



# **Workshop ZEV Regulation Amendments**

**Sacramento, California  
July 24, 2007**

# ZEV Program Goals

- Commercialize Zero Emission Vehicles
- Encourage vehicle technologies that enable ZEV commercialization
- Maximize air quality benefits through transition to ZEVs

# Workshop Goals

- Board's direction
  - “Tweak” the regulation
  - While offering additional flexibility
  - Don't “backslide”
- Comments on proposals and options
- Constructive dialog

# Overview

- Topics:
  - A Alt Path Options
  - B Type IV ZEV definition
  - C BEVs in Alt Path
  - D ZEV credit levels
  - E Plug In HEVs
  - F AT PZEV Credit Calculations
  - G NEVs
  - H Intermediate Volume Manufacturers
  - I Section 177 Travel Provision
  - J Other Topics

# Topic A

## Phase II, III and IV Volume Requirements

### Current Regulation

<b>Phase</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
<b>Years</b>	<b>2005-2008</b>	<b>2009-2011</b>	<b>2012-2014</b>	<b>2015-2017</b>
<b>Total*</b>	<b>250</b>	<b>2,500</b>	<b>25,000</b>	<b>50,000</b>

# Topic A Options

Phase		I	II	III	IV
Years		2005-2008	2009-2011	2012-2014	2015-2017
*Option 1	Staff Proposal	250	2,500	2,500	25,000
*Option 2	Combined Phase	250	5,000		10k to 15k
*Option 3	No Change	250	2,500	25,000	50,000

# Topic A

## Questions

- Are the proposed numbers feasible while maintaining pressure for technology development?
- Should the regulation require additional numbers of advanced technology vehicles in exchange for producing fewer near-term ZEVs?

# Topic A

## Questions (Cont.)

- How may this possible modification impact technology suppliers and infrastructure deployment?
- How may this possible modification impact technology suppliers and infrastructure deployment?

# Topic B

## New Type IV ZEV

- Recognize and encourage improved performance characteristics
- Demonstrate key parameters needed for widespread commercialization
  - Range, durability, performance or cost

# Topic B

## Type IV ZEV - Proposal

Type	Range	Fast Refill
I	50 miles	No
II	100 miles	No
III	100 miles	Yes
IV	200 miles	Yes

- Offer an exchange ratio for Type IV ZEVs in Alt Path so that fewer Type IVs could be used to meet Alt Path requirement than Type IIIs

# Topic B

## Type IV ZEV – Pros & Cons

- Pros:
  - Recognizes advancement in technologies
  - Offers a way to demonstrate better technology without ramping up volumes
- Cons:
  - Assumes high range is necessary for commercialization of ZEVs
  - In a sense offers compliance break for aspects of the technology that OEMs must do anyway to make vehicles viable

# Topic B

## Questions

- Does this help to further advance technologies under the Alt Path?
- What measurement metrics make sense (range, warranty, fast refueling)?
- Should fast refueling requirements be eliminated?
- If a fast refueling metric is needed, how can this requirement be integrated better into the regulation?
- What exchange ration is appropriate for Type IV to Type III ZEVs?
- What credits per vehicle would Type IVs earn?

# Topic C: Use of Type I/II BEVs in the Alternative Path

- Current Regulation

Type	Cap (percent)	Ratio to Type III (2005-2011)	Ratio to Type III (2012-2017)
I (City ZEV)	50	20:1	10:1
II (FF ZEV)	50	10:1	5:1

- Proposed Modification

Type	Cap (percent)	Ratio (vs. Type III) (2009-2017)
I (City ZEV)	50	3:1 to 5:1
II (FF ZEV)	0	1:1 to 3:1

# Topic C

## Questions

- Are the proposed changes sufficient to restore interest in the development of BEVs?
- Are the proposed changes sufficient to continue to promote development of Fuel Cell and Fast Refueling BEVs?
- What metrics, if any, are appropriate for distinguishing the relative “value” of ZEVs in the Alt Path?

