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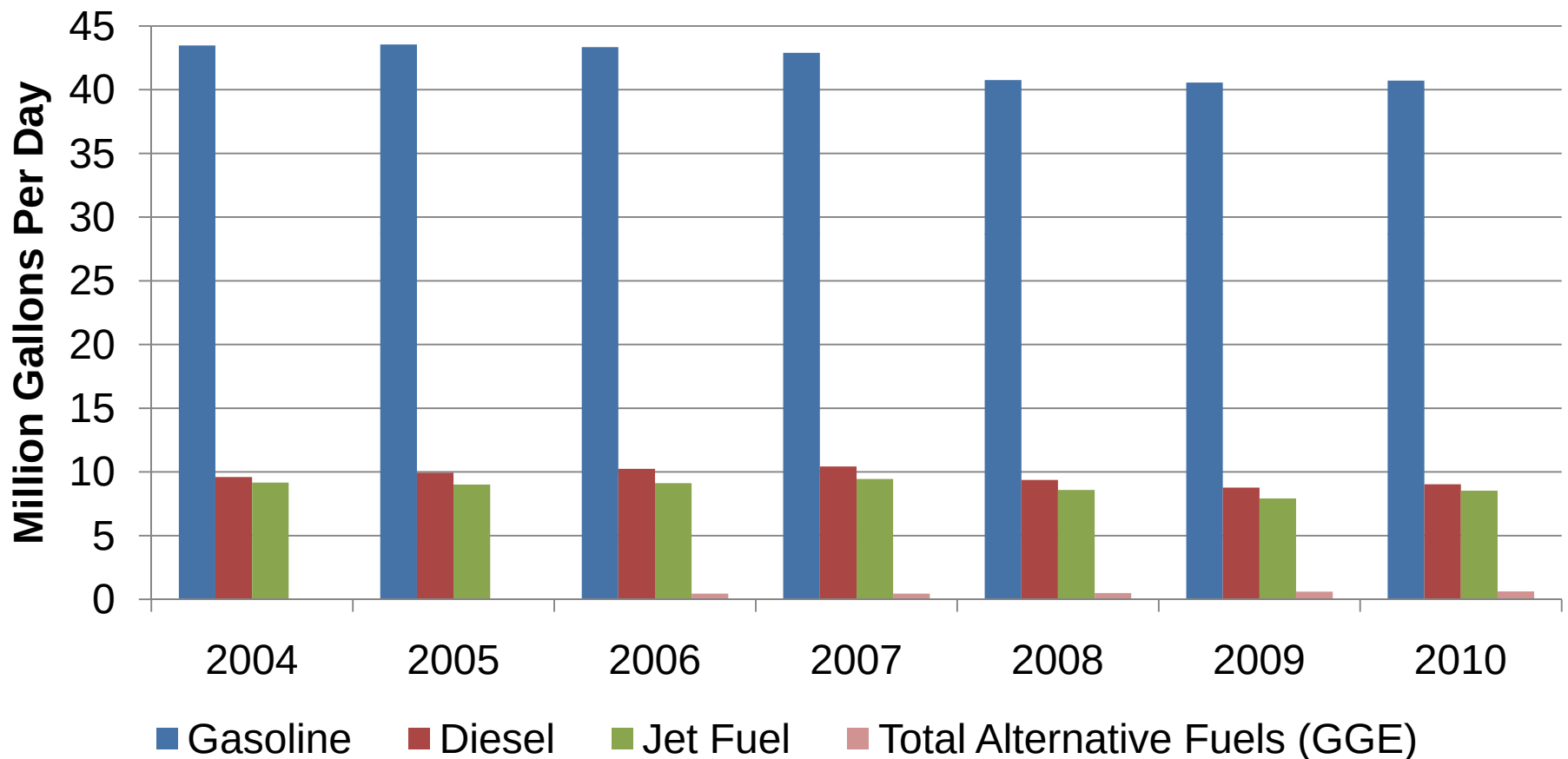
Trends in Transportation Energy Consumption

Transportation Committee Workshop
Transportation Energy Forecasts and Analyses for the
2011 Integrated Energy Policy Report
Sacramento, California
September 9, 2011

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California Energy Commission



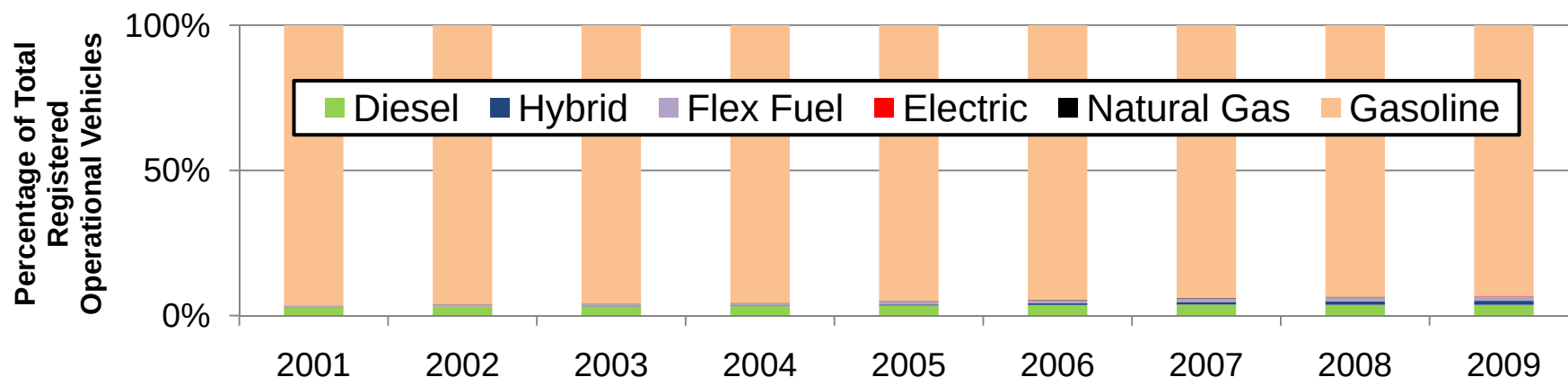
Finished Retail Transportation Energy Consumption



Source: California Energy Commission, Board of Equalization, National Transit Database



California On-Road Vehicle Fleet



Total Vehicle Counts							
	Gasoline	Diesel	Hybrid	Flex Fuel	Electric	Natural Gas	Total
2001	23,206,117	704,754	6,609	97,611	3,314	4,423	24,029,290
2002	23,821,892	757,785	15,159	129,734	12,592	30,037	24,770,432
2003	24,939,494	818,615	24,182	183,546	24,145	22,289	26,014,352
2004	25,158,427	863,290	45,263	195,752	15,231	26,670	26,306,356
2005	25,830,453	944,698	91,438	269,857	14,960	31,761	27,194,069
2006	26,125,222	1,005,894	154,165	300,806	15,103	32,847	27,642,889
2007	26,191,963	1,060,166	243,730	340,910	14,995	33,779	27,893,303
2008	26,020,525	1,036,569	333,021	381,584	15,859	34,484	27,828,930
2009	25,588,452	1,016,406	384,568	409,636	16,281	36,111	27,458,229
CAGR	1.23%	4.68%	66.19%	19.64%	22.02%	30.01%	1.68%

