

# Asia regional exchange on NAMAs in the transport sector

16 Aug 2013

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# Singapore's Climate Change Targets

Sustainable Singapore  
Blueprint (2009)

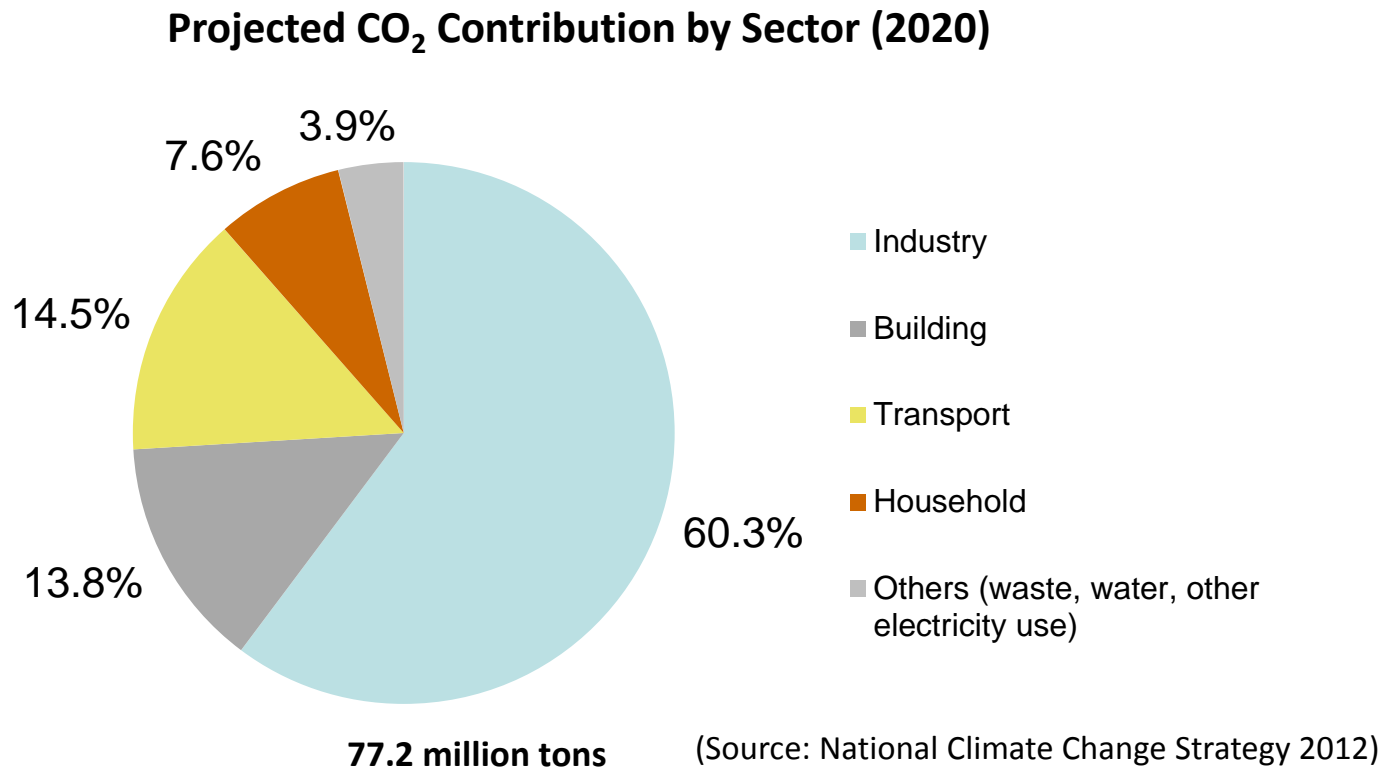
Reduce energy intensity by 20% from 2005 levels by 2020, & by 35% from 2005 levels by 2030  
(Equivalent to 7% to 11% emission reduction from 2020 Business As Usual (BAU))

Singapore's Pledge

Reduce GHG emissions by 16% below 2020 BAU, if a global agreement on climate change is reached

