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Road Pricing For Managing Traffic in Singapore

Mr Chandrasekar s/o Palanisamy

- Land Transport Authority
- Director, Traffic & Community Partnership
- sekar_chandra@lta.gov.sg

Land Transport  Authority

Area License Scheme

- Manual road pricing introduced in Central Business District (CBD) in 1975
- High manpower needs, inconvenient, limited in varying road pricing charges



Electronic Road Pricing (ERP)

- Uses Pricing
 - Push-pull concept to encourage public transport
 - Optimise use of road space to achieve max. traffic flow-rate on the roads



**Ownership
Control**
(Vehicle Quota System)

**Usage
Restraint**
(Road Pricing)



Usage Restraint: ERP



- A Dedicated Short-Range Communications System
- In-vehicle Unit & CashCard or Cepas cards for payments of road usage charges

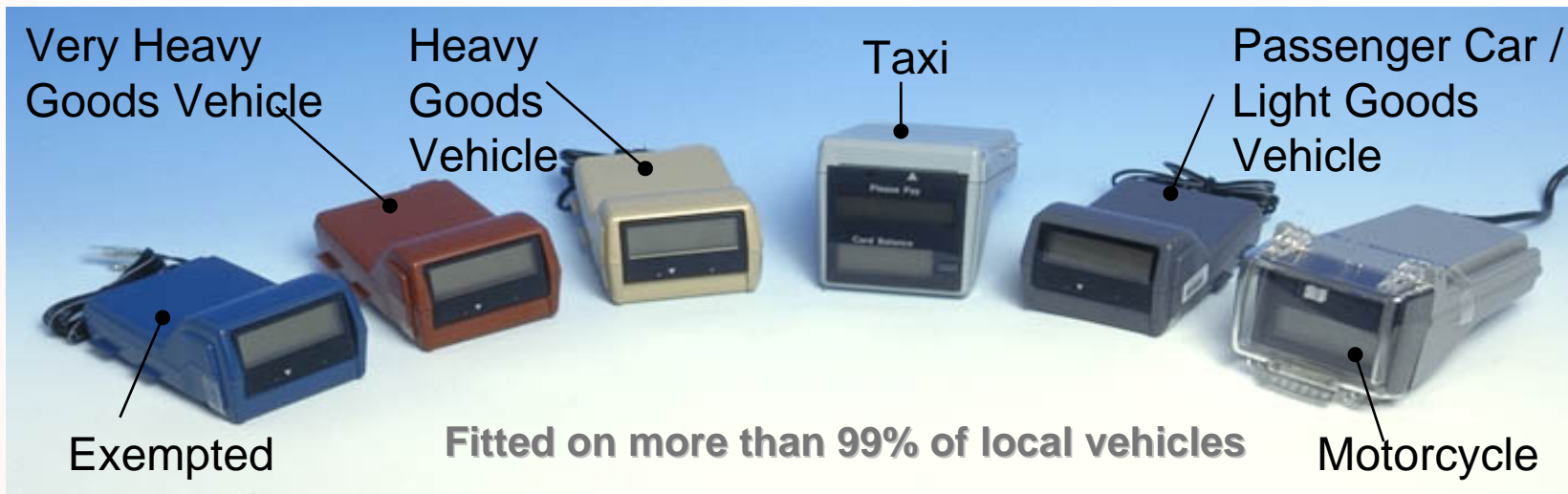
- Implemented in 1998 to replace the Area Licensing and Road Pricing schemes



In-vehicle Units (IU)

