

**Stream 2:  
Reducing Emissions from Mobile Sources  
SW 30: Congestion Charging and Road Pricing**

BAQ 2006  
13–15 Dec 06, Yogyakarta, Indonesia

## Road Pricing Strategy in Singapore



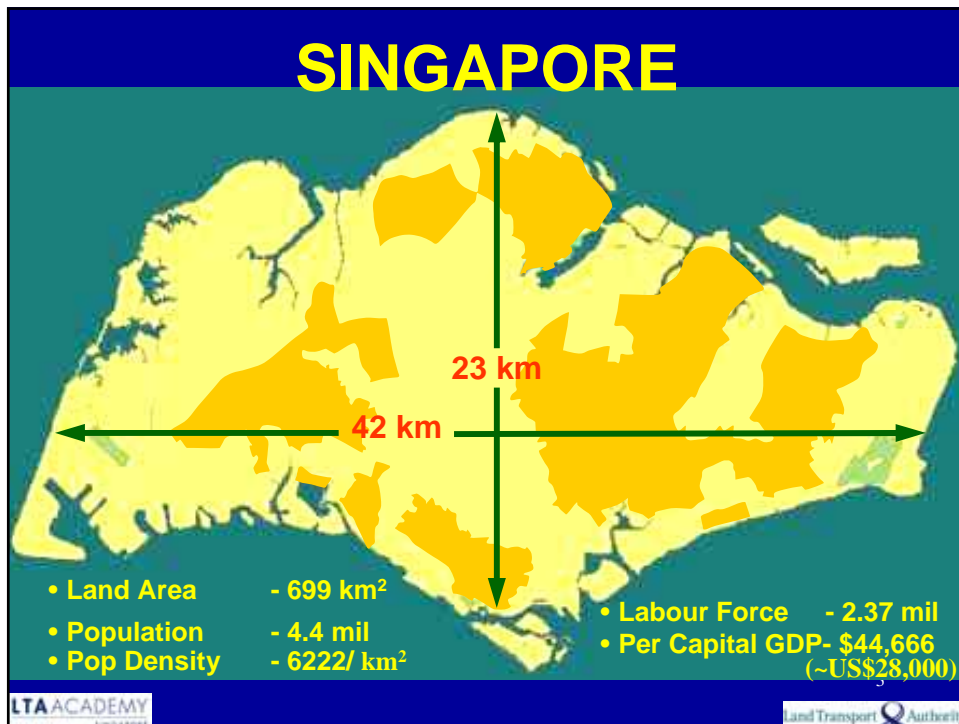
**Loh Chow Kuang**  
Deputy Director, LTA Academy  
Land Transport Authority, Singapore  
Email: [chow\\_kuang\\_loh@lta.gov.sg](mailto:chow_kuang_loh@lta.gov.sg)  
Website: [www.lta.gov.sg](http://www.lta.gov.sg)

## Overview

- ★ Context
- ★ Overall Transport Strategies
- ★ Manual Road Pricing
- ★ Electronic Road Pricing
- ★ Current Achievements
- ★ Conclusion



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Land Transport Authority **(LTA)**

**Policy**

**Planning**

**Development**

**Management**

**One-Stop National Agency that:**

- Formulates policies and strategies;
- Plans road & rapid transit networks to meet future travel demand;
- Develops road & rail infrastructure and manages the design & construction of projects;
- Manages traffic and maintains road structures & facilities; and
- Regulates public transport services and vehicles.

~ 3500 staff (incl 1200 professionals)

Road   Rail   Vehicle   Bus   Taxi

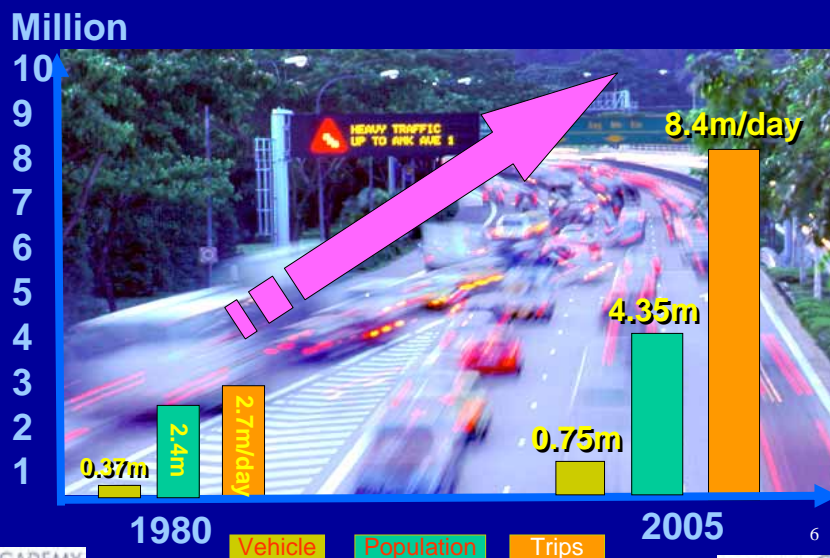
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## Road/Private Transport