# Topic D

## ZEV Credit Levels

Type	2008	2009-2011	2012-2014
I	7	2	2
II	10	3	3
III	40	4	3

## Topic D

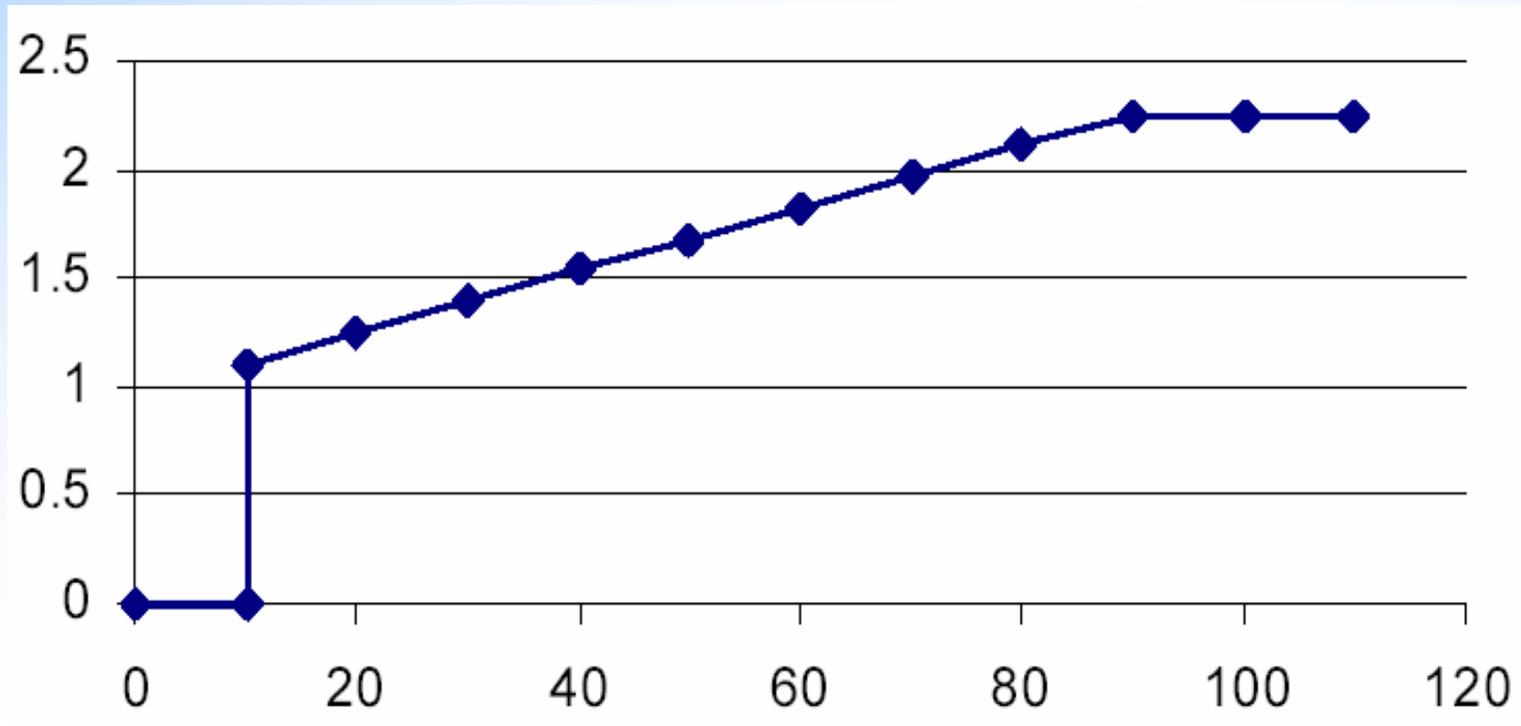
### ZEV Credit Levels - Questions

- Should the credits per vehicle be increased?
- How would raising the credits per vehicle be offset throughout the program given that the Board's policy direction?
- What justification can be provided for raising the credits?