Different types for different categories of vehicles

- allow variable pricing
- facilitate use of stored-value smart cards



Source: LTA



Field Equipment & Control Centre

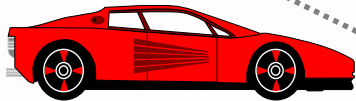
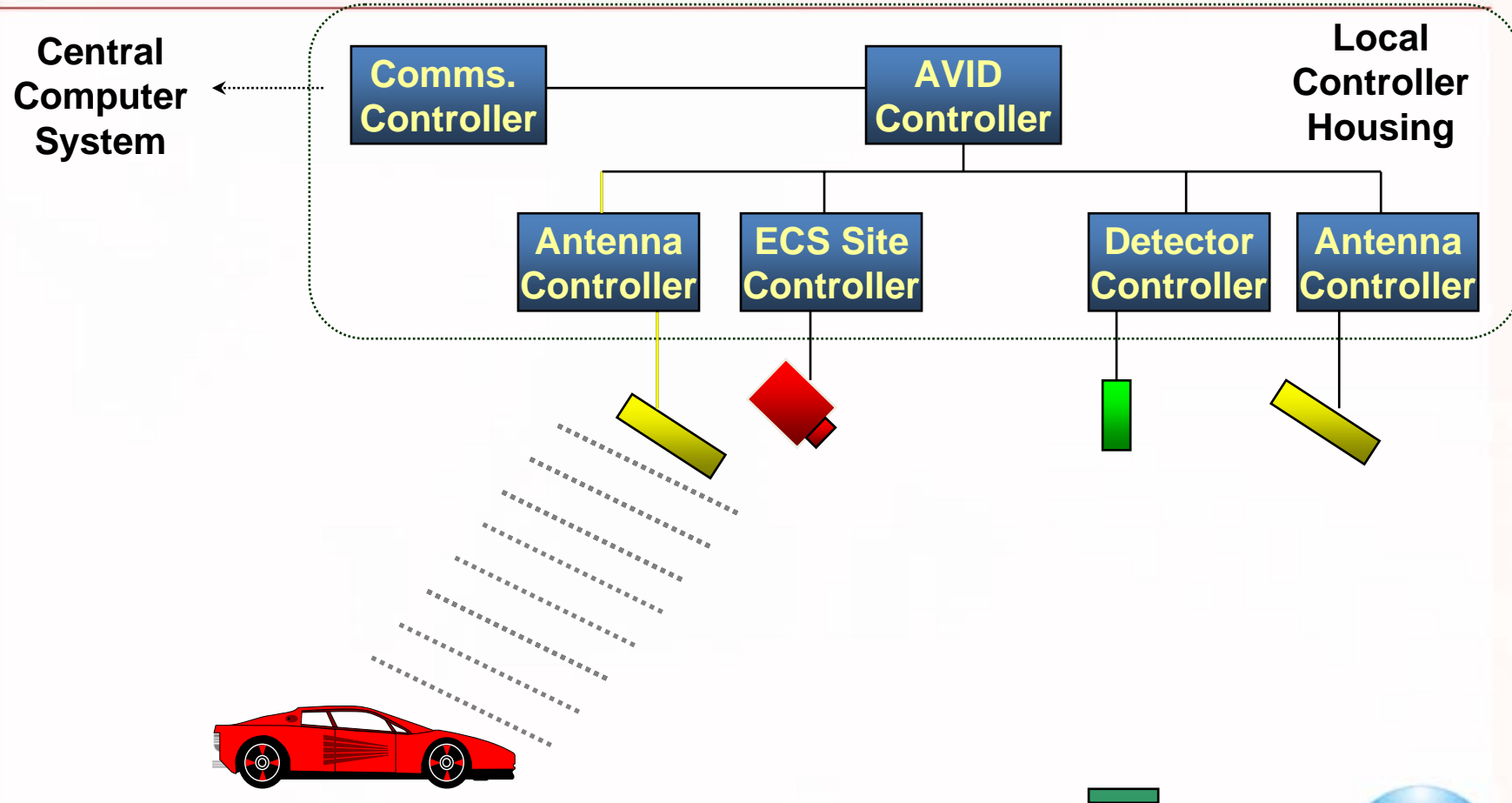


- Field Equipment
 - DSRC antennae
 - vehicle detectors
 - enforcement cameras
 - controller housing
 - variable message sign