# Singapore's Projected BAU Emissions

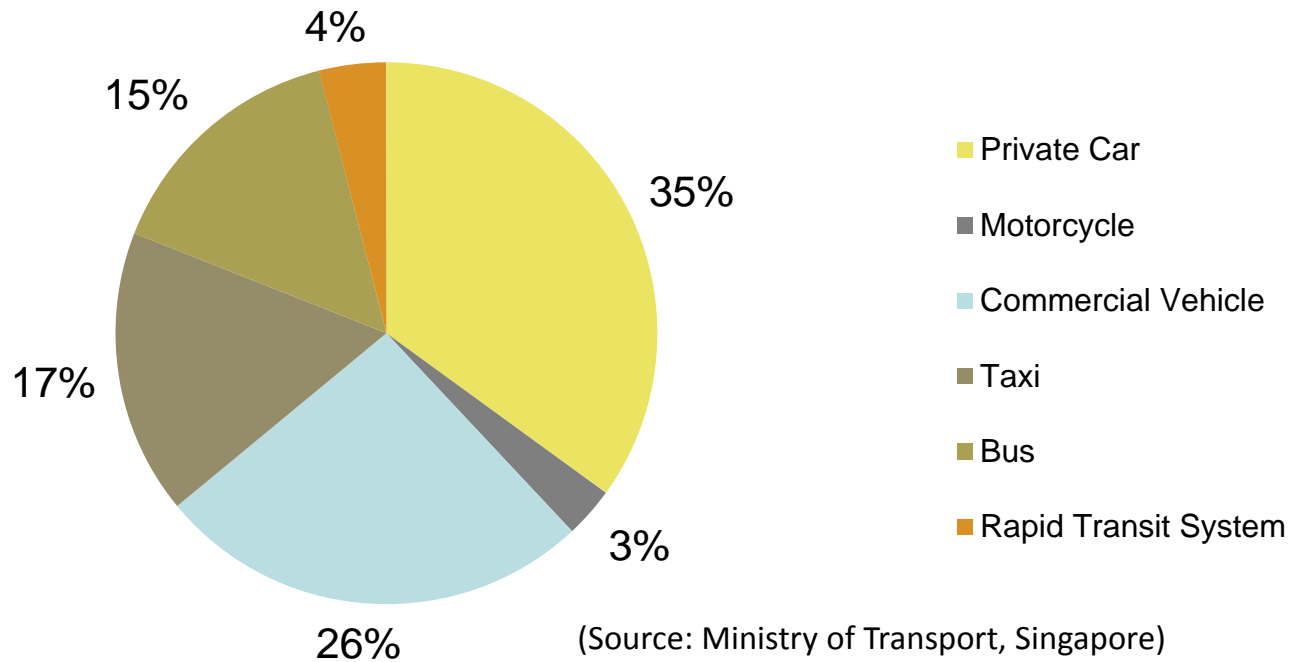
- Land transport will form the second largest source of CO<sub>2</sub> emissions in Singapore in 2020