# Topic E

## Plug-in Hybrid Electric Vehicles (PHEVs)

**Current Credit Potential based on All-electric Range**



# Topic E

## PHEVs - Questions

- How should “blended” PHEV credits be calculated; should they be based upon battery capacity; total or usable?
- What is the time frame for bringing PHEVs to market?
- How do we modify the current battery warranty (10 year) to address changes to the PHEV battery requirement?

# Topic E

## PHEVs – Questions (Cont.)

- Should we create a new category (Silver +) to further encourage PHEV development?
- If we do create a new category, should this category be used to “backfill” gold on a temporary basis?
- Should high-scoring AT PZEVs (PHEVs and H2ICEs) be allowed to earn more credit than a pure ZEV for a set period of time?

# Topic F

## AT-PZEV Credit Calculations

- Existing credit for conventional AT-PZEV hybrids

Type	A	B	C	D	E
2003-08	0	0.2	0.2	0.4	0.5
2009-11	--	--	0.2	0.4	0.5
2012-14	--	--	--	0.35	0.45
2015+	--	--	--	0.25	0.35

- Proposed modifications

Type	A	B	C	D	E
2003-08	0	0.2	0.2	0.4	0.5
2009-11	--	0.2	0.2	0.4	0.5
2012-14	--	--	--	0.4	0.5
2015+	--	--	--	0.35	0.45

