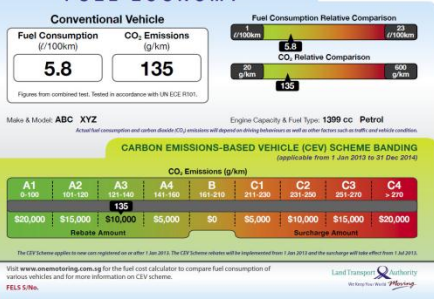


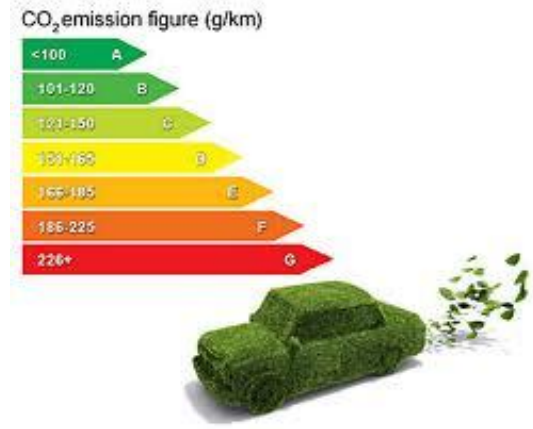
# **Update on Singapore's Actions and Policies to improve transport energy efficiency**

42<sup>nd</sup> APEC Expert Group on Energy Efficiency & Conservation Meeting  
11-12 Nov 13, Bangkok



# Outline

- Transport energy consumption in Singapore
- Policies and strategies to improve transport sector energy efficiency;
- Carbon-emission based schemes for vehicles;
- Green mark for rapid transit;
- Electric vehicles test-bed



# Transport sector in Singapore...

**As at June 2013**

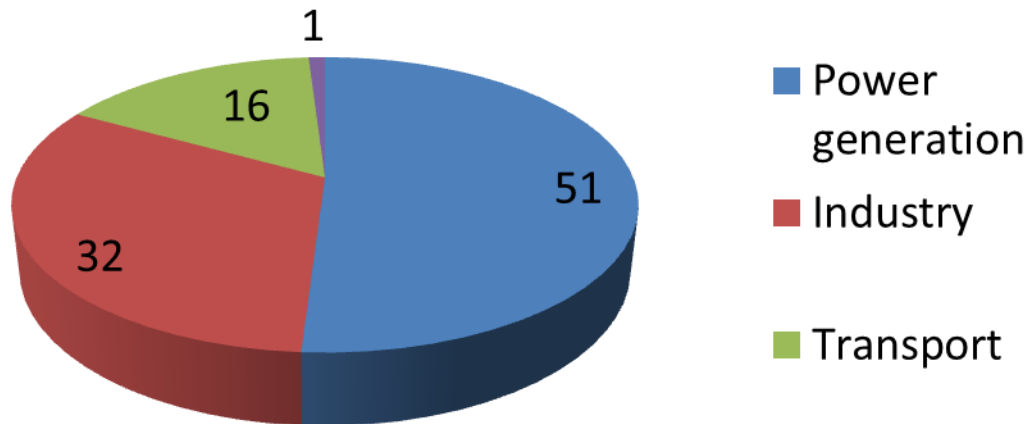
**Total Population : 5.4 million**

**Land area : 716.1 sq km**

**Population density: 7,540 p/km<sup>2</sup>**



## **Estimated energy consumption (%)**



# Transport EE policies look to...

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- Promote public transport as it significantly improves EE
- Increase the target for public transport share during peak periods to 75% by 2030.
- **Strategies to increase public transport model include;**
  - ✓ Doubling rail network from 178 km to **360km**;
  - ✓ Expand public bus fleet by **20%** (or 800 buses) over the next 5 years;
  - ✓ Additional **30 km of bus lanes** added to the current 180 km in the next 2 years, and expanding the Mandatory Give Way to Buses schemes from 200 locations to about 350;

# Transport policies seek to...

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## Manage car population through ;

- Under the Vehicle Quota System (VQS), vehicle population growth reduced from 3% - 1.5% per year from 2009 and further to 0.5% in 2012;
- Electronic Road Pricing (ERP) adjusted quarterly according to traffic conditions;



- Off-Peak Car (OPC) scheme to encourage drivers to use during off-peak periods;
- Intelligent Transport System (ITS) solutions

# Carbon Emission-based vehicle scheme...

Rebates for new cars, taxis and newly imported used-cars with low carbon emissions (i.e. less than or equal to 160g CO<sub>2</sub>/km) registered with effect from 1 January 2013

CEVS BANDINGS			
Band	Carbon emission (CO <sub>2</sub> g/km)*	REBATE (FROM 1 JAN 2013)	
		Cars	Taxis
A1	0 to 100	\$20,000	\$30,000
A2	101 to 120	\$15,000	\$22,500
A3	121 to 140	\$10,000	\$15,000
A4	141 to 160	\$5,000	\$7,500

# Carbon Emission-based vehicle scheme...

Surcharges will be levied on new cars, taxis and newly imported used cars with high carbon emission (i.e. equal to or more than 211g CO<sub>2</sub>/km) registered with effect from 1 July 2013

CEVS BANDINGS			
Band	Carbon emission (CO <sub>2</sub> g/km)*	REGISTRATION SURCHARGE (FROM 1 JULY 2013)	
		Cars	Taxis
C1	211 to 230	\$5,000	\$7,500
C2	231 to 250	\$10,000	\$15,000
C3	251 to 270	\$15,000	\$22,500
C4	271 & above	\$20,000	\$30,000

# Green Mark for Rapid Transit System

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- A Green Mark framework for the Rapid Transit System (RTS) was developed to effective use of energy, water conservation, and environmental protection & sustainable development;
- The RTS Framework provides a systematic and structured approach in evaluating and rating the environmental performance of existing and future lines.



# Singapore's EV test-bedding programme ...



Daimler Smart ed



Mitsubishi-MiEV



Nissan Leaf



Renault Fluence Z.E.

- Inter-Agency effort lead by EMA and LTA .
- Aims to assess the different EV prototypes and charging technologies given Singapore's urbanised environment and road conditions, to determine the feasibility of using EVs in Singapore.
- Four models are available as part of this test-bed: Daimler smart electric drive (ed), Mitsubishi i-MiEV, Nissan Leaf and Renault Fluence Z.E..

# Objectives of the EV test-bed

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EV Test-bed aims to examine several issues relevant to policies regarding the roll-out of EVs in the future including:

- The optimal way to operate and deploy charging infrastructure;
- Consumer behaviour on charging and range anxiety;
- Robustness of EV battery systems; and
- General performance of EVs on Singapore road conditions.

*As of 30 October 2013, there are 89 registered EVs under the test-bed*

# ... and is deploying charging service infrastructure in tandem with electric vehicle take-up .



Outdoor normal charger



Indoor normal charger

- Robert Bosch (SEA) Pte Ltd (Bosch) is the appointed Charging Service Provider (CSP).
- To design, develop, deploy, operate and maintain Singapore's EV charging infrastructure.

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# Thank You