

Status Report on the Zero Emission Vehicle Program

May 24-25, 2007

Overview

- Background
- Program Status
- Expert Panel Presentation
 - Mr. Michael Walsh
- Policy Implications
- Additional Issues
- Conclusions

Background

- First Adopted in 1990
 - Evolve California's vehicles to zero emission technology
- Amended to address technology status
 - 1996 – MOAs
 - 1998 – PZEVs
 - 2001 – AT PZEVs
- Last amended in 2003
 - Response to litigation

Large Automaker Subject to the ZEV Regulation

- DaimlerChrysler
- Ford
- General Motors
- Honda
- Nissan
- Toyota

ZEV Regulation – Base Path

2009
11 % ZEVs

ZEV
Gold

ZEVs = 0.8%
(14,000 per year)

PZEV
Bronze

PZEVs = 30%



AT
PZEV
Silver

AT PZEVs = 4%



ZEV Regulation – Alternative Path

2009
11 % ZEVs

Gold

2,500 over 3
years for all
automakers

Bronze

PZEVs = 30%



Silver

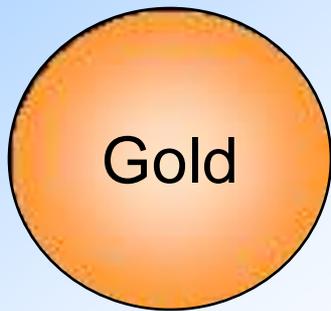
AT PZEVs = 7 %



Alternative Path Fuel Cell Requirements

Years of Phase	Vehicles in 3 years	Range of Production per Manufacturer	
		Low	High
2005 – 2008	250	17	62
2009 – 2011	2,500	260	700
2012 – 2014	25,000	2,600	7,000
2015 – 2017	50,000	5,200	14,000

Gold Category Current Status



- Fuel cell vehicle demonstrations and banked credits

- » 4,400 banked BEVs
- » 130 Fuel Cell Vehicles
- » 26,000 NEVs



Silver Category Compliance Status

- In compliance using HEVs, a few CNG vehicles and banked credits
 - 70,000 vehicles, exceeds requirements
 - Compliance strategy varies by automaker



Bronze Category Current Status

- In compliance through sale of PZEVs and use of some banked credits
- Exceeding requirements by 40%
 - 507,000 vehicles
 - 38 PZEV models now available

Bronze



Infrastructure Status - Hydrogen

- 24 hydrogen stations open
- 11 hydrogen stations in planning or development
- Hydrogen Blueprint Plan for 2010:
 - 50 to 100 stations



Technology Review Process

Expert Review Panel

- Board's direction in 2003 to establish independent expert panel
- Assess ZEV technologies
 - Fuel cell, battery, hybrids
 - Technology readiness

Technology Review Additional Inputs

- September 2006 Technology Symposium
- Hydrogen Highway Report to the Legislature

