

Possible Amendments to the California ZEV Program

California Air Resources Board

Background

- **Purpose of Rulemaking**
- **Milestones**
- **Objectives**
- **Status:**
 - Preliminary Injunction
 - Status of Technology Development
 - Banked Credits

Purpose of Rulemaking

- Address issues raised by industry litigation
- Take into account current conditions and trends in zero and near-zero emission technology development

Milestones

- | | |
|-----------------|-------------------|
| ● Board Meeting | February 27, 2003 |
| ● Staff Report | January 10, 2003 |

Objectives

- **Maintain ZEV requirement and goal of zero emissions to achieve public health goals**
- **Resolve issues raised by litigation**
- **Maintain pressure to accelerate ZEV technology**
- **Provide support for ZEV commercialization**

Objectives

- **Take full advantage of technology available today**
- **Provide manufacturers with option to pursue their preferred path**
- **Provide flexibility as to fuels, technologies and compliance pathways**

Preliminary Injunction

- **2001 ZEV amendments approved May 24, 2002**
- **Preliminary injunction issued by federal district judge June 11, 2002**
 - ARB cannot enforce 2001 amendments in 2003 or 2004 model years
 - ARB has appealed
 - Decision pending; injunction in effect

Preliminary Injunction

- **Relates to AT PZEV “advanced componentry”**
 - CO2 emissions
 - Efficiency
- **Judge found plaintiffs likely to succeed in claim that these provisions are related to fuel economy and therefore are preempted**

Preliminary Injunction

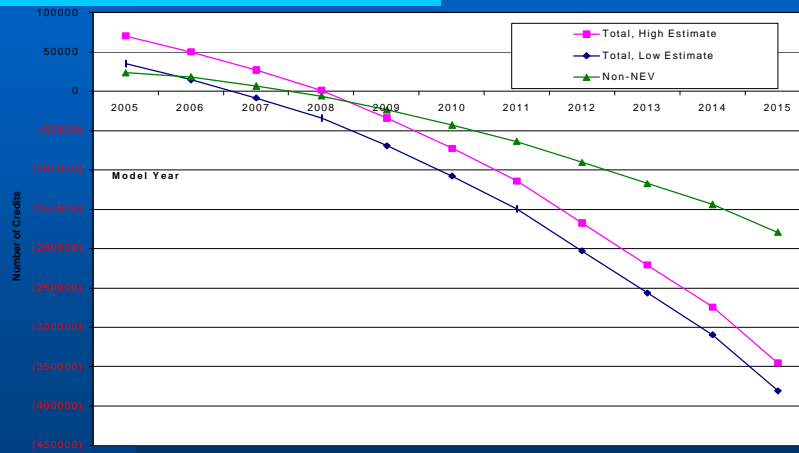
- Staff plans to propose amendments that address preemption concerns
- 2001 version has advantages, but staff believes strawman is satisfactory and provides certainty

Status of Technology

- 2001 view
 - Near-term compliance expensive
 - Continued development will lead to more economical approaches as quantities increase
- Today
 - No significant battery EV cost reductions
 - Fuel cell commercialization projections less optimistic
 - Additional battery EVs needed in interim years
 - Rapid AT PZEV and PZEV progress

Banked Credits

ZEV Credit Balances



Possible Amendments

- Strawman Proposal
- Specific Possible Changes

Strawman Proposal

- **Delay percentage requirements until 2005**
 - Allow full use of credits earned prior to 2005
- **Remove references to fuel economy from calculation of ZEV and AT PZEV credit values**
 - Substitute “flat” credit

Strawman Proposal

- **For 2005-2011 transition period, reduce ZEV obligation to one-half of current level**
 - Allow remaining half to be met with AT PZEVs or hydrogen infrastructure
- **Define fuel cell development “stages”**

Fuel Cell Stages

- **Stage I (2003-2005)**
 - Tens of vehicles per manufacturer, total over 3 years
- **Stage II (2006-2008)**
 - Hundreds of vehicles per manufacturer, total over 3 years
- **Stage III (2009-2011)**
 - Thousands of vehicles per manufacturer, total over 3 years

Fuel Cell Target Numbers

Model Year	Stage I		Stage II		Stage III			Return to "Red Line"			
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Needed under Strawman	120	400	400	400	3000	5000	7000	18240	18240	18240	24320
Red Line Requirement	405	638	815	1470	8980	11040	12020	18240	18240	18240	24320

