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Government project
for Developing New EV
## Current status of EV in Korea

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<td>HMC &amp; KIA</td>
<td>- <strong>BlueOn</strong>, 1st EV in Korea in Sep. 2010&lt;br&gt;- <strong>Ray EV</strong>, produced in 2011&lt;br&gt;Sold 1,500 vehicles as of today</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>R-Samsung</td>
<td>- <strong>SM3 ZE</strong>, Compact car EV &lt;br&gt;SOP in 2013, 4000 vehicles in 2014</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>GM Korea</td>
<td>- <strong>SPARK EV</strong>&lt;br&gt;developed conjunction with GM &lt;br&gt;(SOP plan: 2013)</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Gov. project for Next generation EV (I)

- **Project**: Next generation EV in 2014
- **Period**: July 2011 ~ June 2014 (36 months)
- **Budget**: 110 Millions USD
- **Project partners**:
  - Leader: Hyundai Motor
  - Participants: 44 organizations
## Gov. project for Next generation EV (II)

### Compact EV for 5 passengers

<table>
<thead>
<tr>
<th>Description</th>
<th>Compact car EV</th>
<th>Ray EV (KIA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension (mm)</td>
<td>4,530 x 1,775 x 1,435</td>
<td>3,595 x 1,595 x 1,700</td>
</tr>
<tr>
<td>Traction Motor</td>
<td>80 kW(PMSM)</td>
<td>50kW(IM)</td>
</tr>
<tr>
<td>Battery</td>
<td>27 kWh ~</td>
<td>16.4kWh</td>
</tr>
<tr>
<td>Maximum cruising range</td>
<td>200 km ~</td>
<td>139km</td>
</tr>
<tr>
<td>Acceleration (0-&gt;100kph)</td>
<td>11.5 seconds ~</td>
<td>15.9초</td>
</tr>
<tr>
<td>Max speed</td>
<td>145 kph ~</td>
<td>130kph</td>
</tr>
<tr>
<td>Charging system</td>
<td>Slow</td>
<td>5 hours (6.6kW)</td>
</tr>
<tr>
<td></td>
<td>Fast</td>
<td>20 min.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 hours (3.3kW)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 min.</td>
</tr>
</tbody>
</table>
Promotion of EV

- Restructuring Legal & Regulation -
- Building Charging Infrastructure -
- Promotion & Demo project -
Promotion of EV (I)

- Supply EV to Public sector first
  - Provide subsidies for purchasing EV by public agencies

- Provide incentives to general customers
  - support 50% of gasoline vehicle price (Max $20,000) until 2014

- Support installing a charging station
  - Provide low interest Loan for installing a charging system
Promotion of EV (II)

- EV dissemination by Ministry of Environment
  - Promotion of EV dissemination more than 5000 EVs until 2014
  - Domestically suitable charge infrastructure

⇒ Reduction 6,500 tons of CO2 emission

⇒ Saving 7,500,000 USD per year in energy demand

※※ ※※
CO2 emission reduction: 1.3 ton per one EV
Saving energy demand: 1,500 USD per one EV
# Current status of EV Charging facilities in Korea

- **EV Charging facilities by Government as of 2012**
  - Seoul, Busan, Jeju, Gyeonggi, Chungnam,

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>slow charger</td>
<td>9</td>
<td>312</td>
<td>676</td>
<td>997</td>
</tr>
<tr>
<td>quick charger</td>
<td>7</td>
<td>26</td>
<td>94</td>
<td>127</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td>338</td>
<td>770</td>
<td>1,124</td>
</tr>
</tbody>
</table>
Goal of Charging Infra by 2016

- Deployment of **15,000 Units** of EV charging station for supporting to the dissemination of EV

<table>
<thead>
<tr>
<th>Description</th>
<th>Quick</th>
<th>Medium</th>
<th>Slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging time</td>
<td>&lt; 30 minutes</td>
<td>2-3 hours</td>
<td>&lt; 8 hours</td>
</tr>
</tbody>
</table>

**Model**
Demo project of EV in Jeju island
Spark EV by GM Korea
Ray EV by Kia
SM3 Z.E. EV by Renault-Samsung
SM3 Z.E. EV by Renault-Samsung

- 1,000 vehicles will be built in 2013
- 4,000 vehicles will be built in 2014
  - R-Samsung wants to become #1 in EV market in Korea
- Jeju & Seoul will purchase 1,000 SM3 for Taxi in 2014
- MSRP of SM3 ZE is $40,000 USD
  - Central Government Subsidy: 14,000 USD
  - Local Government Subsidy: 5,000 ~ 7,000 USD
- 1,500 EVs were sold in Korea as of Today.
Evaluation project of Charging infrastructure in Jeju-do in 2011
- Assessment of performance & interoperability of EV and Smart grid
- Development of business model for EV charging & sharing
- 53 EVs (slow EVs: 20, fast EVs: 33)
- Charging stations: 139 (Slow charger; 109, Quick charger; 30)

Deployment EV and charging station by Government agency
- Completion of installing charging station 491 units (Ministry of Environment and Local Government, 2011)
Recent news of HMC FCEV (Tucson ix)

HMC is going to export 1,000 Tucson ix FCEV to Denmark, Norway, Netherlands, UK and Sweden by 2015.

Major characteristics of Tucson ix FCEV:
- Top speed: 160kph
- 0 to 100: 12.5 seconds
- Driving range: 594km
- Hydrogen bottle: 700bar
- Traction motor: 100kW
Thank you very much for your attention
Thank you for your attention