ZEV Independent Expert Panel Presentation

Michael Walsh
Panel Chairman

Policy Implications of the Panel's Findings

Fuel Cell Vehicles

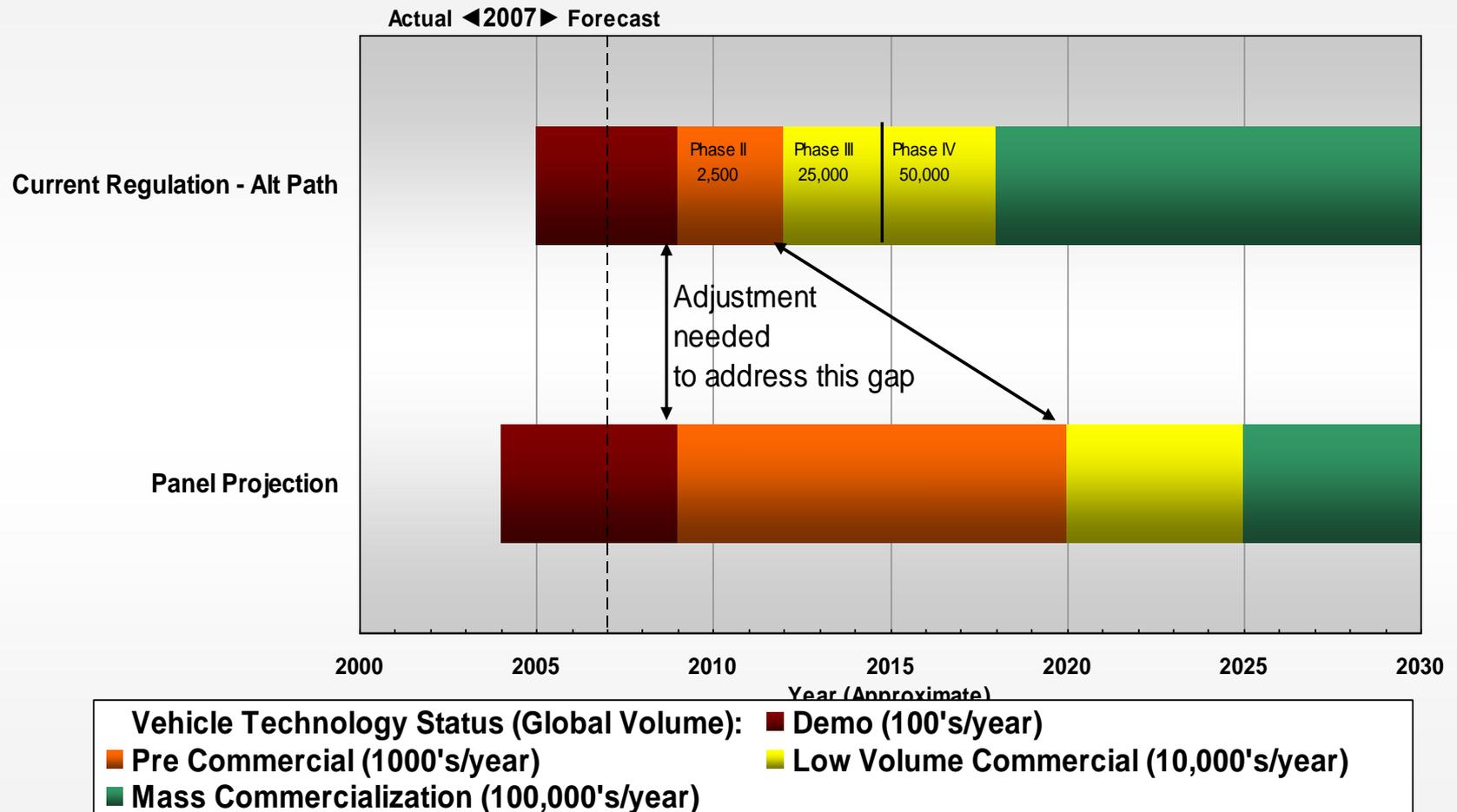
- Are the number of fuel cell vehicles required by the Alternative Path consistent with the state of technology?



Fuel Cell Vehicles Panel Findings

- Technical challenges remain
 - Durability
 - Cost
- Thousands per year achievable by 2009
- Further ramp up by 2020