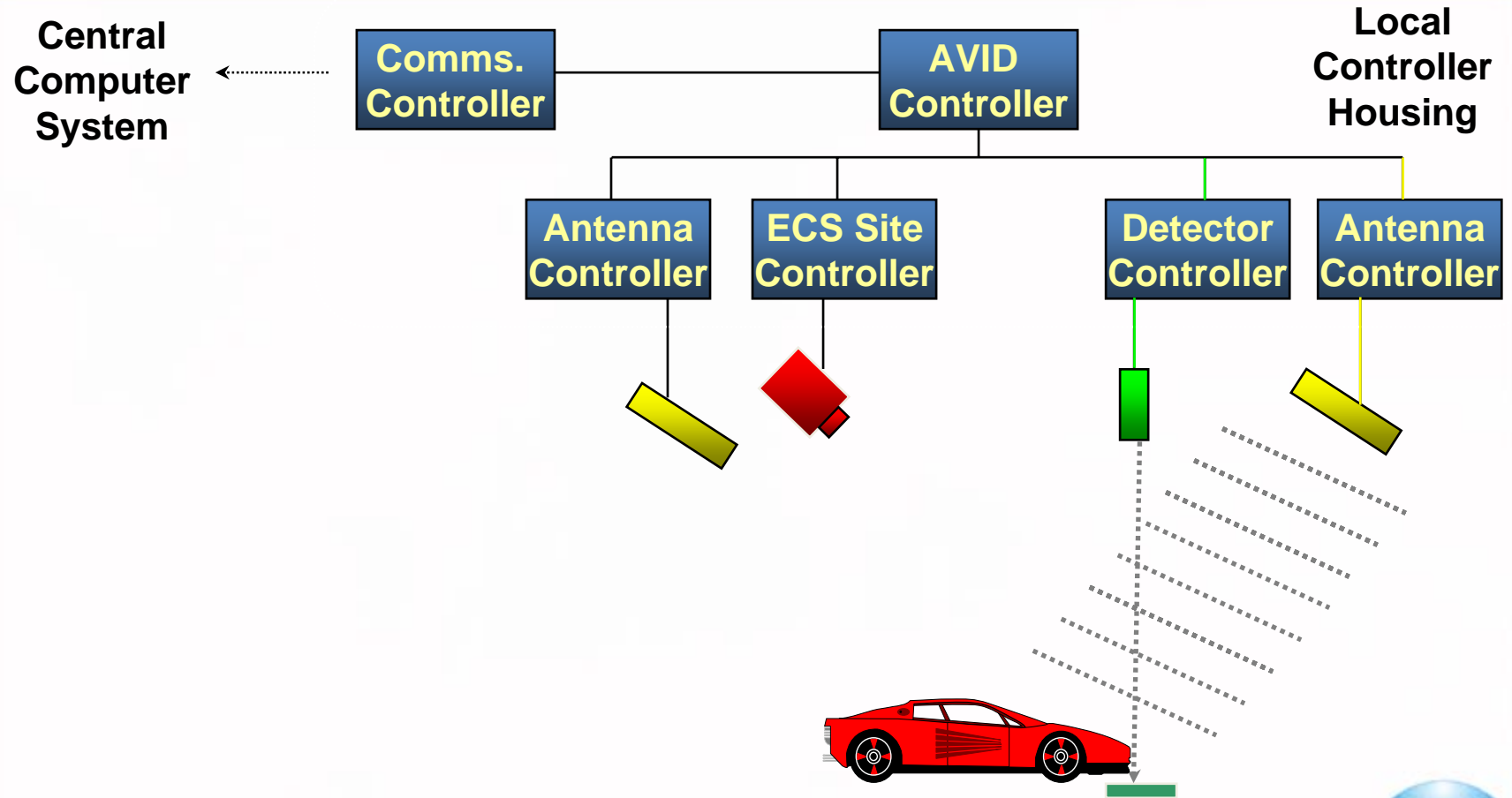
- Control Centre
 - back-end computers
 - monitoring system
 - process financial transactions and violation images