Source: California Energy Commission, California Department of Motor Vehicles

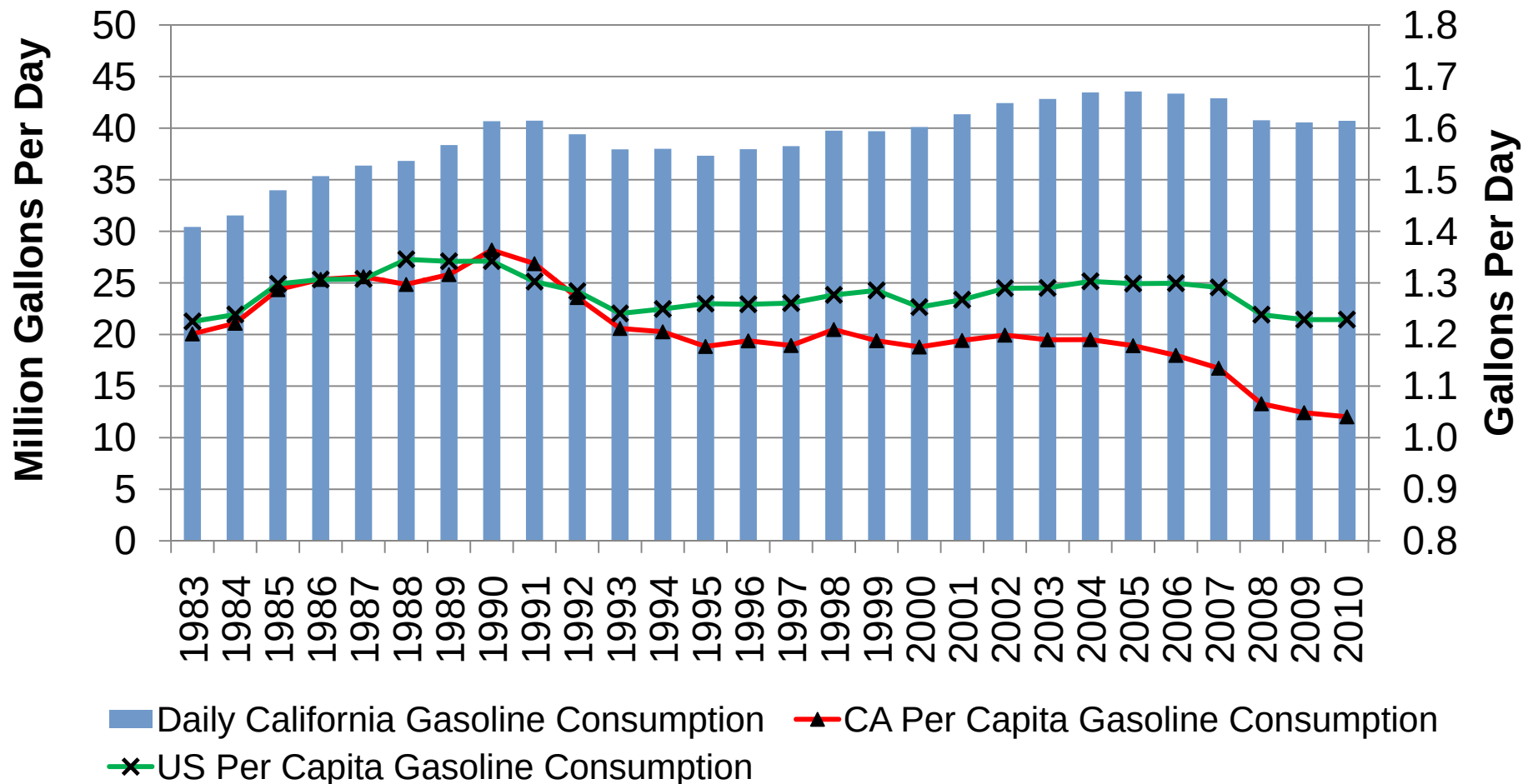


Trends in Finished Gasoline Consumption

- 4 years of consecutive daily consumption declined from 43.5 million gallons a day in 2005 to 40.6 million gallons a day in 2009.
- On an annual basis, California has experienced 5 years of demand decline (15.9 billion in 2004 to 14.8 billion in 2009), before increasing slightly in 2010 to 14.86 billion gallons.
- From 2004 to 2008, average California regular grade gasoline prices have risen from \$2.11 to \$3.52, before falling to \$2.67 in 2009.
- From 2004 to 2010, California's share of U.S. gasoline consumption has fallen 11.4 percent to 10.7%.
- The percent of ethanol in gasoline has also risen from 6% in 2004 to 10% in 2010.



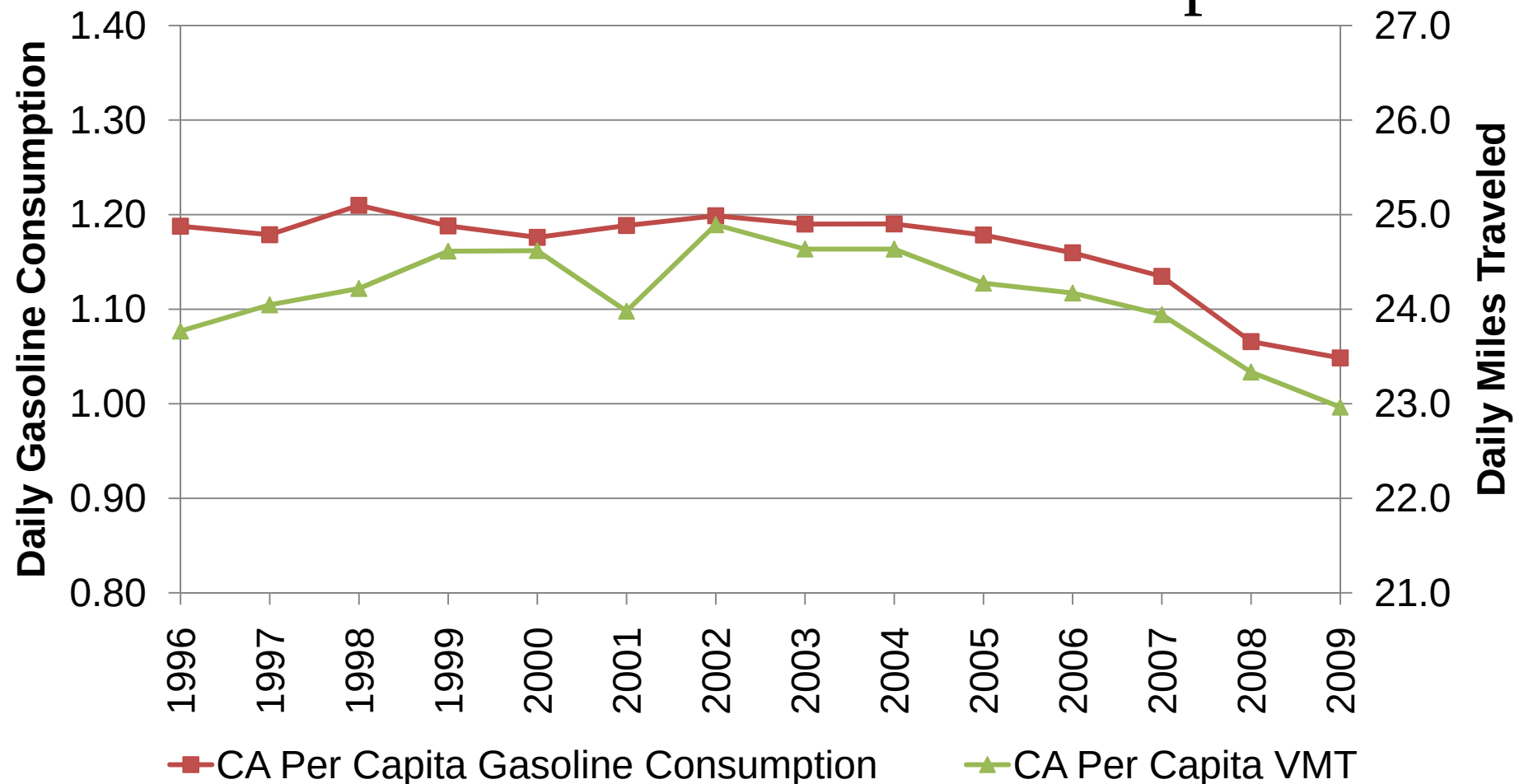
California Total and Per Capita Gasoline Consumption



