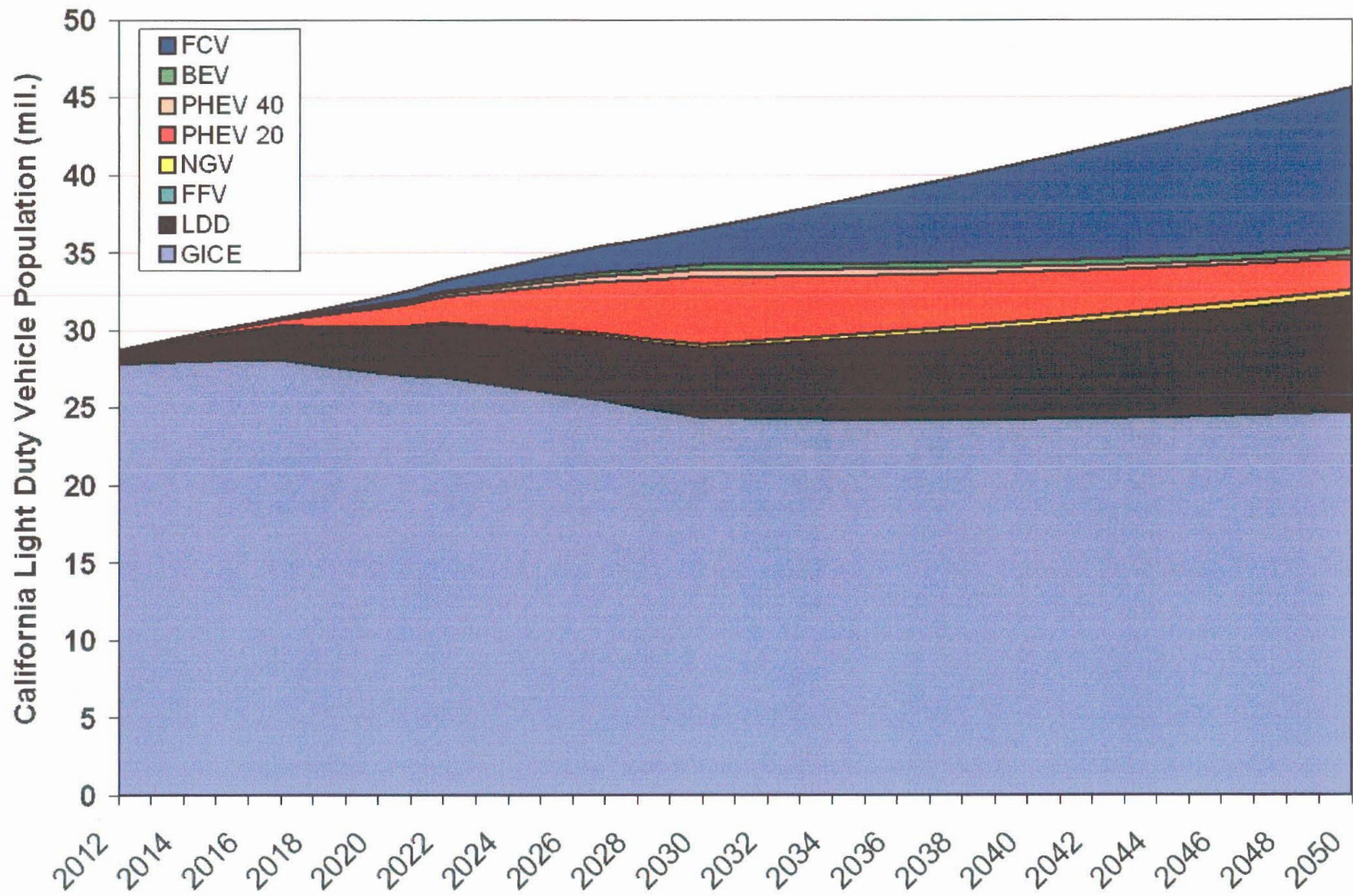
Vehicle Population Results for Example 2



