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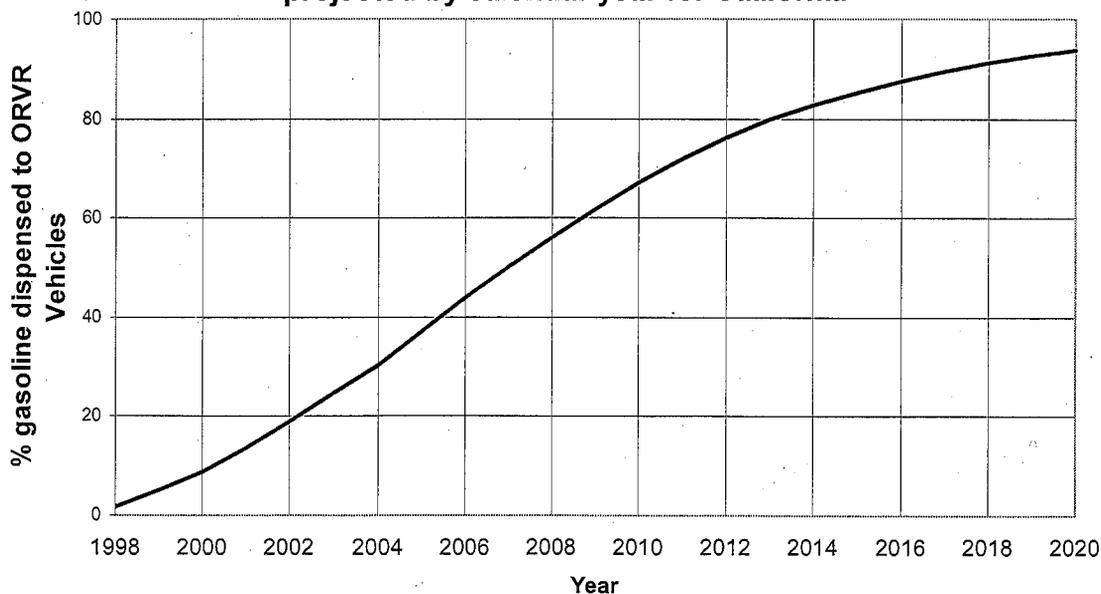
FROM: Frances Cameron
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DATE: December 14, 2009 *F. Cameron*

SUBJECT: PERCENT OF GASOLINE DISPENSED TO VEHICLES WITH ORVR

The percentage of gasoline dispensed in California to vehicles with on-board refueling vapor recovery (ORVR) was projected for 2009 and future years. On-board vapor recovery captures the gasoline vapors that are displaced when gasoline is dispensed to a motor vehicle and stores those vapors on the vehicle in a canister filled with activated carbon. When the vehicle engine is started, gasoline vapors stored on the carbon are purged and burned in the engine. First installed on some models of passenger vehicles in 1998, ORVR was later installed on new light duty and medium duty vehicles. As shown in Figure 1, about 94% of gasoline will be dispensed to ORVR vehicles in 2020:

Figure 1: Percentage of gasoline dispensed to ORVR vehicles, projected by calendar year for California



The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

The data for Figure 1 is provided in Table 1. In 2009, the amount of gasoline dispensed to vehicles in each of the vehicle classifications that are mandated to have ORVR systems was projected with the Air Resources Board (ARB) Emission Factors (EMFAC) 2007 model, version 2.3, released November 1, 2006. These vehicle classifications include passenger cars, light duty trucks, medium duty vehicles, and light heavy duty trucks.

Table 1: Percent of gasoline dispensed to ORVR vehicles in California

Calendar Year	% of gasoline dispensed to ORVR vehicles
1998	2
1999	5
2000	9
2001	14
2002	19
2003	25
2004	30
2005	37
2006	44
2007	50
2008	56
2009	62
2010	67
2011	72
2012	76
2013	80
2014	83
2015	85
2016	88
2017	90
2018	91
2019	93
2020	94

The data and assumptions used in calculating the percentage of gasoline dispensed to ORVR vehicles are outlined below:

1. The percentage of gasoline dispensed to ORVR vehicles was assumed to reflect the federally mandated phase-in schedule for ORVR vehicles. Table 2 is that phase-in

schedule for each vehicle category. California regulations¹ include the same phase-in schedule as does federal law for passenger cars, light duty trucks, and medium duty vehicles with a gross vehicle weight rating (GVWR) less than or equal to 8,500 lbs. However, only federal law requires ORVR for gasoline-powered light heavy duty trucks (LHDT1) with a GVWR between 8,501 and 10,000 lbs.

Table 2: Federally mandated phase-in schedule for ORVR vehicles

Vehicle Category	Non-ORVR Vehicles	40% ORVR	80% ORVR	100% ORVR
Passenger Cars	≤ 1997	1998	1999	≥ 2000
Light Duty Trucks, ≤ 6000 lbs. gross vehicle weight rating (GVWR)	≤ 2000	2001	2002	≥ 2003
Medium Duty Vehicles, Light Heavy Duty Trucks, 6000 – 10,000 lbs GVWR	≤ 2003	2004	2005	≥ 2006

Source: U.S. Code of Federal Regulations (CFR), Title 40, Part 86

2. In 2009, gasoline dispensed was distributed among the following vehicle categories:

Passenger Cars	45%
Light Duty Trucks	36%
Medium Duty and LHDT1	19%

3. ORVR penetration in 2009 was calculated for each vehicle category and model year by first obtaining the fraction of gasoline dispensed to ORVR vehicles for each vehicle category and model year, according to the mandated phase-in schedule from Table 2. Each ORVR penetration fraction was then applied to the amount of gasoline dispensed to that vehicle category and model year in 2009 to obtain the portion of gasoline dispensed to ORVR vehicles in 2009. The portion of gasoline dispensed to ORVR vehicles from each vehicle category and model year in 2009 was then applied to forecast the percent of gasoline dispensed to ORVR vehicles for future years and to back cast the percent of gasoline dispensed to ORVR vehicles for past years. This forecasting method does not include any projected changes in buying and driving habits, nor does it include any projected changes due to programs to remove older or inefficient vehicles or encourage use of electric, hybrid, or alternate fuel vehicles.

If you have questions regarding this analysis or need further information, please contact me via email at fcameron@arb.ca.gov or (916) 445-9314.

¹ California Code of Regulations (CCR), Title 13, Section 1978.