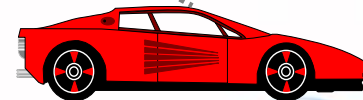
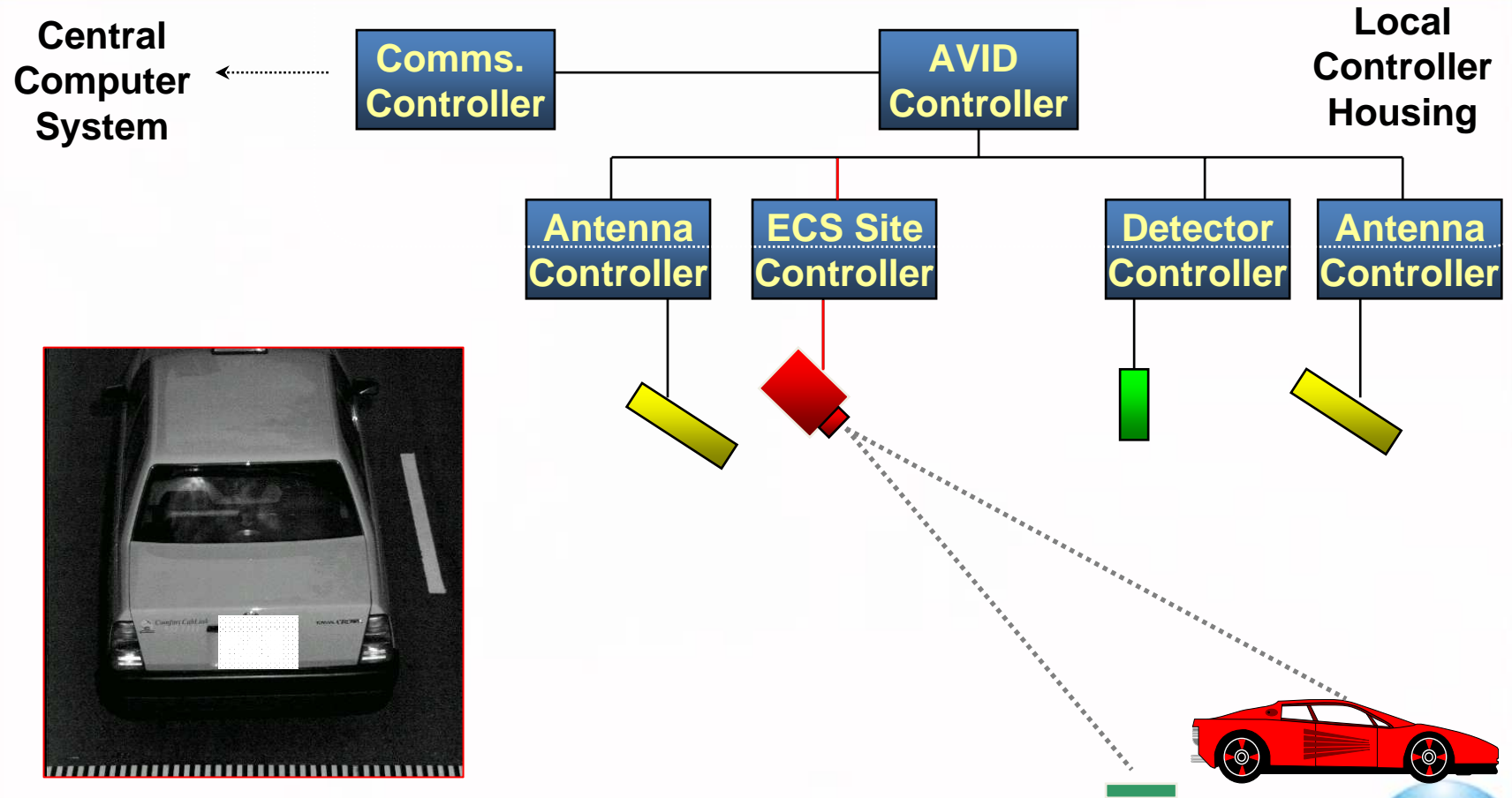
How does it work?



