

# Zero Emission Vehicles Action Plan in Changwon



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 : 747.07km<sup>2</sup>
- Companies : 4,013
- GRDP : 28.7 bil UDS



2010.7.1 A NEW metropolitan-level  
Changwon established through  
the integration of



# Background of ZEV Policy

## What it should be an ZEV?

- Limitations of bicycles as a transportation mode replacing passenger vehicles

### Physiography



### Climate



### Rise in External Traffic



2006 → 2011  
Daily internal traffic  
**Down by 15,200 cars**

2006 → 2011  
Daily external traffic  
**Up by 71,000 cars**

# Background of ZEV Policy

## What it should be an ZEV?

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

### Environmental Benefits

Fuel cost for 1-yr drive(electric fees)  
**15% of internal-combustion vehicles'**

Use of EVs for 1 yr(20,000km)  
**CO2 reduction by 3.2 tons**

GHG emissions  
**½ of internal-combustion vehicles'**

Electric motor drive  
**No noise, No vibration**

### Industrial Effects





# 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  
(4<sup>th</sup> highest in Korea)  
cars



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



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

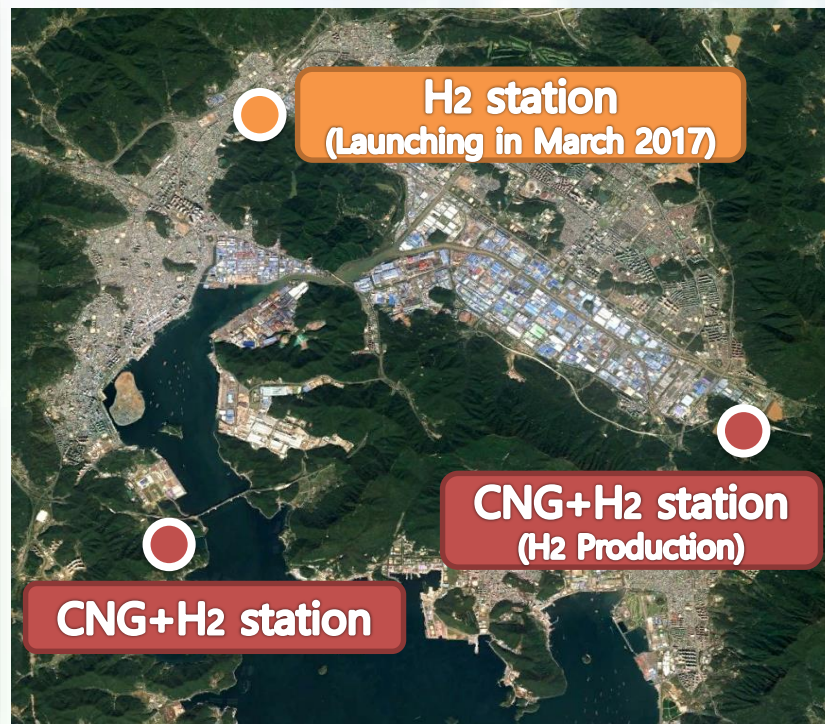




# Deployment of ZEVs

## Public Charging Infrastructure Status

- FCEV Charging Station : 1 spots (increase 2 spots in 2018)



# ZEV Action Plan

## 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 taxis
- Provide ZEV exclusive parking spaces and toll fee discounts




도약의 새 시대 **큰창원**

제202회 정책토론 자료  
2017. 5. 31.(수) 09:00

- 정부 친환경자동차 보급정책 관련 -  
**우리시 친환경자동차 보급방안 검토**

결재  
2017. 05. 31  
시장

 **창원시**  
(생태교통과)



# ZEV Action Plan

## ZEV Action Plan in Changwon (2018~2022)

**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)  
: 675,190kWh(143,768 UDS)
- 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)  
: 145,458km

Daily average mileage : 30km(2017)



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

2.9 Mil mg of fine dust purified

FCEV driving 1km : fine dust is up to 20 mg clean



# Finish

## 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.





# Finish

## ZEVs is Vehicles of the future

- Changwon plans to successfully supply ZEVs through the ZEV Action Plan



# Mecca of Eco-Mobility *Changwon*



# Thank you