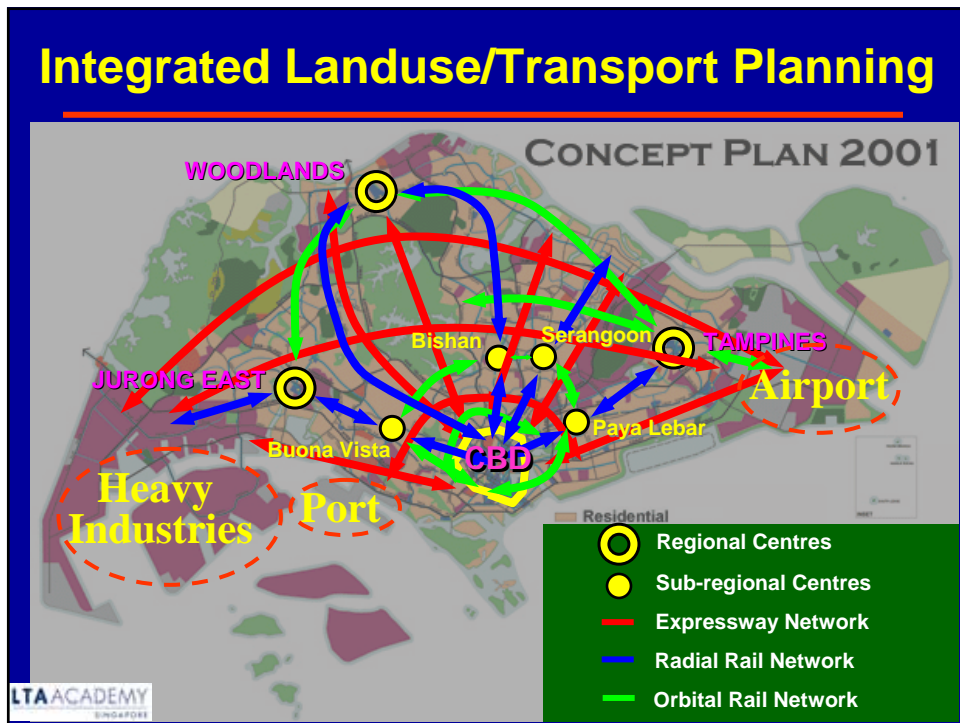
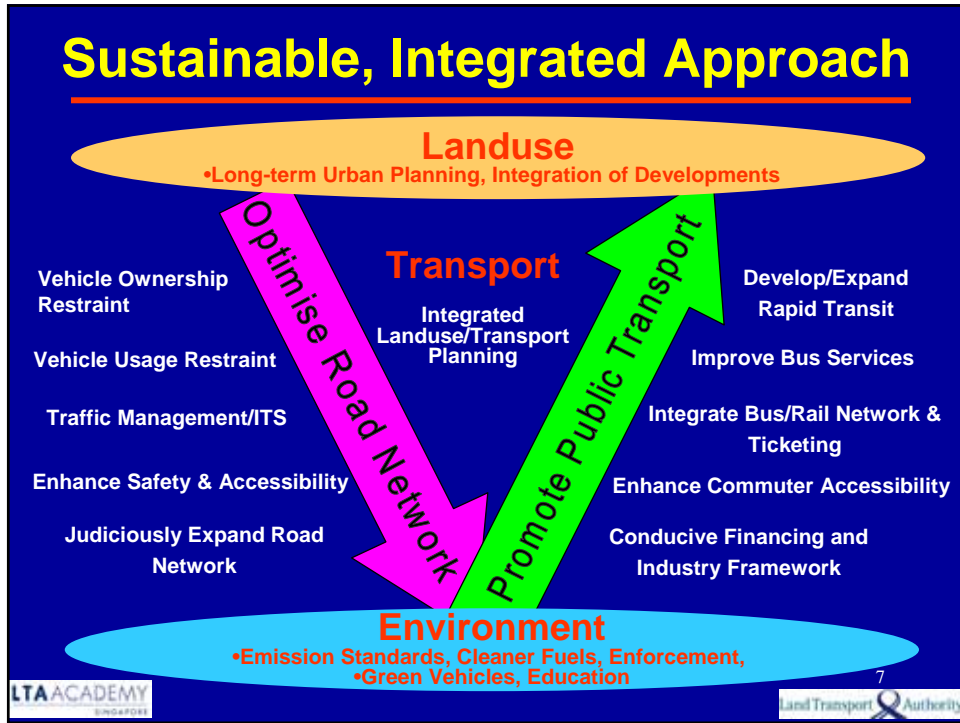
<b>Road Network</b>	- 3,200 km
<b>Expressway Network</b>	- 150 km
<b>Vehicle Population</b>	- 755,000
<b>Car Population</b>	- 438,000 (58%)
<b>Cars/1000 residents</b>	- 117



