New EV policies in China and EV testing results

SAIC MOTOR Corporation Limited
Sep 2013
## Domestic NEV Policy

<table>
<thead>
<tr>
<th></th>
<th>Policy</th>
<th>Release Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management rules for new energy vehicle production enterprises and product access</td>
<td>2009-07-01</td>
</tr>
<tr>
<td>2</td>
<td>Development plan for Energy saving and new energy vehicle industry (2012-2020)</td>
<td>2012-06-28</td>
</tr>
<tr>
<td>3</td>
<td>Interim measures for financial incentives fund management for innovation projects in new energy vehicle industry</td>
<td>2012-10-13</td>
</tr>
<tr>
<td>4</td>
<td>Notice on continuing promoting the application of new energy vehicle</td>
<td>2013-09-17</td>
</tr>
<tr>
<td>5</td>
<td>Notice on implementing promotion of energy-saving passenger vehicle (lower than 1.6L)</td>
<td>2013-09-30</td>
</tr>
</tbody>
</table>
Notice on continuing promoting the application of new energy vehicle

- Released by: the Ministry of Finance, the Ministry of Industry and Information Technology of China, etc.
- **Aim**: NEV promotion from 2013 to 2015.
- **Promoted vehicle types**: battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV) and fuel cell vehicles (FCV).
- **Incentives**: target all customers
Notice on continuing promoting the application of new energy vehicle

1. Subsidy Standards for Passenger Vehicles in 2013 (unit: 10,000 RMB/car)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Range (battery only) R (NEDC cycle, km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80≤R &lt; 150</td>
</tr>
<tr>
<td>Battery Electric Passenger Vehicles</td>
<td>3.5</td>
</tr>
<tr>
<td>Plug-in Hybrid Passenger Vehicles (including EREV)</td>
<td>/</td>
</tr>
</tbody>
</table>
Notice on continuing promoting the application of new energy vehicle

2. Subsidy Standards for commercial Vehicles in 2013 (unit: 10,000 RMB/car)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Vehicle Length L (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6≤L &lt; 8</td>
</tr>
<tr>
<td>Battery Electric Commercial Vehicles</td>
<td>30</td>
</tr>
<tr>
<td>Plug-in Hybrid Commercial Vehicles (including EREV)</td>
<td>/</td>
</tr>
</tbody>
</table>

In addition: quota subsidy for super-capacitor electric commercial vehicles and lithium titanate fast charging electric commercial vehicles is 150,000RMB.
3. Subsidy Standards for battery electric special vehicles
(mainly: postal service, logistics, sanitation, etc) in 2013:

The subsidy is 2000RMB/KWH based on the battery capacity. The total subsidy for each vehicle is up to 150,000RMB.
4. Subsidy Standards for Fuel Cell Vehicles in 2013 (unit: 10,000 RMB/car)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Subsidy Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Cell Passenger Vehicles</td>
<td>20</td>
</tr>
<tr>
<td>Fuel Cell Commercial Vehicles</td>
<td>50</td>
</tr>
</tbody>
</table>
Notice on continuing promoting the application of new energy vehicle

➢ In year 2014 and 2015, the subsidy standards for battery electric passenger vehicles, plug-in hybrid electric passenger vehicles (including EREV), battery electric special vehicles and fuel cell vehicles will decline by 10% and 20% respectively, compared with year 2013. Standards for battery electric public buses and plug-in hybrid (including EREV) electric busses will remain the same.

➢ The central finance will distribute financial incentives to pilot cities, according to a certain proportion of the total local investment in charging facility construction, thus to encourage and guide the social power to participate in construction and operation of the charging supporting facilities.

-8-
Notice on implementing promotion of energy-saving passenger vehicle (lower than 1.6L)

On Sep 30th 2013, “Notice on implementing promotion of energy-saving passenger vehicle (lower than 1.6L)” was jointly released by the Ministry of Finance, the National Development and Reform Commission and the Ministry of Industry and Information Technology of China.

**Period:** Oct 1st 2013 – Dec 31st 2015  
**Scope:** Passenger vehicle with engine displacement lower than 1.6L, including HEV (not PHEV)

**Requirements:**
- Product fuel consumption standard (specific criteria are listed in the table below)
- Exhaust emission standard China V.