	Stage I			Stage II			Stage III			Return to "Red Line"			
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1%													Gold
1%													
1%										Gold	Gold	Gold	
1%							Gold	Gold	Gold				
1%		Gold	Gold	Gold	Gold		T. Gold	T. Gold	T. Gold				
1%		T. Gold	T. Gold	T. Gold	T. Gold								
2%		Silver	Silver	Silver	Silver		Silver	Silver	Silver	Silver	Silver	Silver	Silver
6%		Bronze	Bronze	Bronze	Bronze		Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze

Specific Possible Changes

- Program Restart
- Transitional Categories
- Hydrogen Infrastructure
- Calculation of AT PZEV Credits
- Calculation of Pure ZEV Credits
- Compliance Categories
- Other Miscellaneous Changes

Program Restart

- Delay percentage requirements until 2005
- Credits earned prior to 2005 retained at full value
- All other timing factors remain the same
 - Early introduction multipliers
 - LDT2 ramp up
 - Percentage obligation ramp up

Transitional Categories

	Stage I			Stage II			Stage III			Return to "Red Line"			
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1%													Gold
1%													
1%													
1%													
1%							Gold	Gold	Gold	Gold	Gold	Gold	
1%			Gold	Gold	Gold	Gold	T. Gold	T. Gold	T. Gold				
1%			T. Gold	T. Gold	T. Gold	T. Gold							
1%			Silver	Silver	Silver	Silver	Silver	Silver	Silver	Silver	Silver	Silver	
2%			Silver	Silver	Silver	Silver							
4%			Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze

Hydrogen Infrastructure

- **Concept: Allow placement of hydrogen infrastructure to earn ZEV credits**
 - applicability limited to Gold and Transitional Gold categories

Calculation of AT PZEV Credits

- **Eliminate efficiency multiplier**
- **Revise calculation of advanced componentry credit**
 - Remove references to fuel economy
 - Substitute flat credit keyed to average 2001 value (roughly 0.4)
 - Must meet minimum threshold 13 percent peak power
- **Revise calculation of Zero Emission VMT credit (e.g. grid connect hybrids)**
 - Roughly 2X 2001 value

Calculation of ZEV Credits

- Eliminate efficiency multiplier
- Eliminate range multiplier as of 2005
- Base 2003-2004 credits on 2001 regulation
- Beginning in 2005, use 4-tier flat credit
 - NEV
 - Type I ZEV (50+ mile range)
 - Type II ZEV (120+ mile range)
 - Type III ZEV (100+ mile range, fast refuel)

ZEV Credit Levels

- NEV
 - Same as 2001 regulation
- Type I ZEV, Type II ZEV
 - 2X 2001 level in 2005-2008
 - Equal to 2001 level 2008+
- Type III ZEV
 - 3.5X 2001 level in Stage I (2003-2005)
 - 2X 2001 level in Stage II (2006-2008)
 - Slightly above 2001 level in Stage III (2009-2011)

ZEV Credit Levels

Model Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012+
NEV	1.25	0.625	0.625	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Type I (City EV)	1.8	1.8	4	4	4	3	1.4	1.4	1.4	1.4
Type II (FFEV)	5.9	5.9	12	10	10	7	3.3	3.2	3.2	2.9
Type III (fuel cell)	40	40	40	15	15	15	3.75	3.75	3.75	2.92

Other Changes

- **Revise 15 year/150,000 mile HEV battery warranty requirement**
 - Allow pro-ration for last 5 years
- **Reflect interpretation that “placed in service” credit for vehicle is dependent on placement by the end of 3 months into next calendar year**
- **Provide more specific criteria for demonstration programs**
- **Modify cap on use of transportation system credits**
- **Remove ZEVs and AT PZEVs in excess of manufacturer obligation from sales total**

Discussion Questions

Should the staff consider proposing additional measures governing the use of banked ZEV credits? If so, what measures should be considered and what would be their effects on manufacturer compliance strategies?

Discussion Questions

How should credits be scaled in the transitional gold category? For example, should vehicles that are used in the transitional gold category be awarded a lesser credit than those that are used in other categories

Discussion Questions

Are there other ways to address the cost to the consumer of replacement batteries for hybrid electric vehicles, other than through a battery warranty?

Discussion Questions

Should the existing ZEV credit for in-service warranty be modified or eliminated? If so, should other options be considered as a replacement?