## Growing Travel Demand



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**Develop High-Quality Public Transport**



**Managing Demand for Road Usage**



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## **World's First Road Pricing System**

**Implemented 1975**



**Area Licensing Scheme (ALS)**



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**Since 1998**



**Electronic Road Pricing (ERP)**

Land Transport Authority

## **Road Pricing in Singapore - Key Policy Issues**

- Strong Government commitment
- Congestion management tool
- Non-revenue generating
- No privacy intrusion
- Transparent and trustworthy
- Fair and equitable
- Improve public transport
- Provide alternatives
- Minimise impact on businesses
- Education/Publicity
- Legislation and enforcement
- Prevention of violations and frauds



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## World's First Manual Road Pricing



- Area Licensing Scheme (ALS) for CBD or Restricted Zone (RZ) started in June 1975
- Licence fee: \$3/day or \$60/month
- Carpools, taxis, motorcycles, buses and commercial vehicles were initially exempted
- Scheme extended to Expressways in May 1990.
- High manpower needs, limitation in varying road pricing charges, inconvenient to motorists.

## World's First ERP System



Gantries

In-Vehicle Unit (IU) & Cash Card



Central Computer & Processing System



Enforcement Cameras

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### ERP Coverage

- Expanded coverage in time & space

- Total 48 gantries (incl CBD, major arterials & expressways)

The map displays the ERP coverage areas in Singapore, including the CBD, major arterials, and expressways. The coverage areas are labeled: AYE, BKE, CTE, Outer Cordon, PIE, ECP, and CBD. An inset photo shows an ERP gantry with a sign that says 'ERP In Operation'.

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### In-Vehicle Unit (IU)

- Permanent IUs (Powered by vehicle's battery)
- Temporary IUs (Powered by replaceable battery)

Different types of IUs are fitted on vehicles to enable road pricing charge to vary by vehicle type.





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### ERP CONTROL CENTRE



- 24-hour operations to ensure all the ERP gantries are working properly.
- Monitoring of all equipment.
- Processing of financial transactions.
- Processing of violation images.

### ERP Implementation - Policy Changes and Publicity

- Free fitting of In-vehicle Units
- Strengthen enforcement powers
- Vehicle tax incentives:
  - Lower vehicle ownership taxes and road tax
  - Road tax rebates over 5 years
- Manage impact on businesses
  - Phasing-in of ERP rates for taxis (over 3 years) & commercial vehicles (over 4 years)
- Publicity
  - Special ERP hot-line
  - Brochures sent to all vehicle owners
  - Wide media coverage, etc



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## Foreign Vehicles

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### Rent - Temporary IUs for short-term visitors

- ▷ \$122.30 refundable deposit
- ▷ \$5.05 rental fee per day (min of 2 days)
- ▷ valid for two weeks

### Buy - Permanent IUs for sale to frequent visitors

- ▷ \$152.90 inclusive of installation

### Day Scheme

- ▷ Flat rate of S\$5 per day. Fee is added to the Vehicle Entry Permit/Toll charges.

## Violations and Errors

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- Violations (~ 0.3% per day)
  - No IUs - Fine of S\$70
  - No CashCards or Insufficient cash value in CashCard - Administrative Charge of S\$8-\$10 plus ERP charge
- Errors (~ 0.05% per day)
  - Motorists asked to have IUs and CashCards checked