Source: California Energy Commission, Board of Equalization



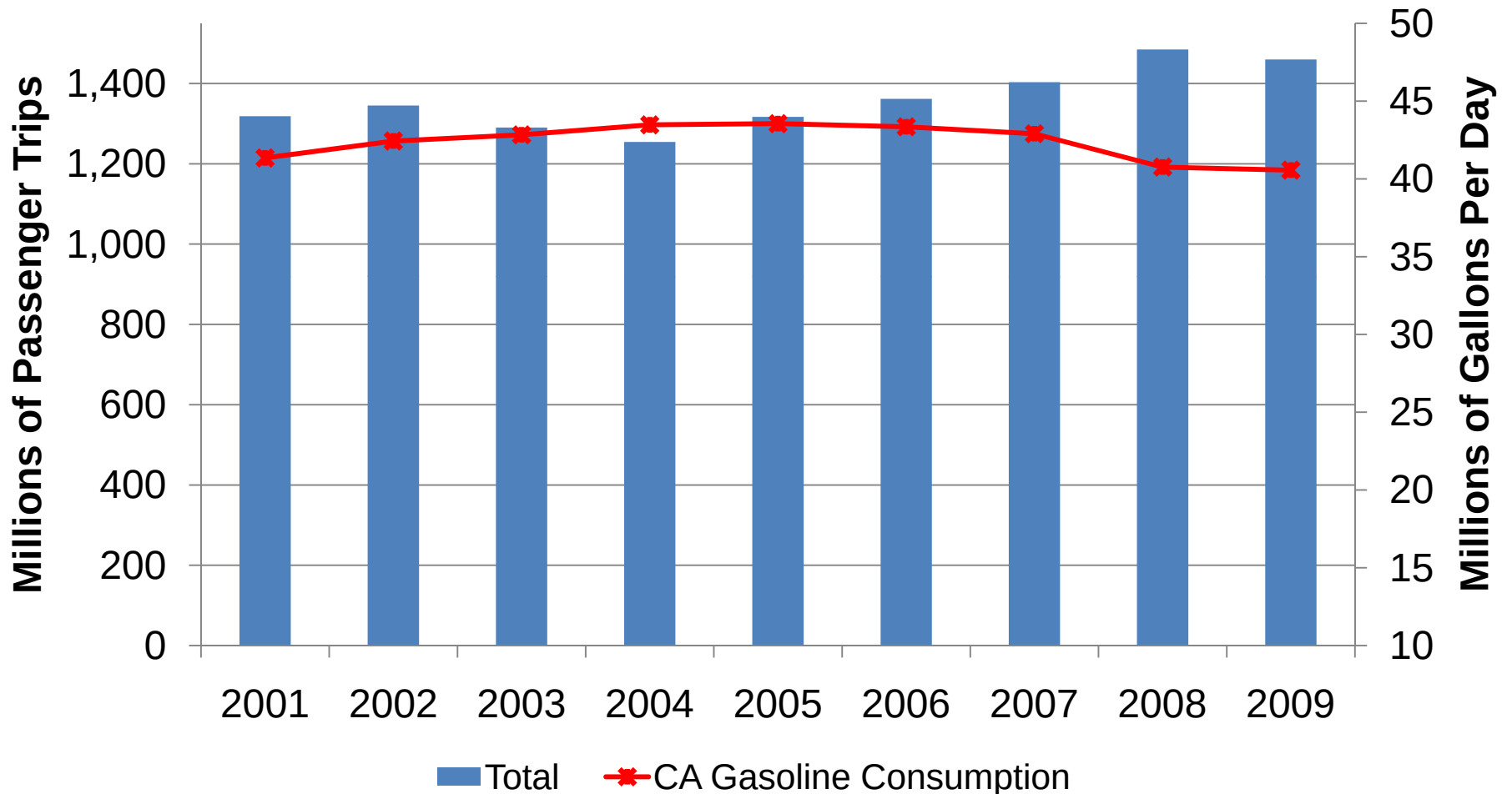
California Per Capita Vehicle Miles Traveled and Gasoline Consumption



Source: California Energy Commission, Board of Equalization, California Department of Transportation



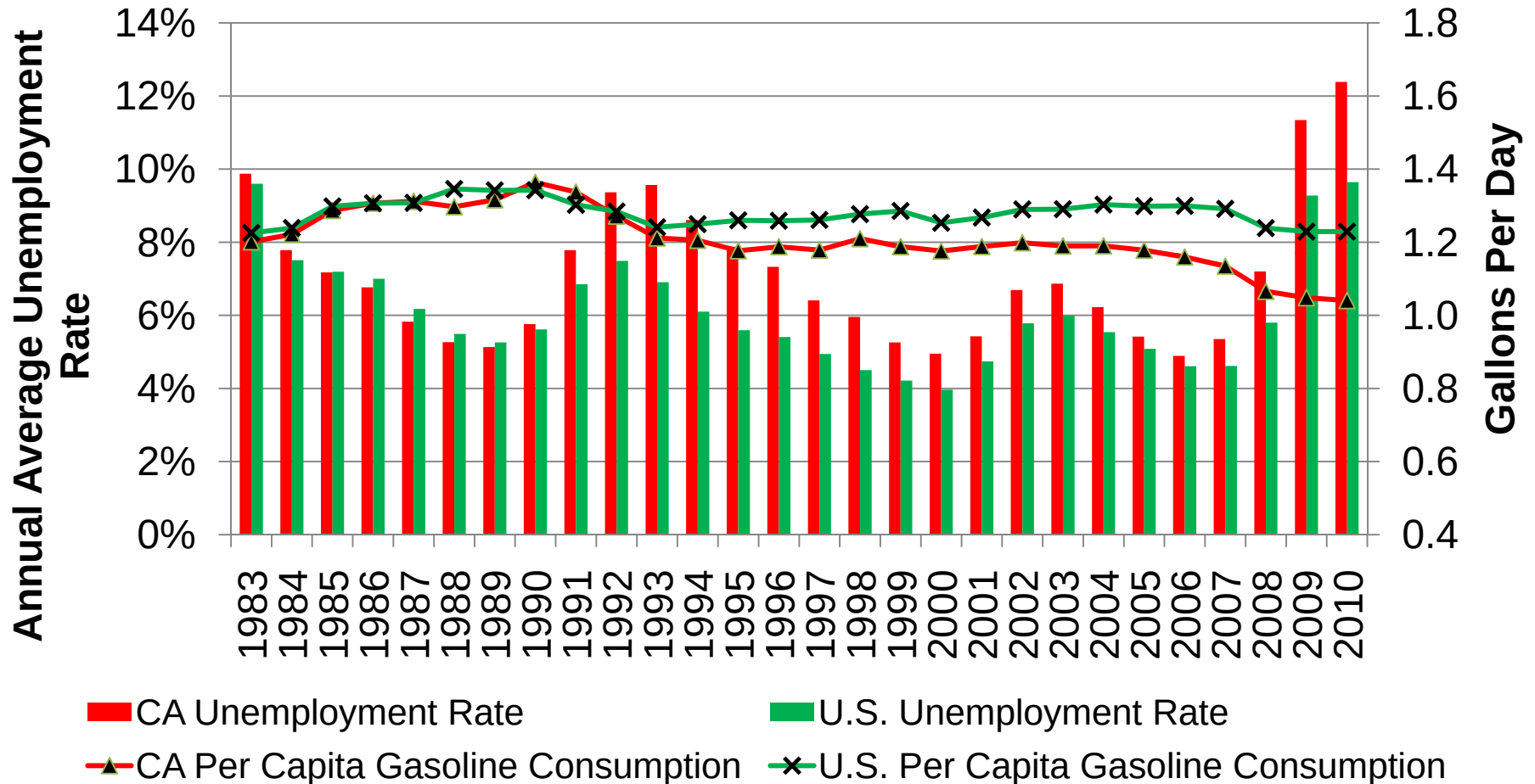
Gasoline Consumption and Transit Ridership