# Emissions from Land Transport in Singapore

- Private cars are the largest contributor to land transport emissions

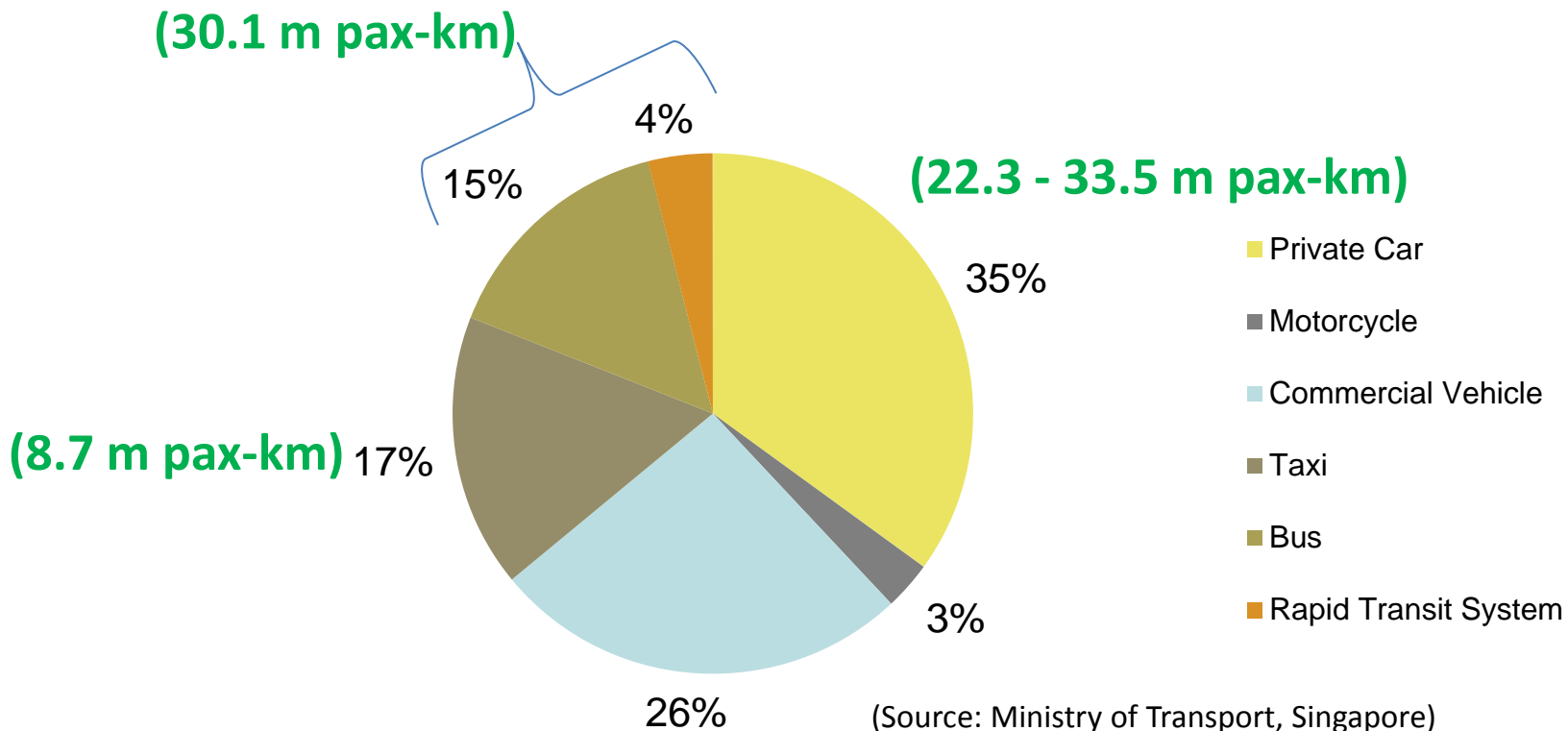
CO<sub>2</sub> Contribution by Transport Mode (2005)



# Emissions from Land Transport in Singapore

- Shifting more trips to public transport and managing car travel demand are key to reducing emissions from land transport sector

CO<sub>2</sub> Contribution by Transport Mode (2005)



All figures are estimated average daily in 2005.

# Shifting More Trips to Public Transport

Public Transport Modal Share  
(during peak periods)