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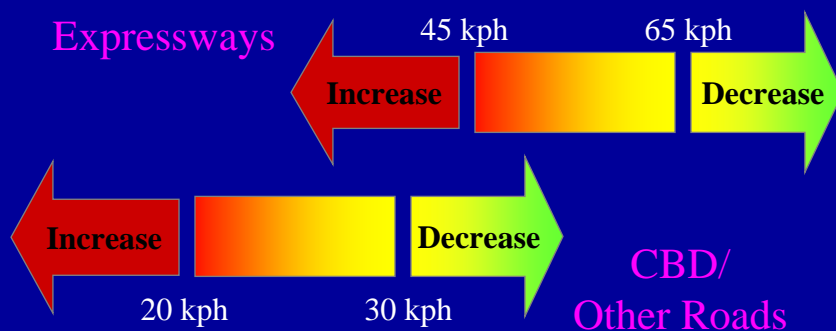
## ERP Rates

- Peg to PCU (Pax Car Unit)
  - Car – 1
  - Taxi -1
  - Buses – 1.5 to 2
  - Light Goods Vehicle – 1
  - Heavy Goods Vehicle – 1.5 to 2
  - M/cycle – 0.5
- Set based on traffic conditions
  - Vary by time and location
- Starting from S\$0.50 per PCU (max \$3.50/PCU)
- Review/Revise quarterly to maintain an optimal speed range
- Only emergency vehicles are exempted



## Review of ERP Rates

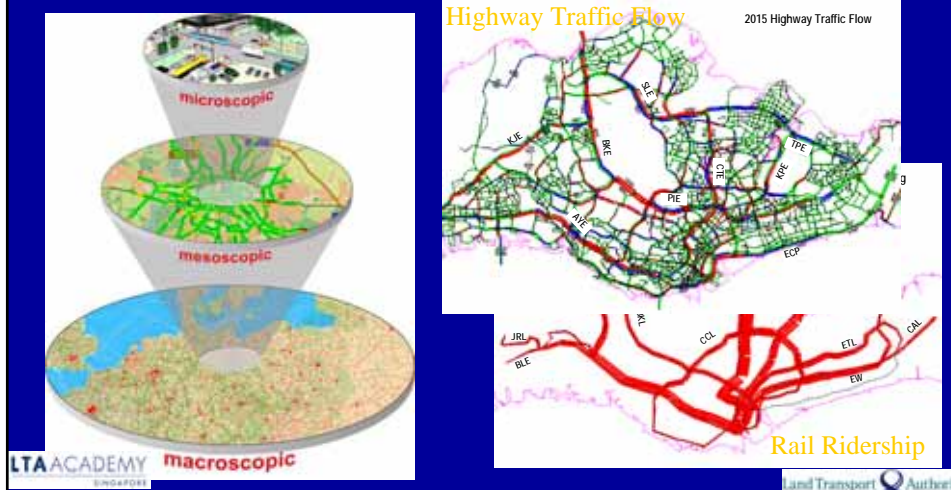
- To ensure use of road space is optimised
- Review at 3-monthly intervals



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### Computer Transport Modelling

- Provides travel demand forecasts and traffic simulation for infrastructure planning, policy studies and traffic management schemes (eg ERP)

