Zero Emission Vehicles Action Plan in Changwon
Introduction of Changwon City

Grew as a role model for local development in Korea

Changwon City - grew as a role model for local development

- Population: 1.07 mil
- Budget: 2.5 bil USD
- Area: 747.07 km²
- Companies: 4,013
- GRDP: 28.7 bil USD

2010.7.1 A NEW metropolitan-level
Changwon established through the integration of Changwon, Masan, and Jinhae
Background of ZEV Policy

What it should be an ZEV?
• Limitations of bicycles as a transportation mode replacing passenger vehicles
Background of ZEV Policy

What it should be an ZEV?

- Implementation of EV policy, considering vehicles’ environmental benefits and industrial efficiency

<table>
<thead>
<tr>
<th>Environmental Benefits</th>
<th>Industrial Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel cost for 1-yr drive(electric fees) 15% of internal-combustion vehicles’</td>
<td></td>
</tr>
<tr>
<td>Use of EVs for 1 yr(20,000km) CO2 reduction by 3.2 tons</td>
<td></td>
</tr>
<tr>
<td>GHG emissions ½ of internal-combustion vehicles’</td>
<td></td>
</tr>
<tr>
<td>Electric motor drive No noise, No vibration</td>
<td></td>
</tr>
</tbody>
</table>
Deployment of ZEVs

Designated by the Ministry of Environment as

『EV leading city of Korea』 (2011)
『Main FCEV city of Korea』 (2015)

Electric Vehicle: 558 cars (4th highest in Korea)
Fuel Cell Electric Vehicle: 47 cars (highest in Korea)

Total project cost: 6.5mil USD 【EV 6.5mil USD, FCEV 1.2mil USD】
Deployment of ZEVs

Public Charging Infrastructure Status

• EV Quick Charging Station : 50 spots
Deployment of ZEVs

Public Charging Infrastructure Status

• FCEV Charging Station : 1 spots (increase 2 spots in 2018)
ZEV Action Plan in Changwon (2018~2022)

Goal to supply 10,000 ZEVs by 2022

- Establishment of ZEV supply methods by stages in tandem with the automobile lifecycle (production → supply → operation → disposal)
- Provide additional support upon purchasing ZEVs after scrapping old diesel vehicles
- Expand ZEVs to buses and taxies
- Provide ZEV exclusive parking spaces and toll fee discounts
Success of ZEVs rides on the cooperation between the local government and auto manufacturers.

**Local government**
- Subsidy for ZEVs
- Charging facilities (electric, hydrogen)
- Convenient services

**Auto manufacturers**
- Outstanding ZEV production and sales
- Customer service
- Self-sustainable charging services
Benefits from ZEV Deployment

Analysis on EVs deployed to general public

- **Total mileage (Dec 2016):** 7,066,400km
  - Daily average mileage:
    - 39.2km (2014) → 44.3km (2015) → 48.4km (2016)

- **CO2 emission reduction (192g/km):** 1,357 tons
  - A cut in CO2 emission incl. thermal power generation: 692 tons

- **Fuel cost saving (Gasoline 10km/L):** 860,000 USD
  - Amount of recharging electricity used (2016): 675,190 kWh (143,768 USD)
  - 17% of gasoline-fueled vehicles’ fuel cost from 2016

- **EV User Satisfaction:** Satisfied 87.0%, Unsatisfied 13.0%
  - Complaints: Insufficient charging stations, difficulty in long-range drive
Benefits from ZEV Deployment

Analysis on FCEVs deployed to general public

Total mileage (Sep 2017) : 145,458 km

Daily average mileage : 30 km (2017)

CO2 emission reduction (192 g/km) : 28 tons

2.9 Mil mg of fine dust purified

FCEV driving 1 km: fine dust is up to 20 mg clean
ZEVs is Vehicles of the future

- Uptake of ZEVs requires the joint effort of the city and the auto manufacturers.
- Eco-friendly and economic solutions to electricity and hydrogen supply, as they are the fuel for ZEVs.
ZEVs is Vehicles of the future

• Changwon plans to successfully supply ZEVs through the ZEV Action Plan
Mecca of Eco-Mobility

Thank you