Source: California Energy Commission, Board of Equalization, National Transit Database



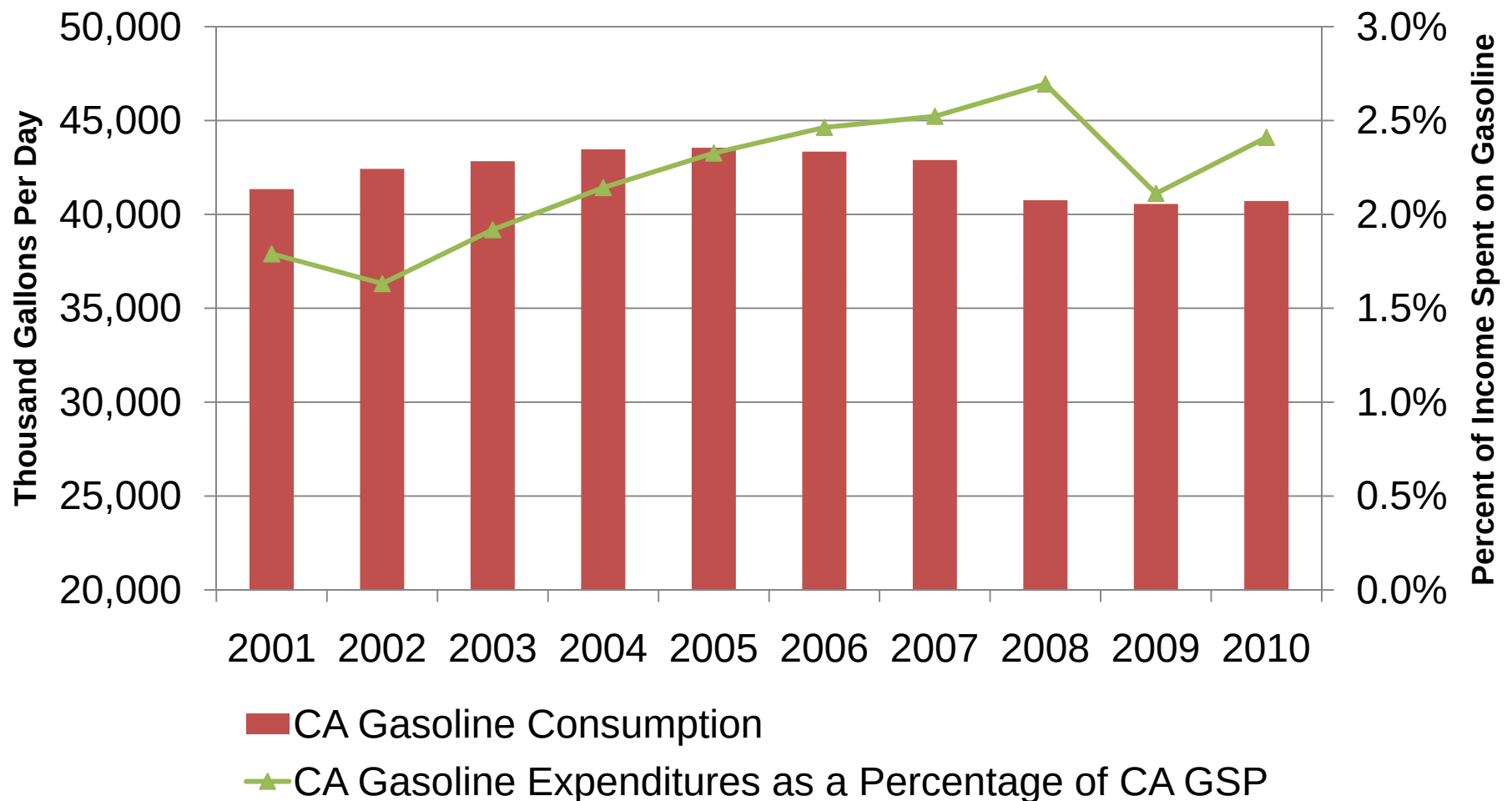
California Per Capita Gasoline Consumption and Unemployment Rates



Source: California Energy Commission, Board of Equalization, Bureau of Labor Statistics



California Gasoline Expenditures and Consumption, with Income.



Source: California Energy Commission, Board of Equalization, Energy Information Administration



Gasoline Summary

- Along with the drops in annual gasoline consumption, California per capita gasoline consumption has fallen from 1.2 gallons a day in 2004 to 1.04 1.2 gallons a day in 2010.
- This fall is accompanied by a dropped in per capita driving over the same time period, from 24.6 miles a day to 22.96 miles a day.
- There has been a rise in California transit ridership over that time period, possibly accounting for some of the decline in gasoline consumption.
- The largest shift in California per capita gasoline consumption occurs from 2007 to 2008 as California unemployment increases from 4.9% in January of 2007 to 9.1% in December of 2008.
- From 2002 to 2008, price increases in gasoline lead to a rise in real gasoline expenditures from 1.6% to 2.7%.

