Update on Vehicle/Battery Performance and Durability

EVE-18 Shanghai

April 11, 2016
Recent events

- At EVE-16 (Ottawa, October 2015):
  - FEV presented comprehensive literature review of factors affecting battery durability
  - IWG initiated status report on vehicle/battery durability

  - Summarize the topic as it relates to the EVE mandate
  - Summarize findings and views to date
  - Identify available options for going forward
  - Promote discussion and eventual selection of option
Recent events

• At EVE-17 (Geneva, January 2016):
  – Discussed draft status report (EVE-17-05e)
  – Discussion of need for coordination with WLTP
    • Desire was expressed to coordinate and avoid duplication of effort
    • Topic further discussed at WLTP meeting later in week
    • WLTP to identify vehicle durability performance requirements (e.g. perhaps a matrix?)
    • EVE to develop test procedures with respect to the performance requirements
# Example matrix of durability requirements

<table>
<thead>
<tr>
<th></th>
<th>Criteria Pollutants</th>
<th>Range</th>
<th>Fuel Economy</th>
<th>Total CO2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEV</strong></td>
<td>Ex: within 5%</td>
<td>N/A</td>
<td>Ex: within 5%</td>
<td>for 200,000 km and 10 years</td>
</tr>
<tr>
<td></td>
<td>for 200,000 km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and 10 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PHEV</strong></td>
<td>Ex: within 5%</td>
<td>Ex: &gt;90% for</td>
<td>Etc.</td>
<td>Etc.</td>
</tr>
<tr>
<td></td>
<td>for 200,000 km</td>
<td>150k km 8 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and 10 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>w/respect to utility factor</td>
<td>w/respect to utility factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BEV</strong></td>
<td>N/A</td>
<td>Ex: none</td>
<td>Etc.</td>
<td>Etc.</td>
</tr>
</tbody>
</table>
Recent events

• In preparation for this meeting:
  – FEV final report posted (EVE-18-04e)
  – Status report on vehicle/battery durability (EVE-18-10e) revised to incorporate IWG comments received in February 2016
  – Received Japan position on battery durability (EVE-18-12e)
EVE-18: Objectives on durability

• Choose among options for going forward:
  – A: Recommend that developing a GTR on battery durability is appropriate
  – B: Extend mandate to continue research and gather data to inform a potential future GTR
  – C: Recommend that it is premature at this time to develop a GTR but the question should be revisited in the future

• Develop plan for making the recommendation to GRPE in June