# Topic F

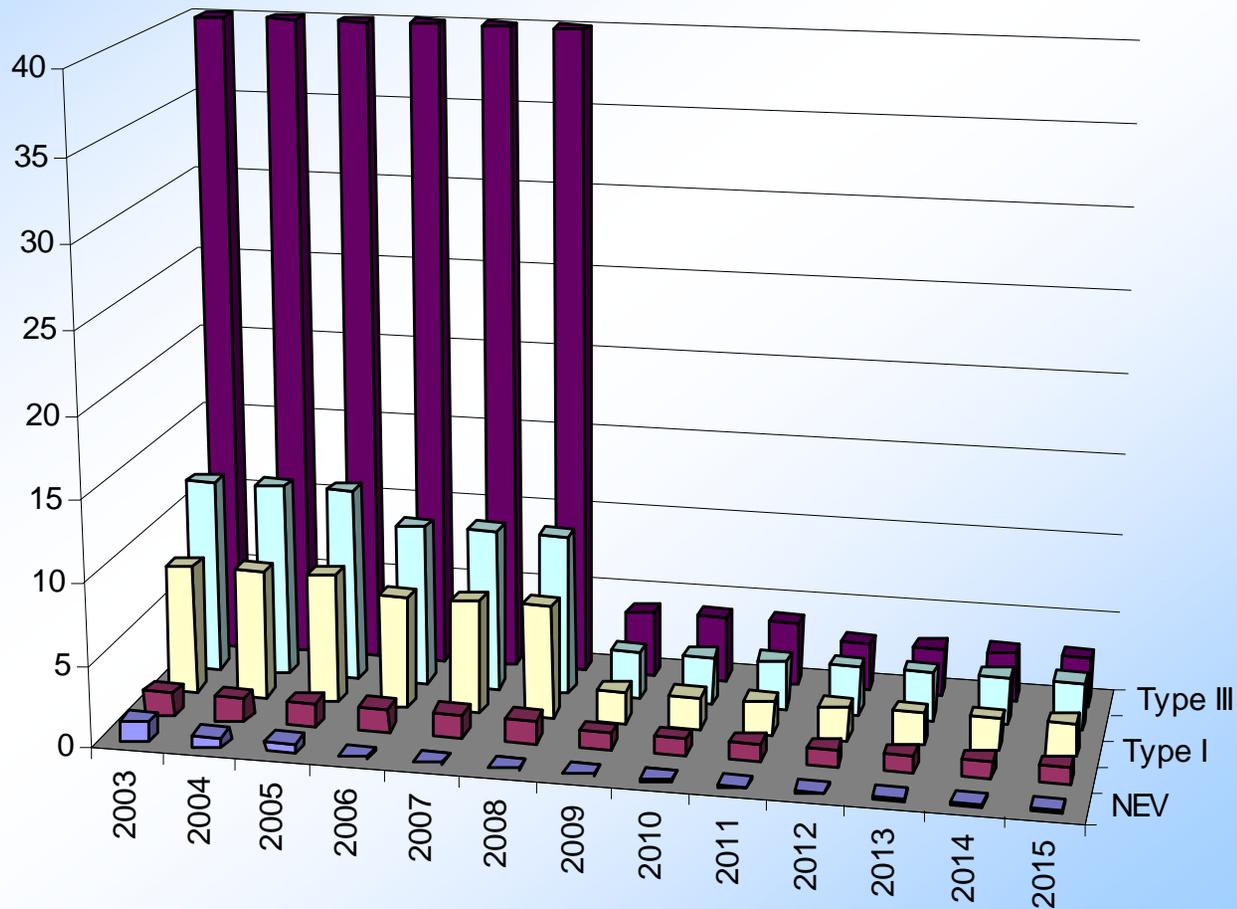
## AT-PZEV Credit Calculations

- Should HEV credit values be extended?
- Justifications?