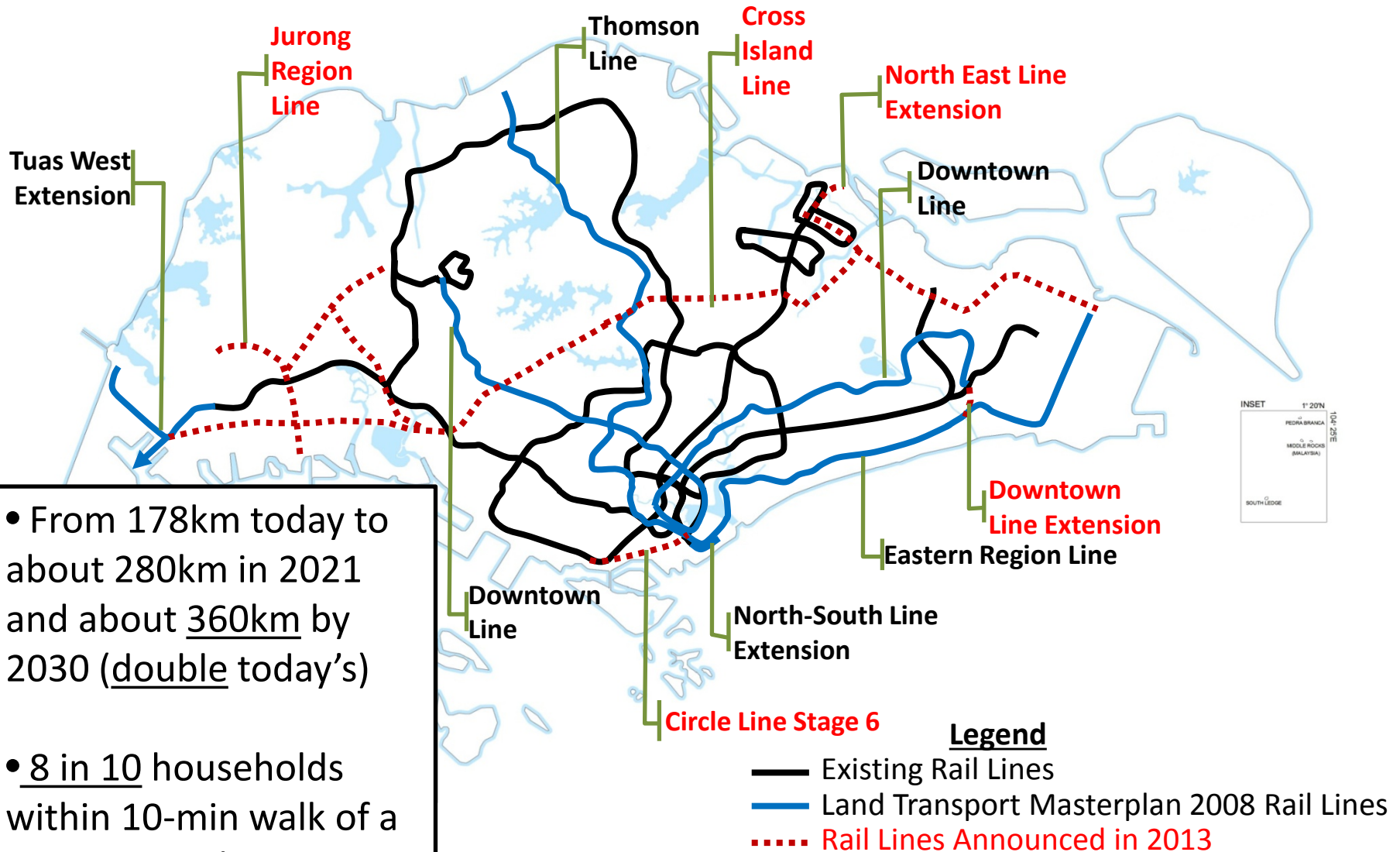


# Shifting More Trips to Public Transport

“**Making Public Transport a Choice Mode**” is a key Strategic Thrust under Singapore’s Land Transport Masterplan 2008

- Enhance integration of public transport system
- More priority for buses
- **Expand rail network**
- Introduce contestability to public transport industry
- Enhance travel experience