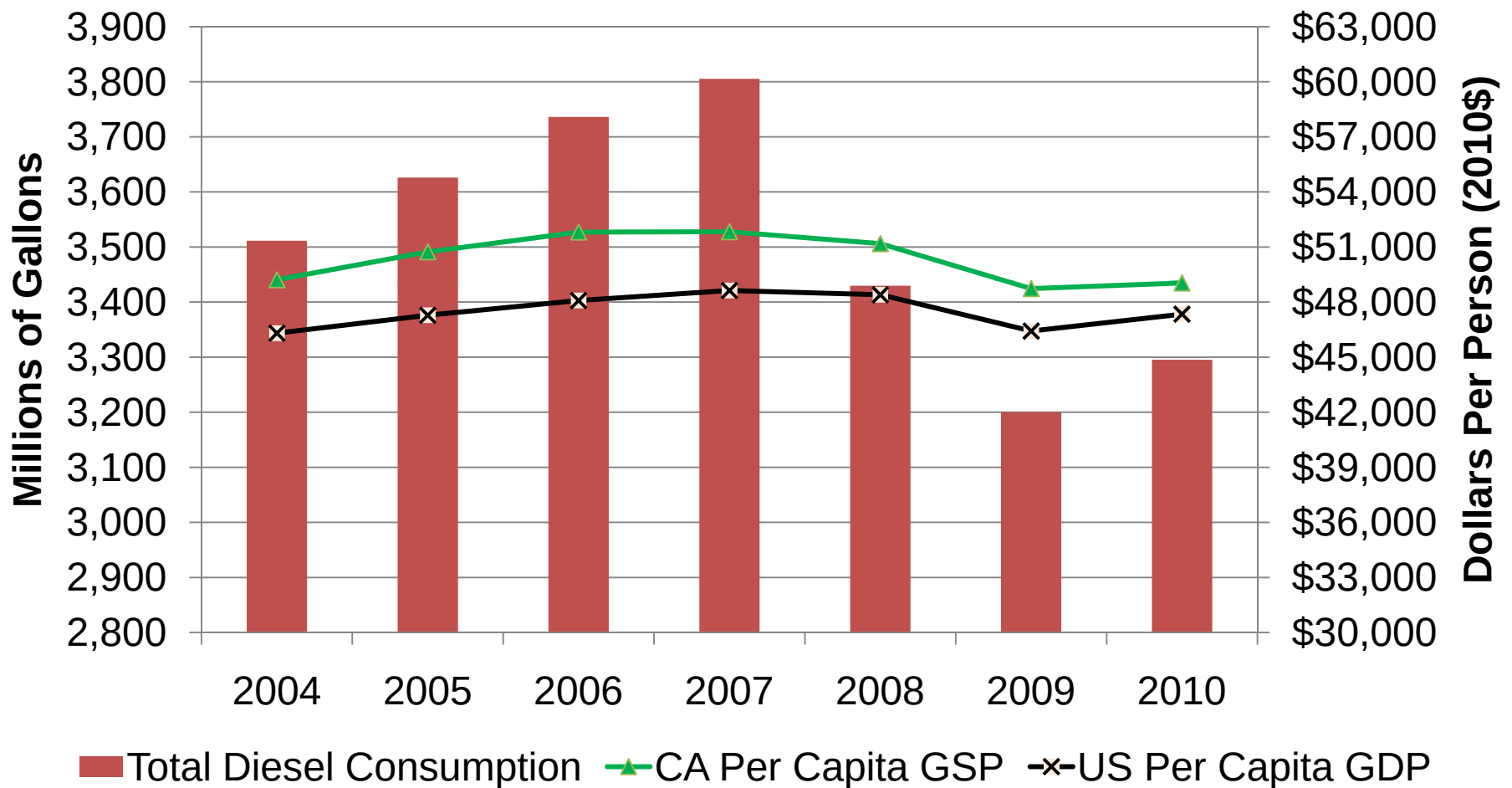


Trends in Diesel and Jet Fuel Consumption

- Diesel and jet fuel consumption in 2010 was 3.3 and 3.1 billion gallons, respectively, roughly 21% to 22% of the size of gasoline consumption
- In 2008 consumption for both fuels declined, from 3.8 to 3.4 billion gallons for diesel and from 3.4 to 3.1 billion gallons for jet fuel.
- With consumption of both fuels being linked to freight goods movement, consumption of these fuel seem strongly linked to Californian income.
- Like gasoline prices, California diesel prices rose from an average of \$2.09 in 2004 to an average of \$3.93 in 2008, before falling to \$2.60 in 2009.



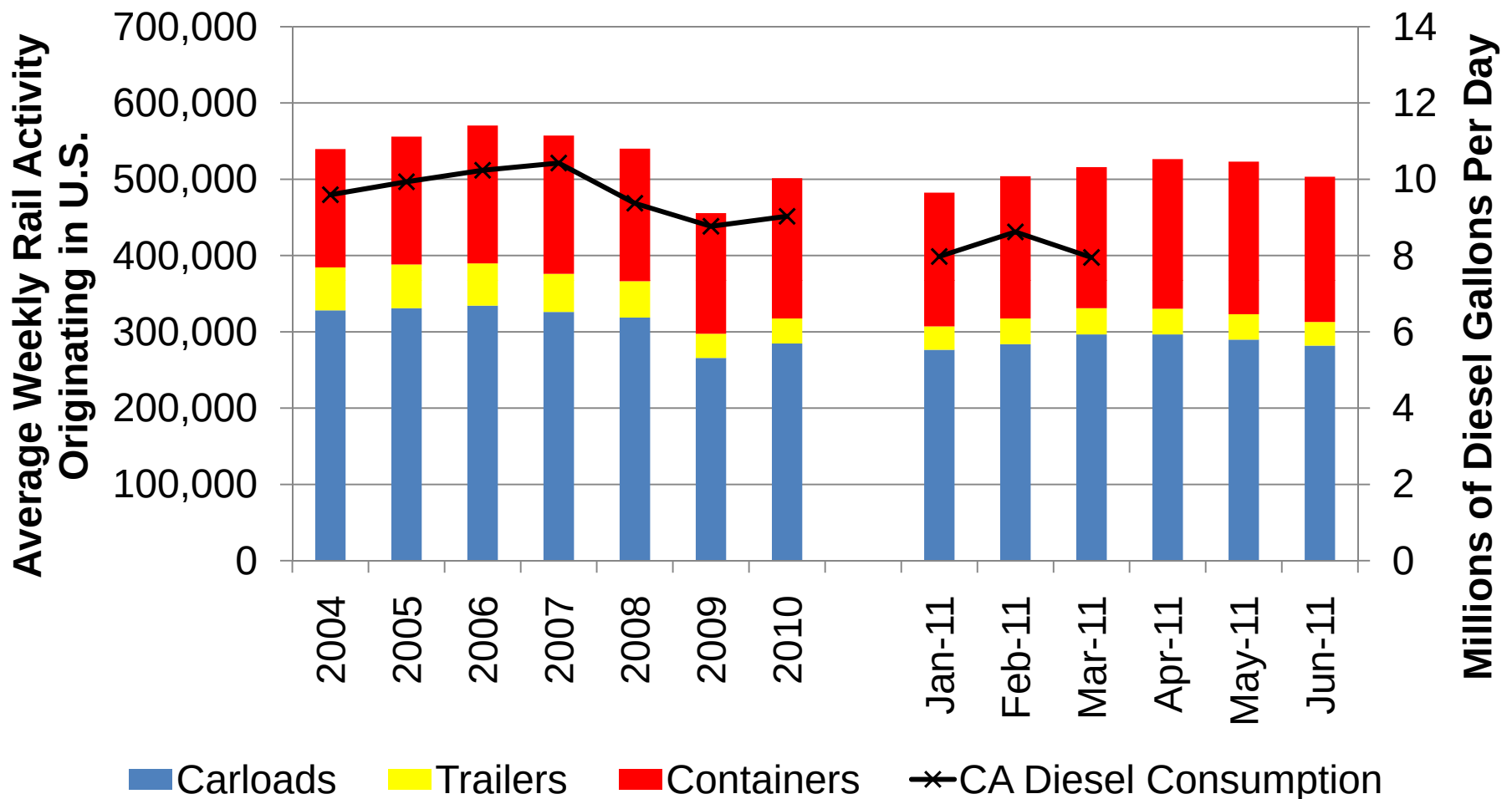
California Taxable Diesel Consumption and Income



