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## Comments Regarding ARB Staff's Proposed ZEV Mandate Changes

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### New ZEV Types and Adjustments to Existing ZEV Types



Mitsubishi Motors supports the Staff Proposal creating the Type 1.5 ZEV.

- Type 1.5 is not a "City EV"
- Definition should require capability to operate on all classes of roadways – hence, a "full function" EV
- An EV with a 75 mile range has much greater potential to replace an existing "commuter" vehicle



- "iMiEV" – Mitsubishi Innovative Electric Vehicle
- Example of a proposed Type 1.5 battery electric vehicle.
- Top speed - 81MPH
- 70-80 mile range utilizing an advanced Li-ion battery
- Directly replaces an existing second/commuter vehicle.
- Mass production (1000's) planned for Japan CY2009
- California fleet testing to begin Fall 2008.

**ZEV Credit Equality?**

**ZEV Credit discontinuity between BEV and PHEV.**

Table 3.1: Credits for ZEVs 2009 to 2017

| Tier           | Expected Technology     | Range   | Existing | Proposed |
|----------------|-------------------------|---|----------|----------|
| Type I         | Battery EV              | 50 – 74 miles   | 2        | 2        |
| Type 1.5 (new) | Battery EV              | 75 – 99 miles   | NA       | 2.5      |
| Type II        | Battery EV              | > 100 miles   | 3        | 3        |
| Type III       | Fuel Cell or Battery EV | Fuel Cell = 100 – 199 miles<br>Battery EV > 200 miles | 4        | 4        |
| Type IV (new)  | Fuel Cell               | > 200 miles   | NA       | 5        |

Should a Type I BEV with more all electric range receive 3.5 times less credit?

| AT-PZEV Type   | Description                         | 2009-2011      |              | 2012-2014    |
|----------------|-------------------------------------|----------------|--------------|--------------|
|                |                                     | Pre-Multiplier | Final Credit | Final Credit |
| Type E         | HEV                                 | 0.70           | 0.70         | 0.65         |
| CNG            | Compressed Natural Gas Engine       | 0.70           | 0.70         | 0.70         |
| HICE           | Hydrogen Internal Combustion Engine | 2.30           | 6.90         | 2.30         |
| B12.5/ 80% CRF | Blended PHEV                        | 1.24           | 3.77         | 1.19         |
| B40/ 80% ERF   | Blended PHEV                        | 1.78           | 5.34         | 1.73         |
| P10            | AER PHEV                            | 1.62           | 4.86         | 1.62         |
| P40            | AER PHEV                            | 2.40           | 7.20         | 2.40         |



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Should an P40 AT PZEV earn more ZEV credit than a Type IV vehicle?

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| B12.5/ 80% ERF | Blended PHEV                        | 1.24           | 3.72         | 1.18         |
| B40/ 80% ERF   | Blended PHEV                        | 1.78           | 5.34         | 1.73         |
| P10            | AER PHEV                            | 1.62           | 4.86         | 1.62         |
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**Solution - correct discontinuity - create a Gold to Silver+ multiplier to allow the conversion of Gold to Silver+ credits**

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## Extend Travel Provision



Mitsubishi Motors supports the extension of the Travel Provision for Type I, 1.5 and II EVs through 2014.

- Important and beneficial to focus R&D within California
  - Leverage existing California-based R&D facilities and charging infrastructure
  - Centralization of advanced technology service facilities
- R&D programs in each section 177 state would slow development due to increased complexity and cost of maintaining redundant facilities.

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## No Expiration of IVM Gold Credits



Allow IVMs to indefinitely retain "Gold" ZEV credits

- Provides an incentive for voluntary introduction of "pure EVs"
- Banking gold credits would ease future transition to LVM requirements.
- When a IVM becomes a LVM, the credit are treated as earned in that year and "ripen" accordingly.

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## Summary of Comments



1. New ZEV Types and Adjustments to Existing ZEV Types – (Support Staff Proposal) Create Type 1.5 with full function requirement
2. Provide More Equal Treatment of Battery Electric Vehicles (BEV) – Create conversion from Gold to Silver to eliminate credit discontinuity.
3. Allow IVMs to indefinitely retain “Gold” ZEV credits.
4. (Support Staff Proposal) Extend Travel Provision to include Type I, Type 1.5 and Type II ZEVs

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