# Expanding Rail Network



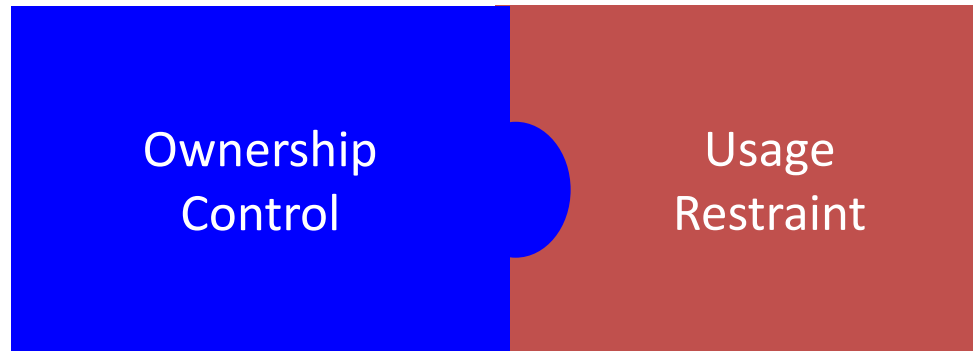
• From 178km today to about 280km in 2021 and about 360km by 2030 (double today's)

• 8 in 10 households within 10-min walk of a train station by 2030



# Managing Car Travel Demand

Another key strategy is the management of road travel demand



- **Vehicle Quota System (VQS)**
  - **Additional Registration Fee (ARF)**
  - **Other ownership costs**
    - Excise duty
    - Road tax
- **Electronic Road Pricing (ERP)**
  - **Off-Peak Car (OPC) scheme**
  - **Petrol duty**
  - **Parking policies**

# Curbing Car Ownership: Vehicle Quota System

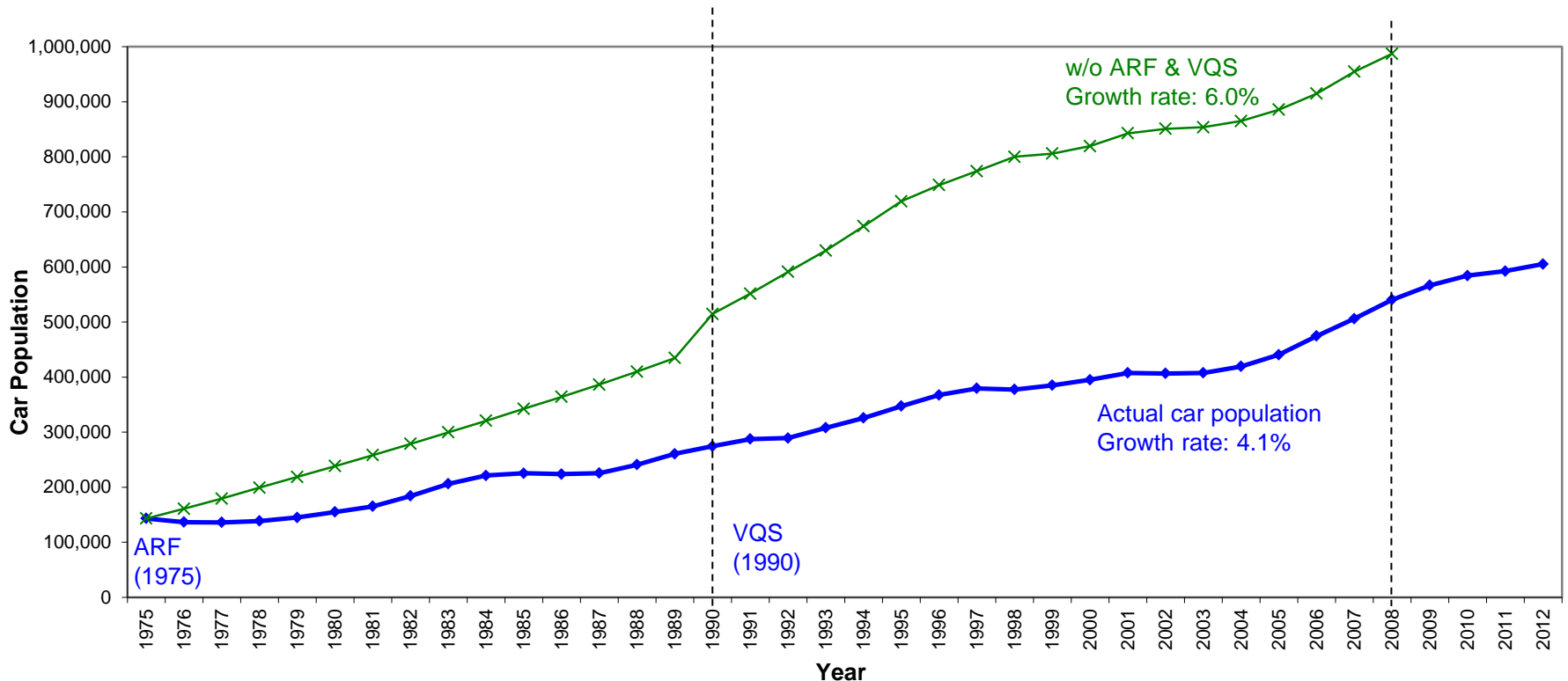
- Introduced in 1990 to control growth rate of vehicle population
  - 3% p.a. from 1990-2008
  - 1.5% p.a. from 2009
  - 0.5% p.a. from 2013
- Certificate of Entitlement (COE) required to own vehicle
  - 10-year tenure
  - Open Bidding System