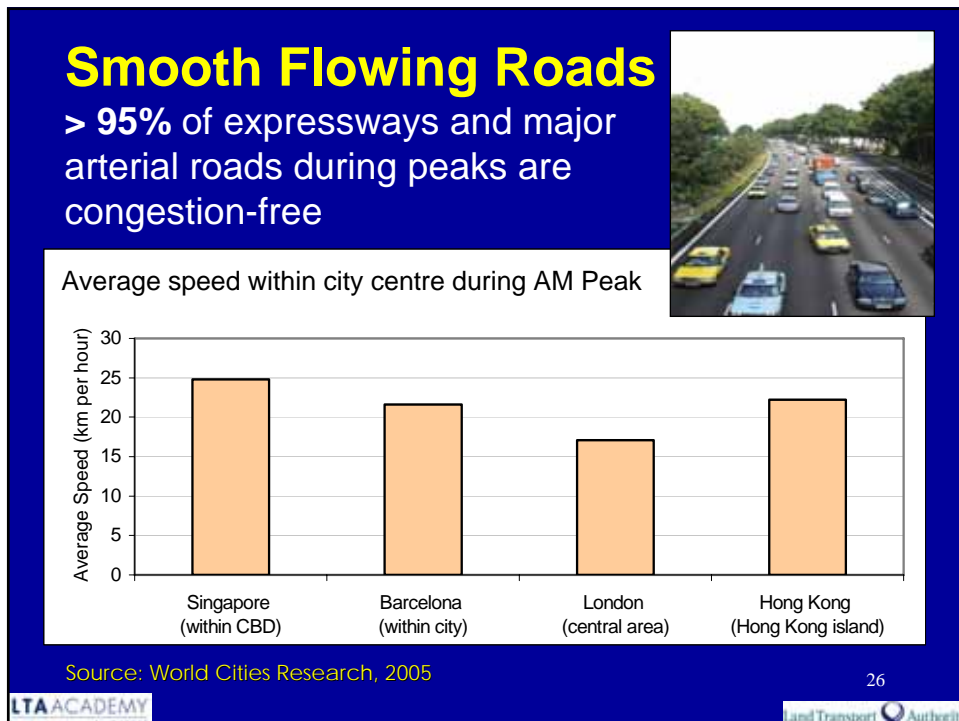
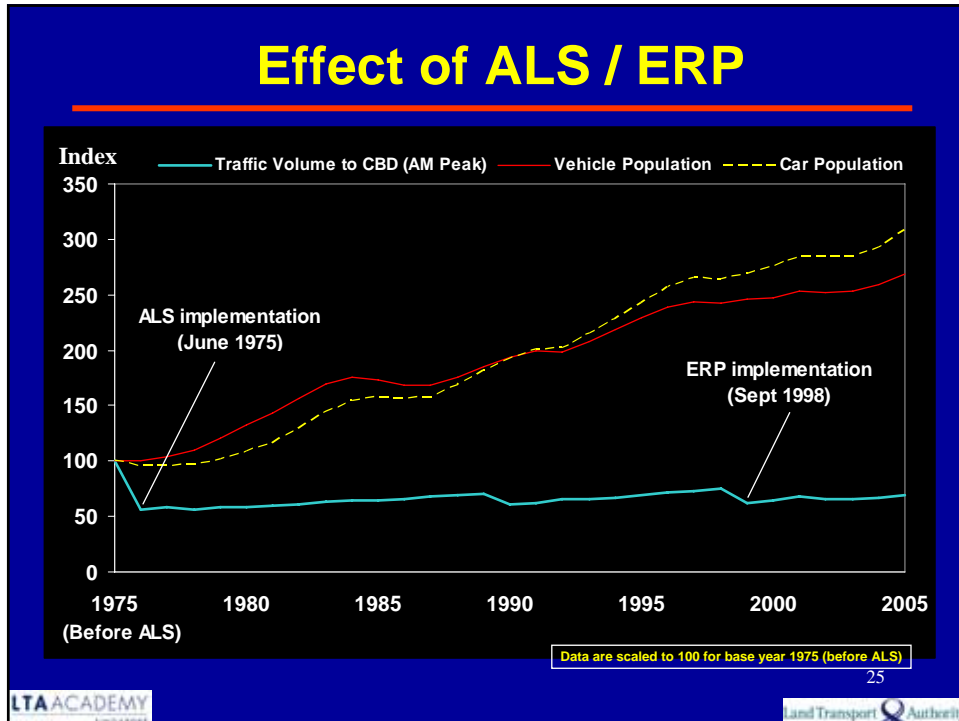


### Benefits of ERP

- Fair:
  - pay-as-you-use (charges are levied on a per-pass basis)
  - those who contribute more to the congestion pay more
  - those who use the roads less frequently or who travel during non-ERP hours will pay less or not need to pay at all
  - those who choose to pay will enjoy a smoother ride
  - no privacy intrusion
- Convenient:
  - rates are automatically deducted from the cashcard in each vehicle
- Reliable:
  - fully automated system, no human errors
- Effective:
  - motorists more aware of the true cost of driving
  - motorists are encouraged to decide/choose:
    - whether to drive, when to drive and where to drive
    - different route, mode of transport, time of travel, or not travel at all.
  - optimise road usage and manage congestion



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## Sharing with the World

Delegates from some 50 countries  
worldwide have visited LTA



> 70 delegations visited LTA in 2005

- A dedicated Division of Land Transport Authority (LTA)
- A one-stop focal point for governments, organisations and professionals around the world to:
  - tap Singapore's know-how and
  - exchange best practices in land transport management and development
- Key training areas:
  - Policy and Planning
  - Public Transport Management
  - Traffic and Road Management
  - Rail Transit Development & Systems
  - Vehicle Licensing and Standards
  - Delivered by Senior LTA Staff who are the Domain Experts



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## **Conclusion**

- Road Pricing/ERP is effective in managing congestion/road usage
  - reduces sharp peak traffic volumes
  - solves congestion in the controlled area, but may transfer congestion elsewhere
- Road Pricing/ERP is not a revenue generating measure in Singapore but for congestion management
- Road pricing scheme has to be implemented as part of a total package
- Need good alternatives for those affected
  - Good public transport is important
- Direct debit from the Cashcard (stored-value smartcard) addresses privacy concerns