Fuel Cell Vehicles – Findings Compared to Regulation

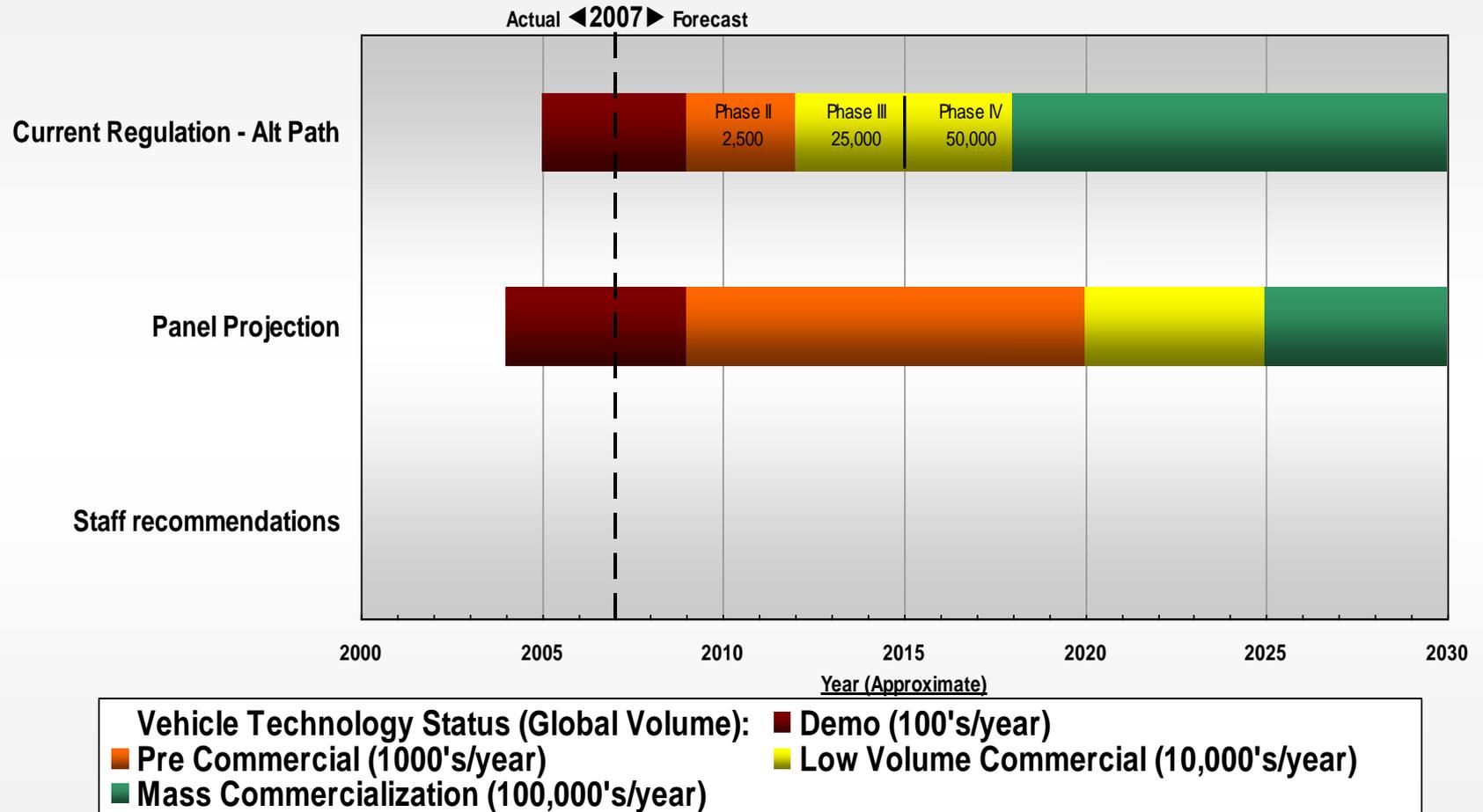


Fuel Cell Vehicles

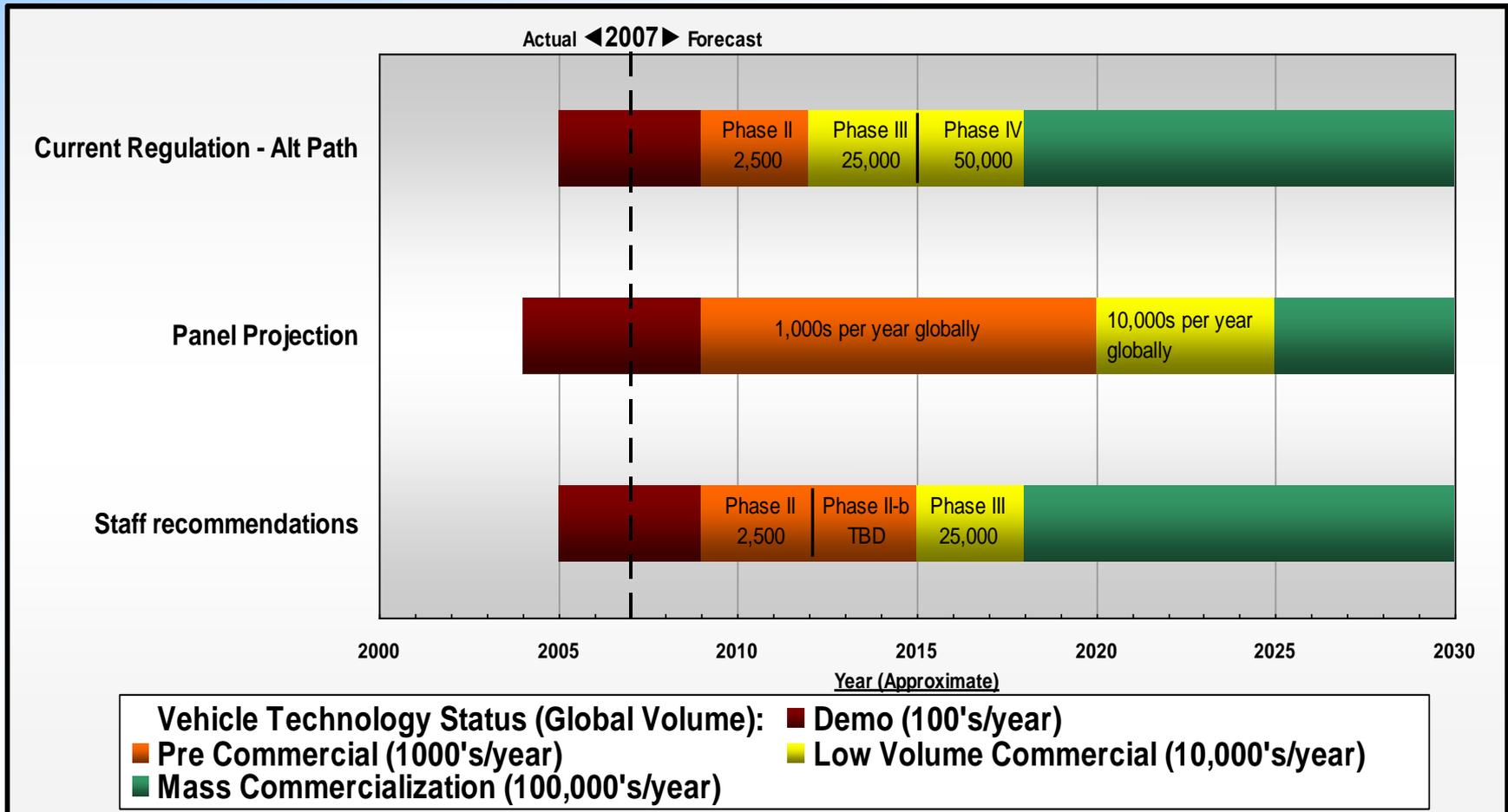
Staff Recommendations

- Proceed to Phase II
 - 2,500 from 2009 – 2011
- Delay Phase III
 - Currently 25,000 from 2012 – 2014
 - Delay until 2015
- Develop revised requirement for 2012 – 2014 (Phase II-b)

Fuel Cell Vehicles – Findings Compared to Regulation



Fuel Cell Vehicles – Findings Compared to Regulation



Battery Electric Vehicles

- Should regulation encourage greater battery electric vehicle production?
 - Currently limited to $\frac{1}{2}$ of obligation
 - 10 to 1 ratio to substitute for FCVs



Battery Electric Vehicles Panel Findings

- Recent improvements in battery technology have renewed interest in BEVs, though cost still an issue

Battery Electric Vehicles Staff Recommendations

- Remove cap for battery electric vehicles under alternative path
- Examine ratio used for BEV substitution for FCVs in Alternative Path

Plug-in Hybrid Electric Vehicles

- Current interest has proponents requesting greater incentives to spur production, including pure ZEV credit



FROM GM



Plug-in Hybrid Electric Vehicles Panel Findings

- Plug-in hybrids have potential to provide significant benefits and foster mass market pure ZEVs
- Technology may be ready for commercial market within the next decade

Plug-in Hybrid Electric Vehicles Staff Recommendations

- Retain Plug-in HEVs as AT PZEVs
- Consider other regulatory incentives

Hydrogen ICE Vehicles

- Should hydrogen internal combustion vehicles receive ZEV credit given their extremely low emissions?