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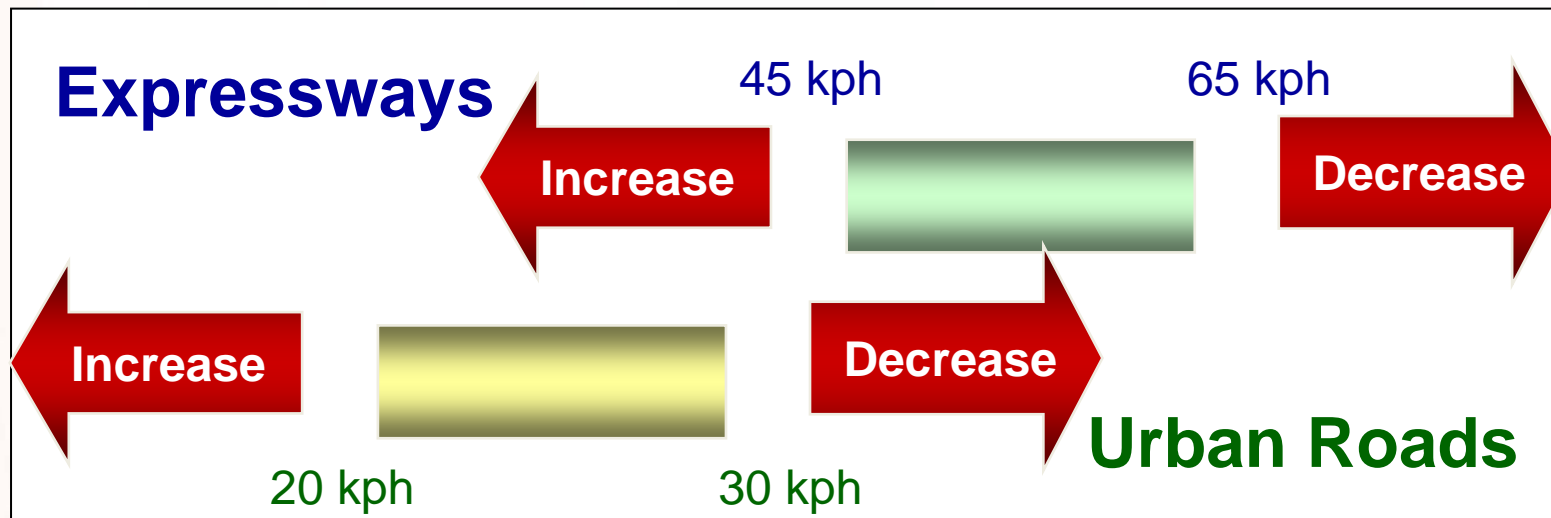
Violation

- No IU installed, No smart-card in IU or insufficient cash in smart-card
- Images by enforcement camera system processed and vehicle owner issued with summons
- Multiple payment options
 - manual payment
 - electronic payment
 - Easi-ERP scheme (tie-up with teleco)