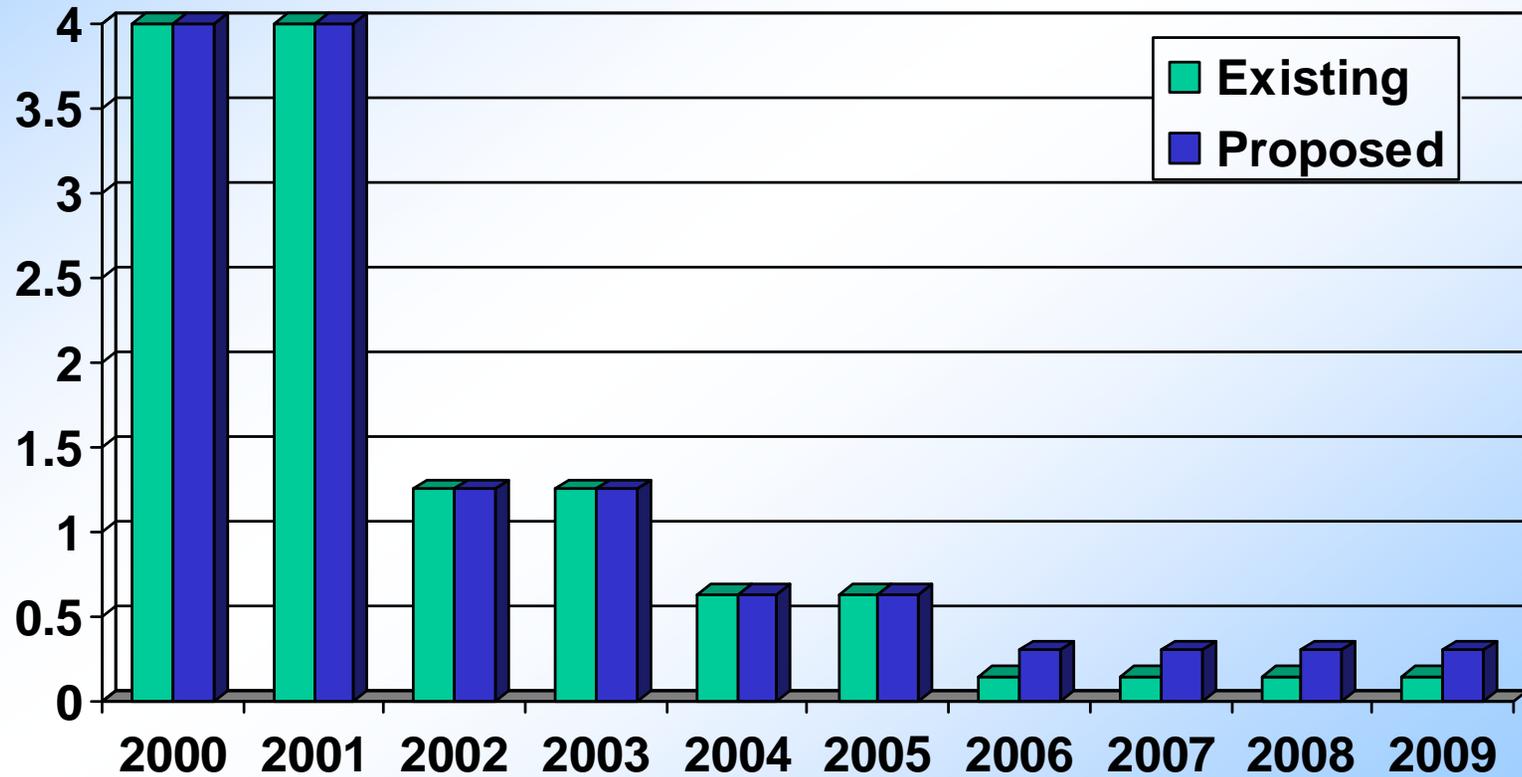
# Topic G

## Neighborhood Electric Vehicle (NEV) Credits

ZEV Credit by ZEV Type and Year



# Topic G NEV Credits



# Topic G

## NEV Credits

- Discussion
  - Expert Panel reported that NEVs are affordable, commercially viable, and reduce upstream emissions relative to other ZEVs
  - Panel & subset of manufacturers consider NEVs to be a possible marketing “bridge” to ZEVs & PHEVs
  - NEVs provide air quality benefits that justify more credit than they presently earn
    - 3,000 miles/yr VS 12,000 miles year? (25%?)
- Questions
  - Appropriate to increase credit?
  - Other caps and limitations appropriate?

# Topic H

## Intermediate Volume Definition

- Vehicle manufacturers' are considered "large volume manufacturers" when their California sales exceed 60,000 vehicles for three years in succession.
- Subsequent to becoming "large," Intermediate volume manufacturers have six years to comply with the regulation.

# Topic H

## Intermediate Volume Definition - Proposal

- Retain definition, but reduce the burden on manufacturers transitioning from intermediate to large.
- Require a pro-rated volume of pure ZEVs if manufactures are required to produce midway through a compliance period.

# Topic H

## Intermediate Volume Definition

- Does addition of new auto manufacturers to the large auto manufacturer category benefit the development of ZEVs?
- Are there additional ways in which the transition to large could be softened?

# Topic I

## Section 177 Travel Provision

- The “Travel Provision,” allows fuel cell vehicles (Type III) placed in California to count towards compliance in states adopting ARB program.
- Under current regulation, the Provision sunsets in 2012.

# Topic I

## Section 177 Travel Provision

- Extend the travel provision to 2015.
- Include Type II ZEVs in the travel provision, which would allow Type II ZEVs (full function BEVs) placed in California to count towards compliance in other Section 177 states (and vice versa).

# Topic I

## Section 177 Travel Provision

- Should pure ZEVs be produced in significant volumes to assist with infrastructure in other ZEV states?
- Comments on the provision extending to Type II ZEVs?
- Will other ZEV states support this extension?

# Topic J

## Other Possible Modifications

- Should additional credits be provided to auto manufacturers' that produce vehicles with tailpipe emissions substantially lower than SULEV standard?
- Should staff make an adjustment to the alternative path calculation by requiring a percentage versus a fixed number of pure ZEVs?
- Should we advance the timeframe for merging the Base and Alternative paths (currently 2017)?

# What's Next?

- Follow-up Meetings with Stakeholders.
- Possible Second Workshop in September – prior to the release of the Staff report.
- Initial Statement of Reasons (Staff Report and Regulatory Proposal) due to Office of Administrative Law October 9
  - Published October 19
- December 6<sup>th</sup> & 7<sup>th</sup>, 2007 Board meeting in Sacramento.

# Comments?

- Staff can meet with your group to further discuss issues/solutions.
- All written comments are due to ARB by August 24, 2007.
  - send to [tandreon@arb.ca.gov](mailto:tandreon@arb.ca.gov)