Source: California Energy Commission, Board of Equalization, Bureau of Economic Analysis



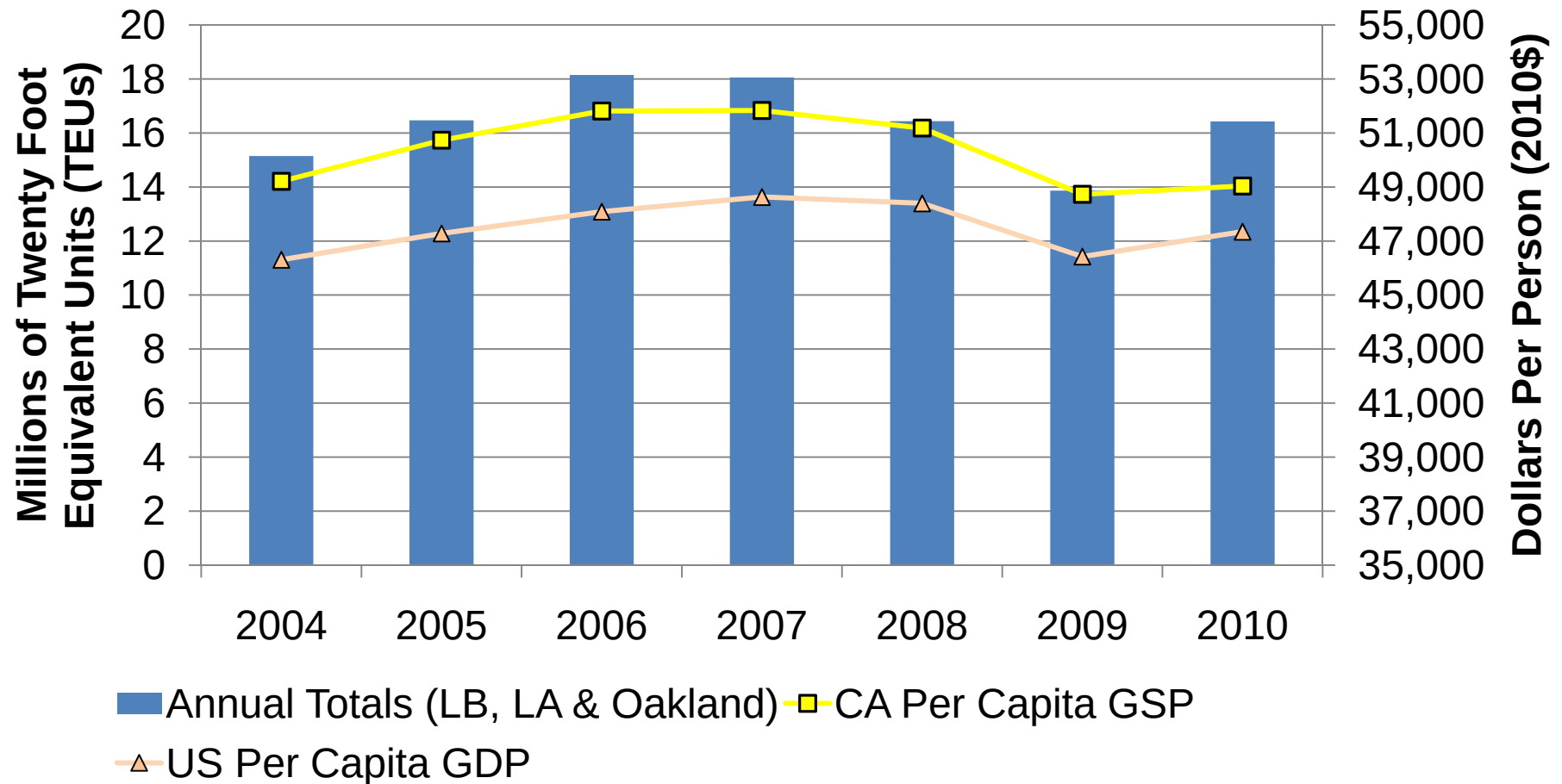
Average U.S. Rail Activity and California Diesel Consumption



Source: California Energy Commission, Board of Equalization, Association of American Railroads



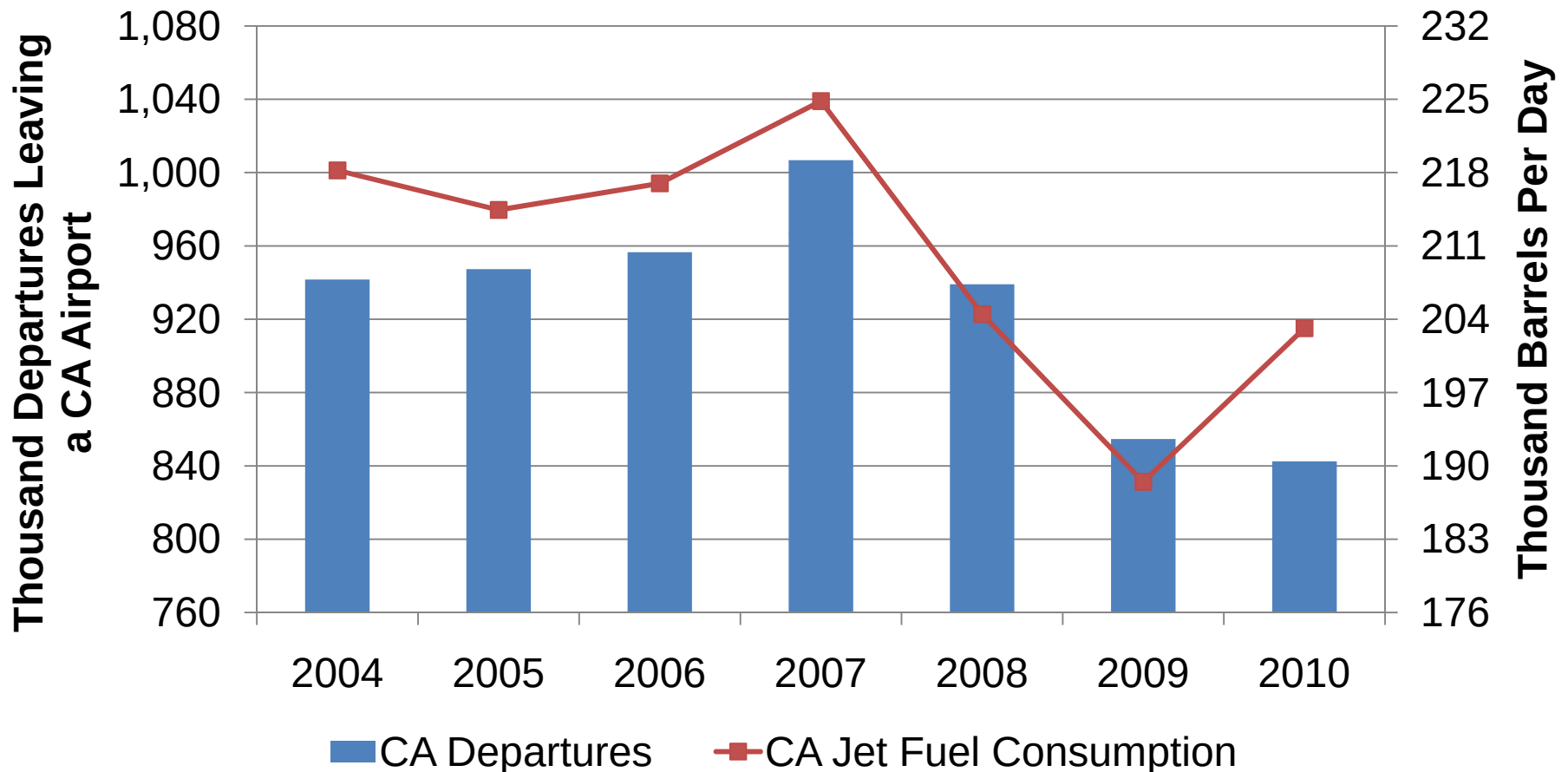
California Port Activity and Income



Source: Bureau of Economic Analysis, American Association of Port Authority, Port of Long Beach, Port of Los Angeles, Port of Oakland