Hydrogen ICE Vehicles Panel Findings

- Hydrogen combustion vehicles provide minor benefits to ZEV commercialization
- Technology could be market ready within this decade

Hydrogen ICE Vehicles Staff Recommendation

- Retain Hydrogen ICEs as AT PZEVs (silver)
- Sufficient credit currently provided under AT PZEV category

Advanced Technology PZEV's

- Are AT PZEV volumes valuable to ZEV commercialization?



Advanced Technology PZEV's Panel Findings

- AT PZEVs are providing major support to future mass market ZEVs
- Continued market penetration needed to further reduce cost and improve performance

Advanced Technology PZEV's Staff Recommendation

- Maintain current requirements
- No changes are needed at this time

Neighborhood Electric Vehicles

- Are the credits for neighborhood electric vehicles consistent with their benefits?



Neighborhood Electric Vehicles Panel Findings

- A small market has been created and NEVs will continue to be produced
- Low volume potential market for the long term
- Minimal technology transfer to full function ZEVs

Neighborhood Electric Vehicles Staff Recommendation

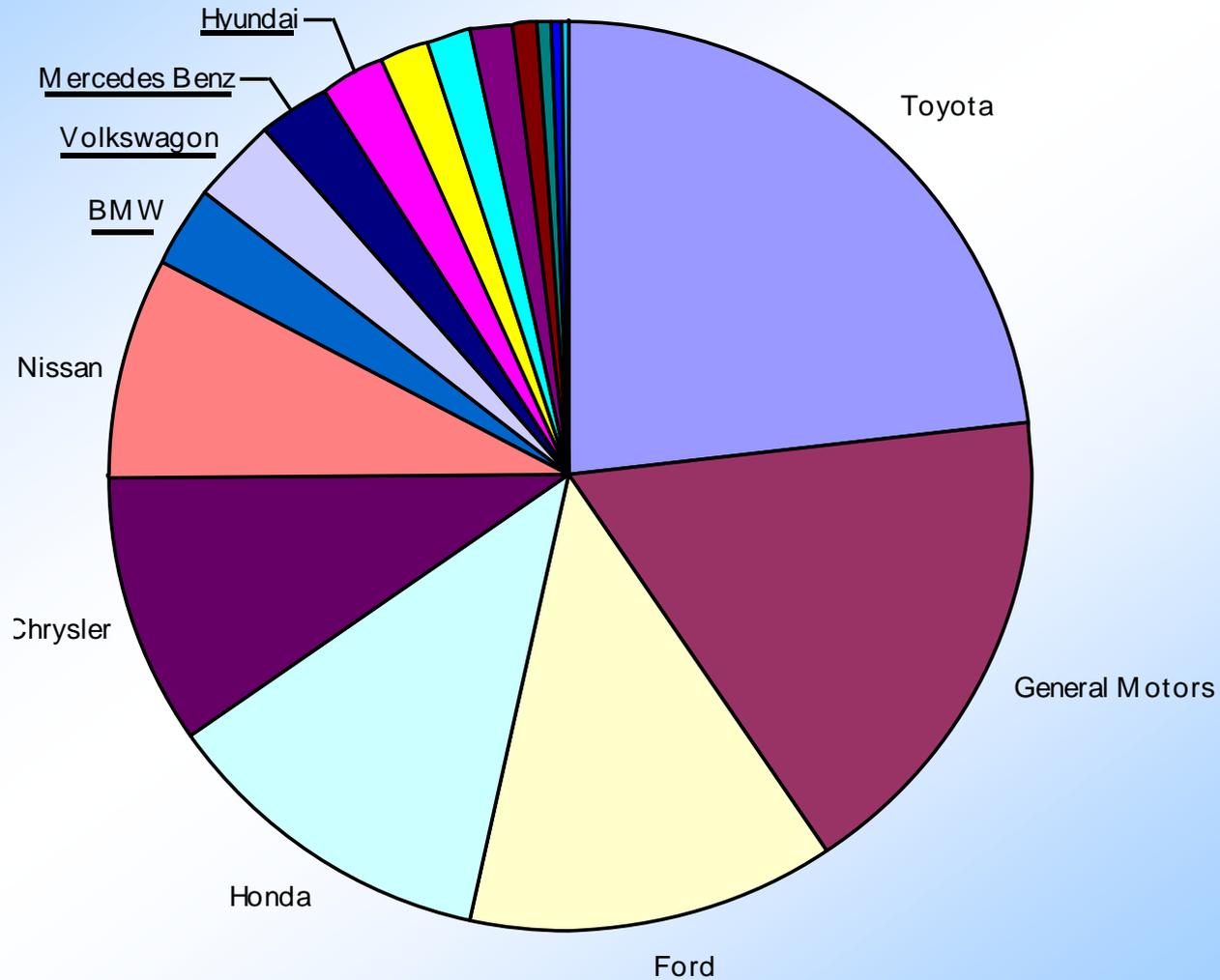
- Consider moderate increases in credit per vehicle
- Credit value should reflect the environmental benefits of the technology