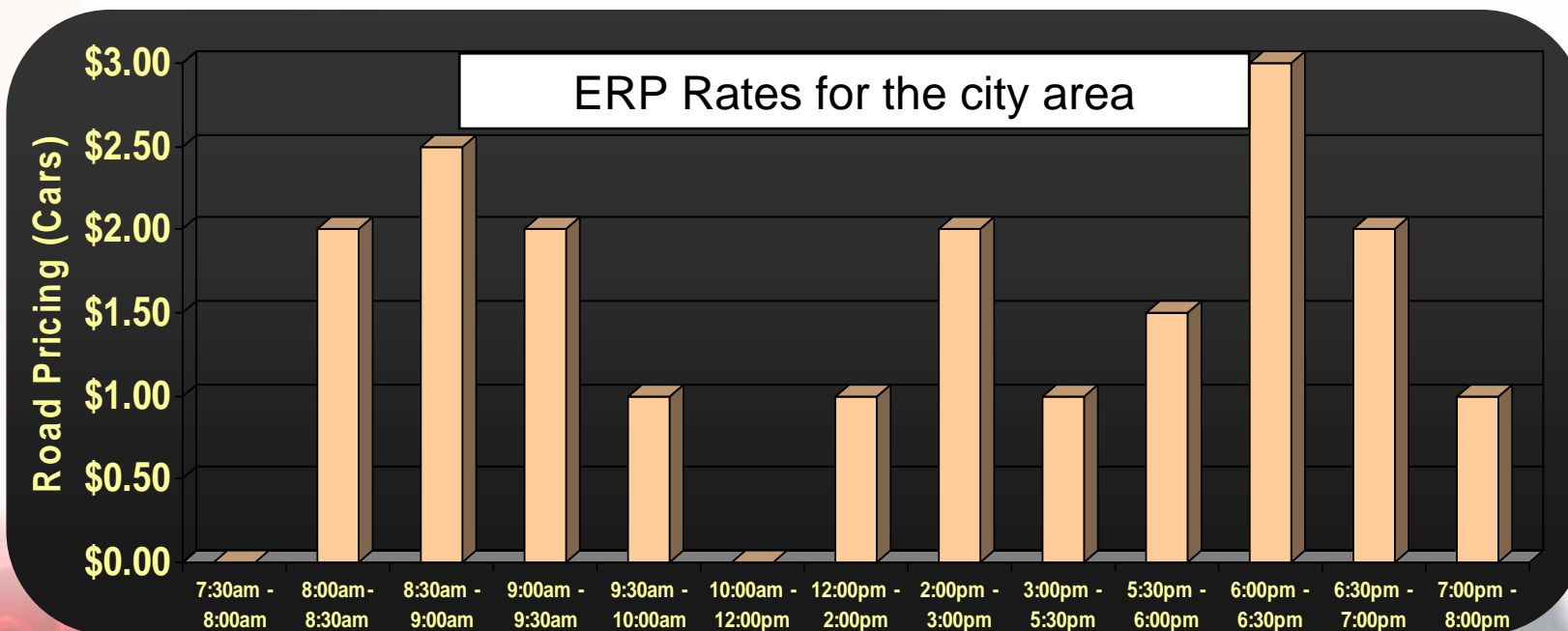
Varying the Road Pricing Charge

- To ensure **optimal use of road space**
- Rates reviewed at regular intervals
- Based on 85th Percentile Method Speeds