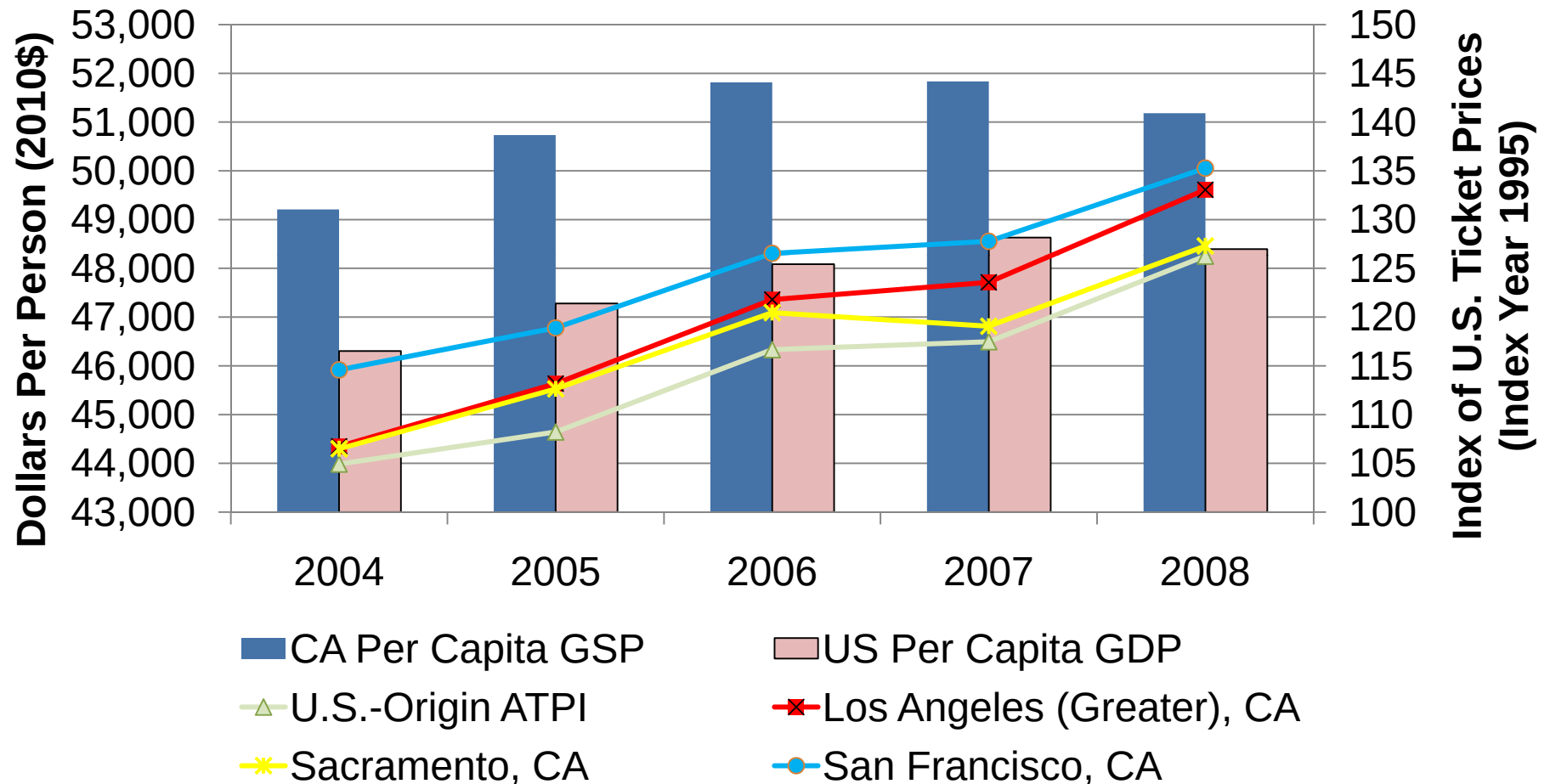
California Commercial Air Travel Departures and Jet Fuel Consumption



Source: California Energy Commission, Board of Equalization, National Transit Database



Air Travel Ticket Prices and Income



Source: California Energy Commission, Board of Equalization, National Transit Database