# Curbing Car Ownership: Additional Registration Fee (ARF)

- Ownership tax introduced in 1972 to deter vehicle ownership
- Based on percentage of Open Market Value (OMV) of vehicles
  - Raised progressively from 35% (1972) to 175% (1980s) for cars
- Currently at
  - 100% for cars and taxis
  - motorcycles: 15%
  - commercial vehicles & buses: 5%

# Curbing Car Ownership: VQS and ARF

- Without ARF & VQS, car population would have grown an additional 83% by 2008
- ARF & VQS brings about annual reduction of 3.8% of Singapore's total CO<sub>2</sub> emissions

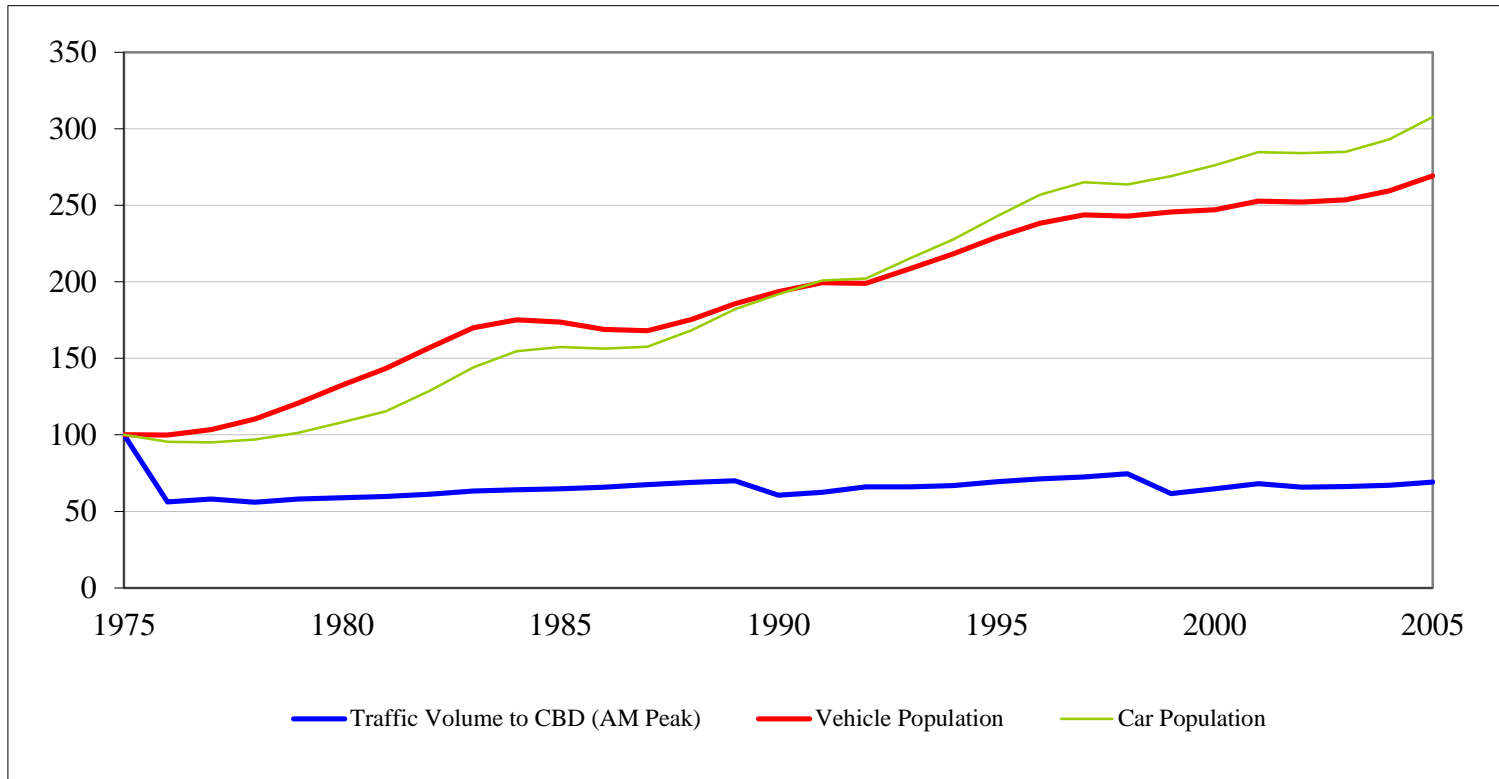


# Usage Restraint: Road Pricing

- **Area Licensing Scheme (ALS)**
  - Implemented from 1975
  - Motorists required to purchase license to enter Restricted Zone (RZ)
  - Reduces congestion in Central Business District (CBD)
  
- **Electronic Road Pricing (ERP)**
  - Introduced in 1998 to replace ALS
  - Caters to changing traffic patterns
  - ERP rates determined based on local traffic conditions and time, and reviewed every 3 months

# Usage Restraint: Road Pricing

- Road pricing brings about annual reduction of 1.01% of Singapore's CO<sub>2</sub> total emissions between 1975 and 2008
  - Reduced congestion on expressways and major roads = 0.85%
  - Lower traffic volume in CBD = 0.16%



# Improving Energy Efficiency

- **Carbon Emissions-based Vehicle Scheme (CEVS)**
  - Introduced in Jan 2013 to encourage lower emissions cars and taxis
  - “Feebate” scheme that is technology-neutral and performance-based
  - Rebates & surcharges depends on vehicle’s CO<sub>2</sub> emissions performance