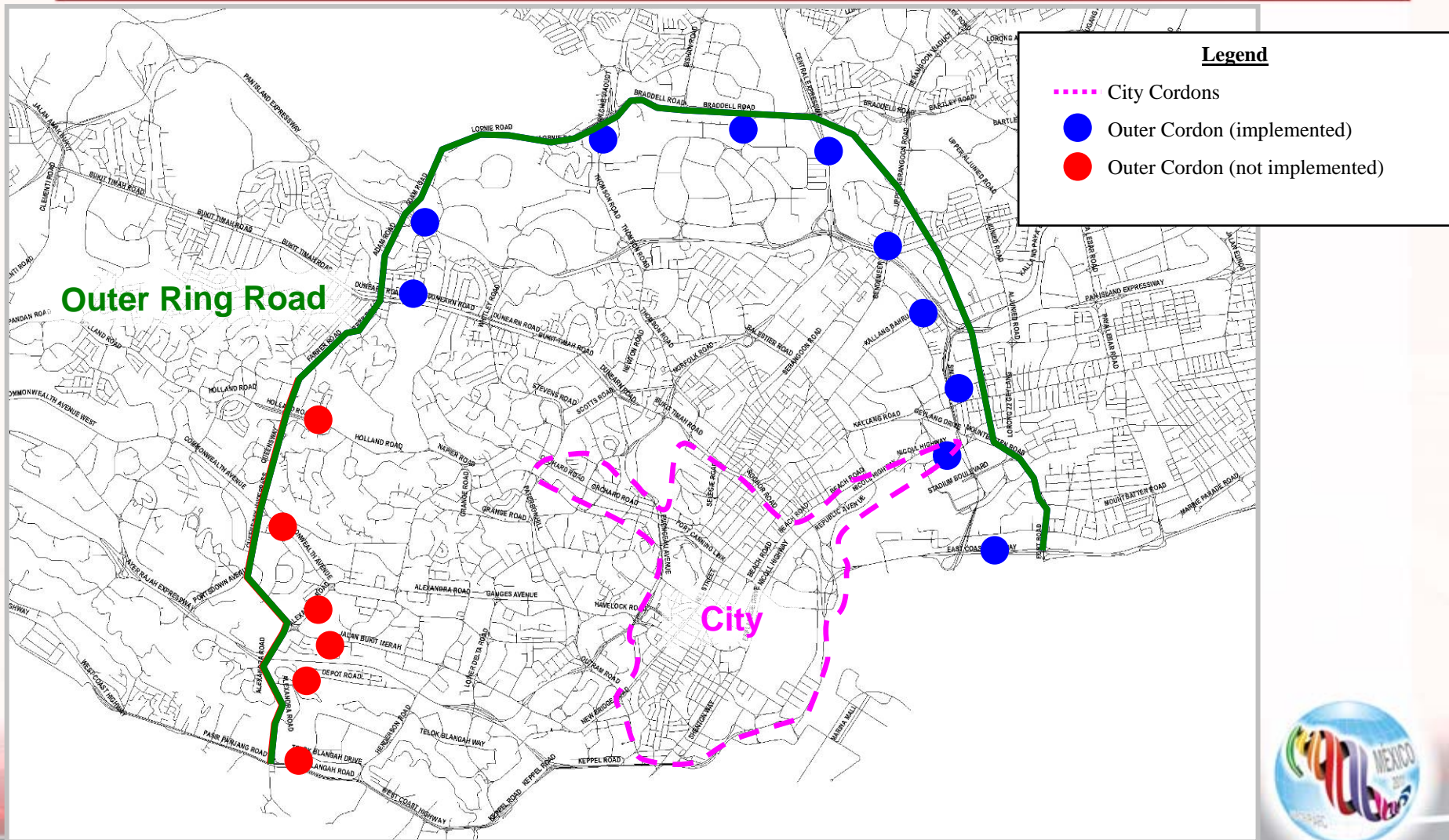


Varying the Road Pricing Charge

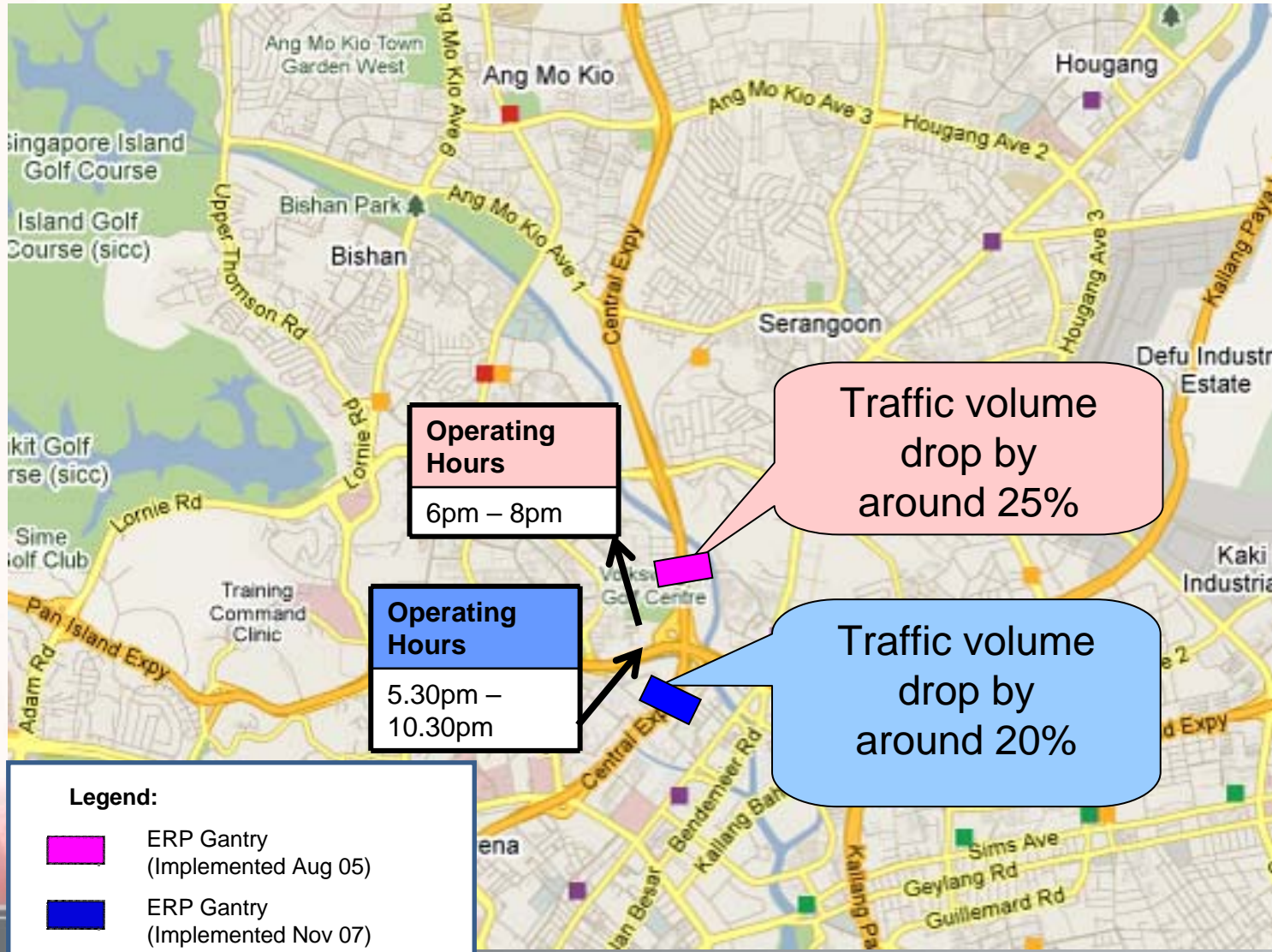
- Varies by vehicle type
- Varies by location of gantry
- Varies by time of day
 - No ERP Charges in the city from 10am to 12nn (weekdays)



