Today’s Agenda

- Background
- Purpose of Amendments
- Activities to Consider
- Potential Amendment Approaches
- Process for Moving Forward
- Comments, Questions, Discussion
Background

- US EPA Heavy-Duty (HD) Greenhouse Gas rule introduced new hybrid test procedures
- AB32 Scoping Plan Measure T-8 targets greenhouse gas emissions reductions from hybridizing trucks
- ARB working to better quantify benefits of Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
- “Vision for Clean Air: A Framework for Air Quality and Climate Planning” assesses potential benefits from truck technology transformation

ARB needs germane hybrid test procedures.

Current HD Hybrid Test Procedures

- Heavy-duty hybrid vehicles >14,000 GVWR
- Interim, approved by Board Oct. 2002
- Focused on hybrid urban buses complying with urban bus rule
- Duty cycles: UDDS, OCTA
- Based on SAE J2711 (April 2002)
- Addresses NOx, but not PM or GHGs

ARB’s hybrid test procedures were approved for a narrow purpose.
Examples of Hybrid Vocations

Purpose of Amendments

- Understand emission profiles for growing number of hybrid vocations
- Support variety of criteria pollutant and greenhouse gas reduction goals
- Better align with federal procedures and prepare for future test methods
- Ensure integrity of growing hybrid market

ARB’s heavy-duty hybrid test procedures need updating.
Other Existing Procedures

- **US EPA**
  - New vehicle-based duty cycles
  - Additional method: powertrain testing

- Society of Automotive Engineers J2711 Revisions

Activities Underway

- **United Nations sub-committee studies:**
  - Hardware in the Loop Simulation (HILS)
  - Powertrain testing
  - Chassis Dyno testing

- AB118 – ARB and National Renewable Energy Lab (NREL) Joint Study on Hybrids
NREL Fleet DNA: Transportation Energy Data Collection

- Drive cycle database of core vehicle usage metrics
- Valuable to OEMs, Fleets, R&D, and government agencies
- 10–12 vocations targeted initially – highest fuel usage and/or VMT
- On-going field evaluation projects will help to supply data

ARB + NREL Study

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<tr>
<th>Details</th>
<th>Main Tasks</th>
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<tr>
<td>Signed July 2012</td>
<td>Characterize in-use duty cycles of several HVIP vocations</td>
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<td>18-month term</td>
<td>Compare real-world duty cycles to industry standards</td>
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<td>Quantify benefits and optimize HVIP investment</td>
<td>Conduct chassis dyno and in-use emissions test</td>
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<td>Provides data for heavy-duty hybrid certification procedure amendments</td>
<td>Develop methodology to estimate emissions and fuel economy for hybrids</td>
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<td>Helps populate Fleet DNA</td>
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Potential Amendment Approaches

- Keep current chassis dyno test procedures with minimal modification to add particulate matter and greenhouse gas methods?
- Modify to include or allow:
  - Powertrain testing?
  - Additional/Alternate duty cycles?
  - Hydraulic energy storage?
  - Charge-depleting hybrids?
- Other approaches?

Amendment Timeline

- On-going: Stakeholder discussions
- Late 2012: Start workgroup meetings
- Feb/March 2013: 3rd Workshop
- June/July 2013: 4th Workshop (if needed)
- Mid-2013: NREL Study Complete
- December 2013: Board Consideration
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Please join “hybridtruck” listserv at:
http://www.arb.ca.gov/listserv/listserv_ind.php?listname=hybridtruck

Comments, Questions, Discussion

- During workshop, webcast participants please use email:
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