Additional Issues

Intermediate Volume Definition

- Current intermediate volume definition:
 - Vehicle sales between 3,001 and 60,000
- Several manufacturers nearing 60,000 units

Intermediate Automaker Volumes



Intermediate Volume Definition

Issue:

- Is there value to adding more automakers to Large category?

Staff's Recommendation:

- Examine implications for adjusting definition

Section 177 “Travel” Provision

- Allows California placements to count toward requirements in other states
- Limits nationwide placements to reflect state of technology
- Provision sunsets after 2011



Section 177 “Travel” Provision Staff Recommendation

- Extend the Travel Provision to be consistent with the delay in Phase III (volume ramp up)

Extremely Clean Vehicles

- Recent information indicates potential to significantly reduce emissions below PZEV



Extremely Clean Vehicles Staff Recommendation

- Investigate how to best encourage production of such vehicles, short of gold or silver credit

Conclusions

Summary of Recommendations (1)

<u>Topic</u>	<u>Issue</u>	<u>Recommendation</u>
Fuel Cell Vehicles	Pace of ramp up appropriate?	Phase II (2,500) ok, Phase III (25,000) needs delay, interim step needed
Battery Electric Vehicles	Are BEVs treated appropriately?	Remove 50% cap on Alt Path, examine credits
PHEVs	Worthy of gold credit?	No Gold Credit, explore credit structure, test procedures
H2ICE	Worthy of gold credit?	No Gold Credit, no changes needed
AT PZEVs	Volumes too high?	Volumes appropriate, no changes needed

Summary of Recommendations (2)

<u>Topic</u>	<u>Issue</u>	<u>Recommendation</u>
NEVs	More Credit?	Adjust credit upward to match environmental benefit
Travel Provision	Extension needed?	Adjust to reflect changes to Alternative Path schedule
Intermediate Automakers	Transition to Large automaker?	Adjust so no intermediate automakers become large
Extremely Clean Vehicles	Worthy of gold credits?	No gold credit, explore ways to encourage production

Next Steps – Timeline

- Board Guidance - Today
- Strawman, Workshop - Summer 2007
- Regulatory Hearing – Fall 2007
- Next Technology Review - TBD

Conclusions

- ZEV technologies are viable
 - much work remains to reach performance and cost goals
- ZEV regulation accelerates their development and commercialization
- ZEV regulation remains a critical component of our clean air strategy
- ZEV complements the State's Greenhouse Gas and Low Carbon Fuel Standard initiatives
- Some regulatory changes are necessary