Projected Future Fleet Mix and Incremental Cost of ZEV-Related Vehicles

Fleet Mix

California Air Resources Board (CARB) estimates that auto manufacturers will meet the ZEV-related requirements by using the Alternate Compliance Path provisions of the rules. In addition, manufacturers are expected to take advantage of flexibility permitted in the rules by overcomplying in the Passenger Car category (PC/LDT1) and undercomplying in the Light Duty Truck 2 category (LDT2) between 3750 and 8500 lbs. California predicts that the future mix of vehicles that will result from this approach will be as shown in Table 1 for the year 2012, and Table 2 for the year 2020.

Table 1: Expected 2012 Oregon Fleet Mix to Meet ZEV Requirements

PC/LDT1 <3750 lbs		LDT2 3751 to 8500 lbs. GVWR		Medium Duty Vehicles >8500 lbs	
True ZEVs*	1%	ULEV II	6%	LEV II	100%
PZEVs	58%	Cal. LEV II	74%		
ATPZEVs	12%	Fed. Tier 2 Bin 4*	20%		

Table 2: Expected 2020 Oregon Fleet Mix to Meet ZEV Requirements

PC/LDT1 <3750 lbs		LDT2 3751 to 8500 lbs. GVWR		Medium Duty Vehicles >8500 lbs	
True ZEVs*	2%	Cal. LEV II	80%	LEV II	100%
PZEVs	57%	Fed. Tier 2 Bin 4*	20%		
ATPZEVs	14%				

*The projected percentage of True ZEV vehicles in the future fleet is based on the use of Type II or Type III ZEVs. (Each type of vehicle ultimately earns 3 ZEV credits.)
**In cases where federal requirements are more restrictive than California's LEV II requirements, California's emission standards specify that the more restrictive standard applies.

Additional Cost of ZEV Vehicles

In CARB's 2003 proposed amendments to California's Zero Emission Vehicle regulations, the agency estimated the additional cost of the different types of vehicles used to meet the ZEV requirements. Those incremental costs are shown in Table 3 below:

Table 3: Additional Cost of ZEV Vehicles[1]

Vehicle	Additional Cost in 2009	Additional Cost in 2012
PZEV	$100	$100
ATPZEV	$1,200	$700
Type II ZEV (battery EV)	$17,000	$17,000
Type III fast-refueling true ZEV (fuel-cell)	$120,000	$9,300

The fleet mix projections can be used in conjunction with the expected incremental costs of PZEVs, ATPZEVs and true ZEVs to estimate the average future cost of complying with the ZEV regulations. If manufacturers use the most expensive vehicle (Type II ZEV) to meet the true ZEV requirement, the maximum average cost in 2012 for the light-duty fleet can be calculated as follows:

Table 4: ZEV Fleet Costs in 2012 (per 100 LD Vehicles)

1% ZEV @ $17,000 ea. =	$17,000
58% PZEVs @ $100 ea. =	$5,800
12% ATPZEVs @ $700 ea. =	$8,400
Total cost of ZEV compliance PC/LDT1 fleet =	$31,200

Maximum Average cost of ZEV compliance (PC/LDT1 fleet) = $312

A final adjustment to the average cost of the ZEV mandate reflects the expectation that all the effort to comply with ZEV will be focused on Passenger Cars/LDT1 which comprises 60% of the light duty fleet. No additional cost is projected to be spent on LDT2 vehicles which make up approximately 40% of the Light Duty fleet. Therefore, the average cost of a Light Duty vehicle to meet the ZEV requirement is estimated to be 60% of $312 or **$187** in 2012.

In practice, the actual number of true ZEV vehicles required in Oregon during the period 2012 through 2017 may be lower than estimated if the future hydrogen refueling infrastructure in Oregon is not sufficient to support the use of Type III ZEVs. [See the extended travel provisions specified in OAR 340-257-0080(3) and (4).]

[1] Estimates derived from CARB Staff Report: Initial Statement of Reasons, 2003 Proposed Amendments to the California Zero Emission Vehicle Program Regulations dated Jan.10, 2003, **Table 5.1**. Pg. 39. http://www.arb.ca.gov/regact/zev2003/isor.pdf.