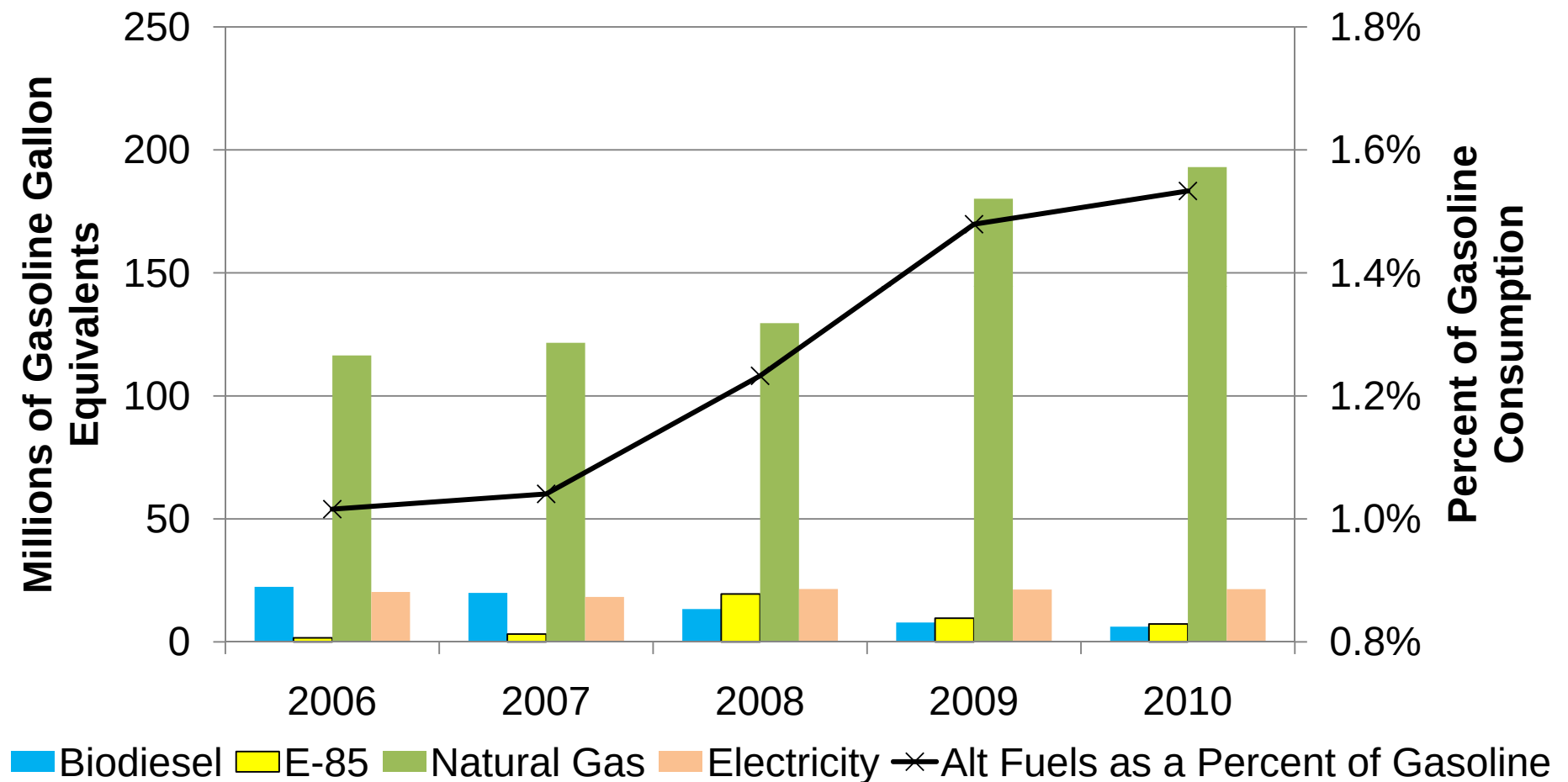


Alternative Fuels

- Excluding the ethanol used in gasoline, natural gas is the most consumed alternative fuel in California, estimated at 192 million GGEs.
- Excluding the ethanol in gasoline, total retail alternative fuels consumption has been rising, going from 1 to 1.6% of gasoline consumption from 2006 to 2010.
- Staff estimates that the largest proportion of transportation natural gas consume comes from Medium- and Heavy- Duty vehicle consumption.
- Initial analysis of retail alternative fuels indicates that consumption of these fuels are unstable and likely highly sensitive to changes in economic conditions.
- Staff experiences many difficulties in determining actual levels of consumption of retail alternative fuels.



Finished Alternative Fuel Consumption



Source: California Energy Commission, Board of Equalization, National Transit Database

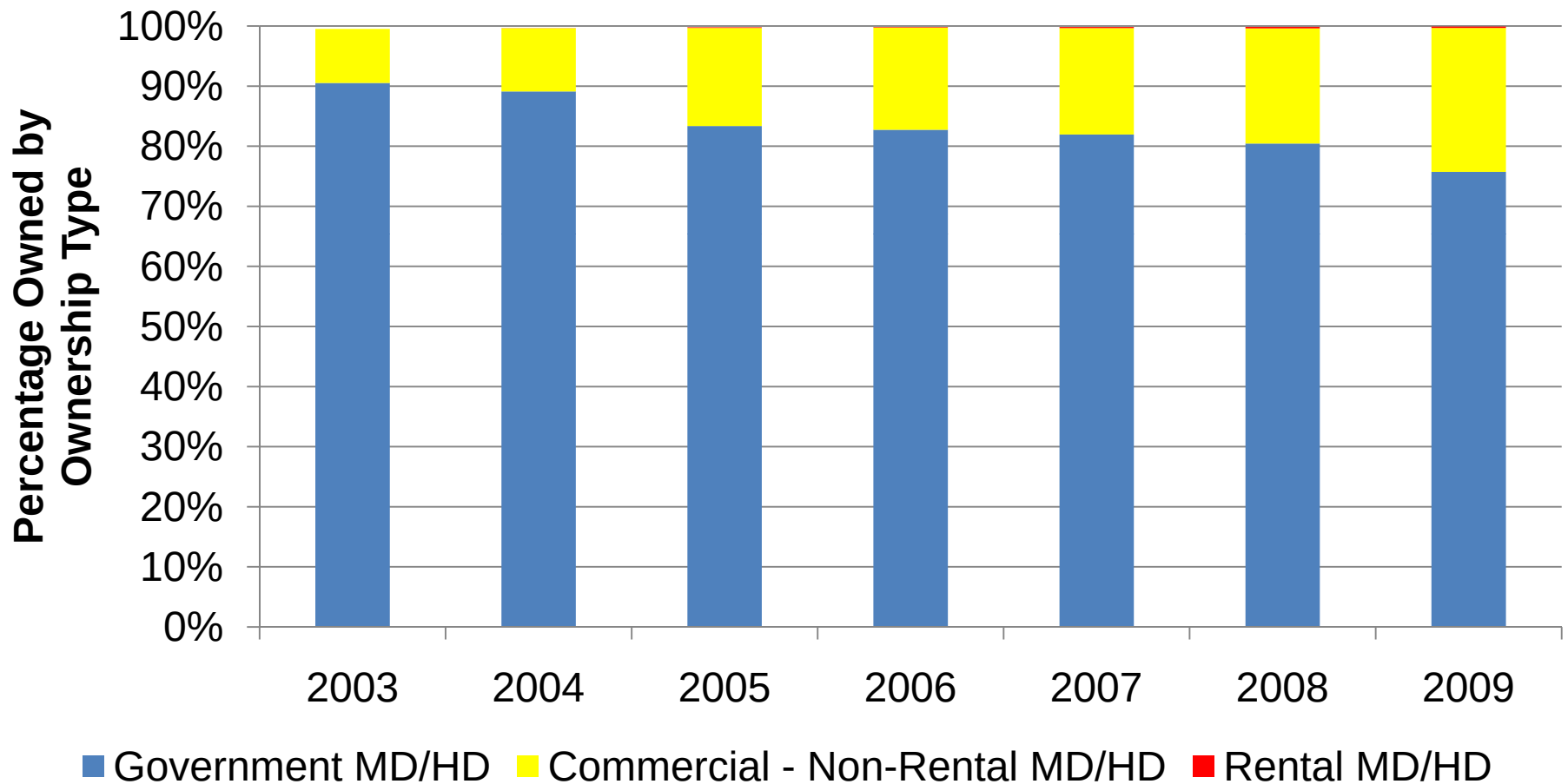


Data Sources for Finished Alternative Fuel Consumption

- Biodiesel: Board of Equalization wholesale tax receipts.
- E-85: Board of Equalization wholesale tax receipts.
- Natural gas: Staff estimated based on vehicle population and calibrated to a 2006 California Public Utilities Commission estimate of natural gas consumed for transportation purposes.
- Electricity: Staff estimated based on vehicle population and average driving behavior of California citizens and National Transit Database figures for transit vehicles.



Medium- / Heavy- Duty Natural Gas Vehicles



Source: California Energy Commission, Board of Equalization, National Transit Database



Transportation Energy Trends Wrap-Up

- Gasoline consumption had begun to decline on a daily and annual basis before the recent California economic difficulties.
- With the beginning of increased unemployment and the decline of real income for California citizens, consumption for the three primary transportation fuels declined significantly-
 - ❖ 5 percent decline for gasoline (2007 to 2008)
 - ❖ 10 percent decline for diesel (2007 to 2008)
 - ❖ 9 percent decline for jet fuel (2007 to 2008)
- Retail alternative fuel consumption is increasing, but remains a small portion of transportation fuel use.



Questions and Comments



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