# Structure of Carbon Emissions-based Vehicle Scheme

| Band | Carbon Emission<br>(CO <sub>2</sub> g/km) | Cars                                   | Taxis                                  |
|------|---|--|--|
|      |   | Rebate (-) /<br>Surcharge (+)<br>(SGD) | Rebate (-) /<br>Surcharge (+)<br>(SGD) |
| 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                                 |
| B    | 161 to 210                                | 0                                      | 0                                      |
| 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                                |



# Carbon Emissions-based Vehicle Scheme

## Distribution of Newly Registered Cars Across Emission Bands

| Band    | Carbon Emission (CO <sub>2</sub> g/km) | Pre-Implementation |       | Implement-ation  |
|---------|--|--------------------|-------|------------------|
|         |  | 2011               | 2012  | 2013 (Jan – May) |
| A1 – A4 | 0 to 160                               | 19.4%              | 41.4% | 48.4%            |
| B       | 161 to 210                             | 59.1%              | 44.8% | 35.6%            |
| C1 – C4 | 211 & above                            | 31.5%              | 13.8% | 16.0%            |

# Improving Energy Efficiency

- **Multi-agency Electric Vehicle (EV) Taskforce**
  - EV Test-bed from June 2011 to Dec 2013
- **Green Mark for RTS**
  - Energy saving measures in MRT system
- **Trial on Diesel Hybrid Bus technology**

# Summary

- Shifting more trips to public transport , especially rail-based transport
- Managing car-based travel demand , through car ownership and usage restraint measures
- Improving energy efficiency

Thank You!