<table>
<thead>
<tr>
<th>Kerb mass ( kg )</th>
<th>With 2 rows (or lower) of chairs ( L/100km )</th>
<th>With 3 rows (or above) of chairs ( L/100km )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM≤750</td>
<td>4.7</td>
<td>5.0</td>
</tr>
<tr>
<td>750&lt;CM≤865</td>
<td>4.9</td>
<td>5.2</td>
</tr>
<tr>
<td>865&lt;CM≤980</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>980&lt;CM≤1090</td>
<td>5.3</td>
<td>5.6</td>
</tr>
<tr>
<td>1090&lt;CM≤1205</td>
<td>5.6</td>
<td>5.9</td>
</tr>
<tr>
<td>CM&gt;1205</td>
<td>5.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Testing Results of Vehicle Energy Efficiency and Range
1. Test procedures

1.1 Test procedures

- Comparison of NEDC and WLTC (ambient temperature)
- Comparison of NEDC and WLTC (Environmental temperature 38 °C AC ON)

1.1 Test standards

- GB/T 18385-2005 Electric vehicles-power performance-test method
- GB/T 18386-2005 Electric vehicles-energy consumption and range-test procedures
- GRPE-66-02 - (WLTP) Draft GTR on WLTP

**NEDC**: New European Driving Cycle

**WLTC**: World Light Test Cycle
1. Test procedures

1.3 Test procedures
• Battery full discharge (70% maximum speed within 30 min);
• Battery charge;

• Test under NEDC;
• Battery charge;
• Test under WLTC;
• Battery charge;

• Test under NEDC; (Environmental 38 °C AC on)
• Battery charge;
• Test under WLTC; (Environmental 38 °C AC on)
• Battery charge;
1. Test procedures

1.4 Test cycle (NEDC)

NEDC CYCLE TIME : 1180S
1. Test procedures

1.4 Test cycle (WLTC, CLASS 3 Not including EX-High)

WLTC CYCLE TIME : 1477S
## 2. Test results

### 2.1 Comparison of results under NEDC and WLTC cycle

<table>
<thead>
<tr>
<th>Test parameters</th>
<th>NEDC Reference energy consumption (Wh/km)</th>
<th>Room temperature (25 °C)</th>
<th>High temperature environment (38 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference energy consumption</td>
<td>153.39</td>
<td>390</td>
<td></td>
</tr>
<tr>
<td>Range (km)</td>
<td>118</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>WLTC</td>
<td>Reference energy consumption</td>
<td>150.33</td>
<td>310</td>
</tr>
<tr>
<td>Range (km)</td>
<td>121</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. No energy regeneration during testing, gear: AT;
2. The adopted WLTC cycle was CLASS 3 VER.5.1;
3. AC temperature control: 25 °C (passenger cabin);
2. Test results

Reference energy consumption (REC) under different cycles at ambient temperature and 38 °C (AC control set to 25 °C).

- NEDC: REC increased by 154% with AC on.
- WLTC: REC increased by 106% with AC on.

NEDC: REC increased by 154% with AC on.
WLTC: REC increased by 106% with AC on.
2. Test results

- Range under different cycles at ambient temperature and 38 °C (AC set to 25 °C).

NEDC: Range was reduced to 39% with AC on.
WLTC: Range was reduced to 48% with AC on.
3. Conclusion

- Reference energy consumption (Wh/km):
  NEDC > WLTC

- Range (km):
  NEDC < WLTC

- Average vehicle speed & theoretical range
  NEDC: 33.6 km/h, 11.01 km;
  WLTC: 36.4 km/h, 14.94 km;

- Effect of AC:
  - Vehicle performance was greatly affected by AC, which results in more than 100% higher energy consumption and more than 50% range decrease.
3. Conclusion

- EVE-04-05e: The total added energy requirement for climate @ +10°C: 10 - 20 %, @ -10°C: 40 - 55% (Dr. Tober).

- Vehicle appears to have lower energy consumption and better range under WLTC cycle, compared with NEDC cycle.
Thank you