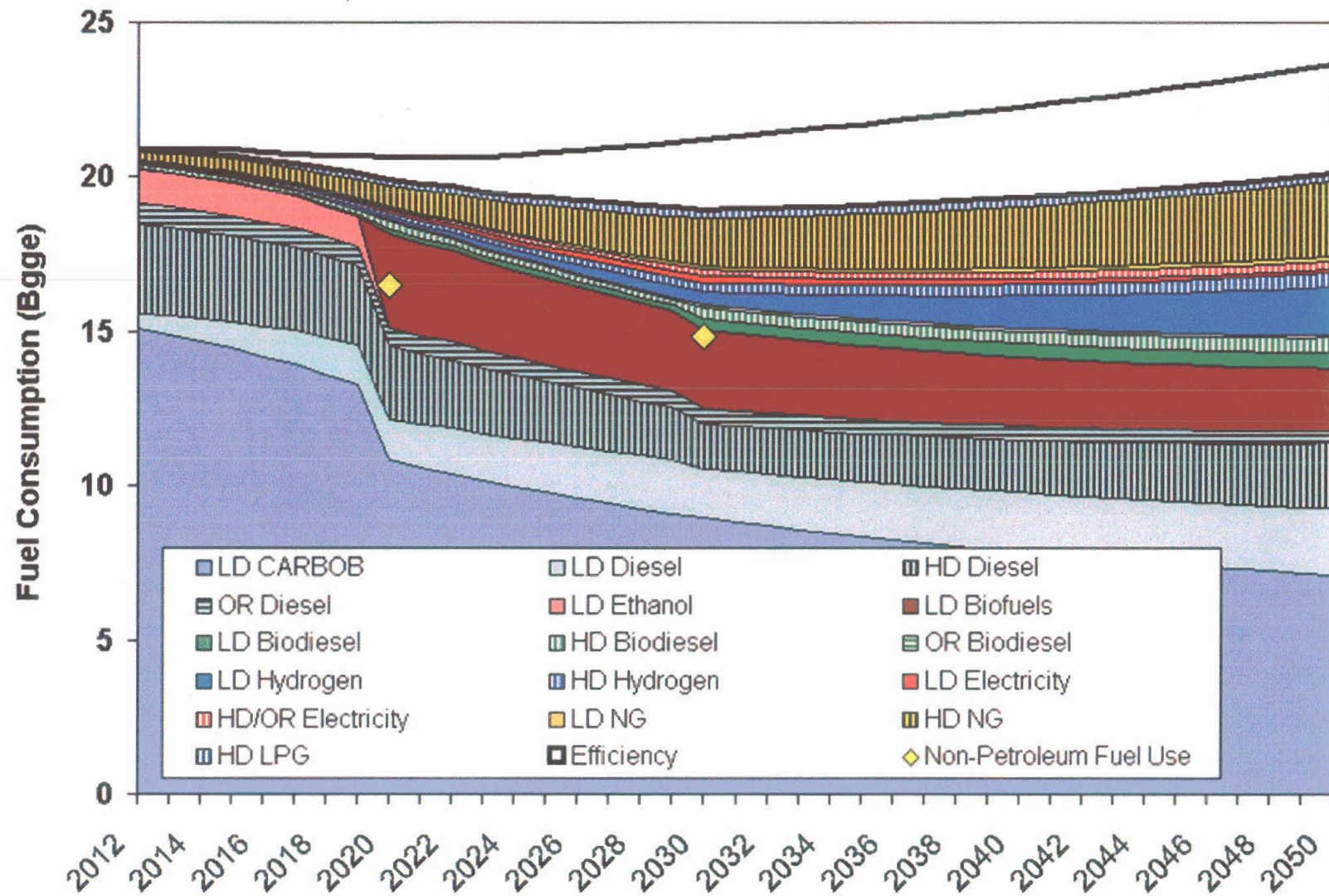
All Vehicles Mix - Fuel Consumption for Example 2



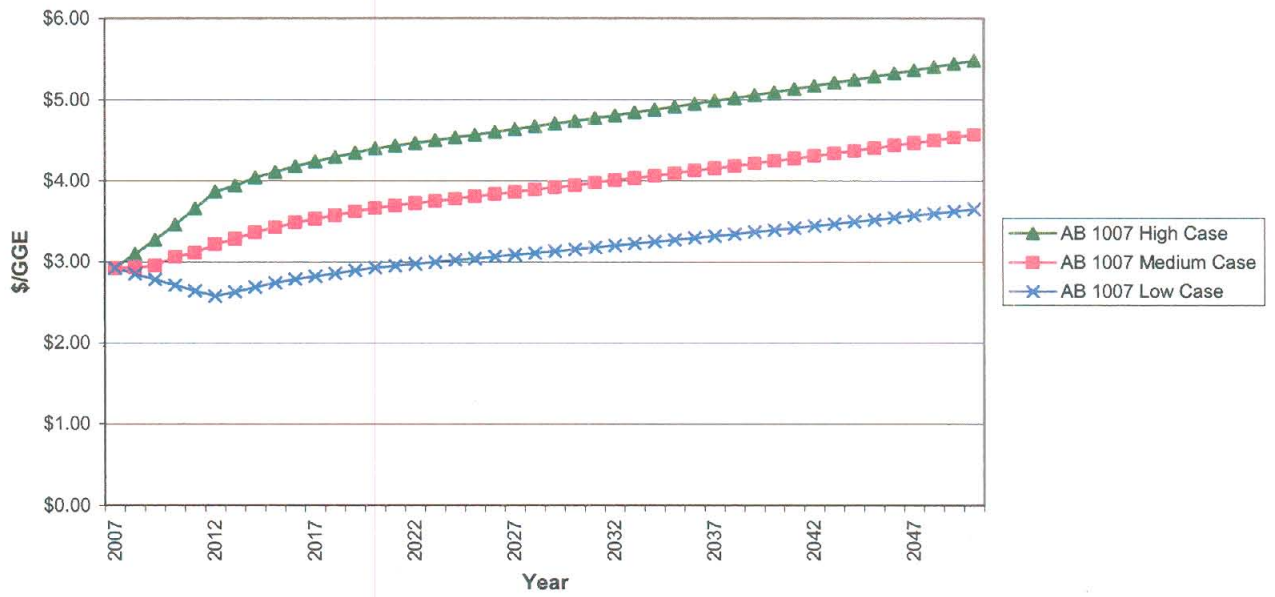
Vehicle Population Results for Example 3



All Vehicles Mix - Fuel Consumption for Example 3



RFG Price Forecast



Diesel Price Forecast