Coverage of ERP

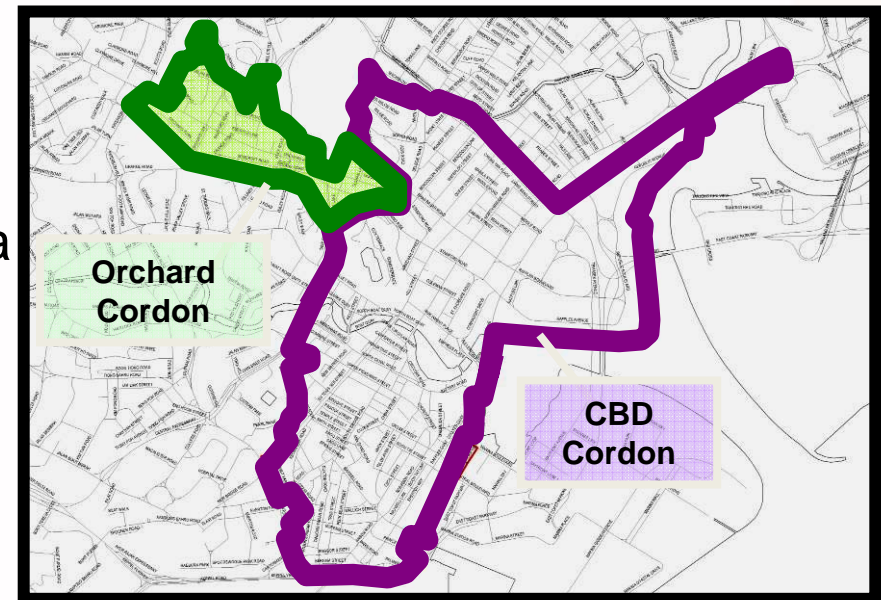


Managing Home-Based Trips



Managing Intra-City Traffic

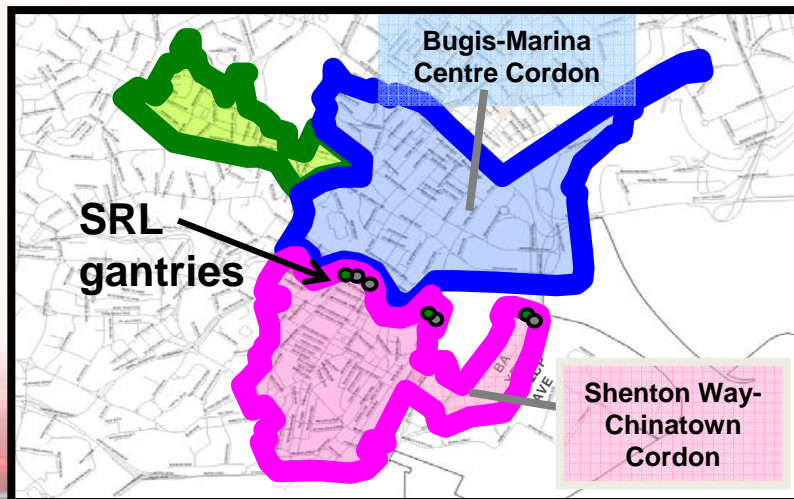
- Orchard Cordon introduced in 2005
 - Different operating hours and rates from CBD
- Basis:
 - Different traffic patterns from rest of CBD:
 - Congestion in the Orchard area occurred on weekdays after 7pm and Saturdays
 - Reduce through-traffic using Orchard Road as a bypass route (from 35% to 20%)



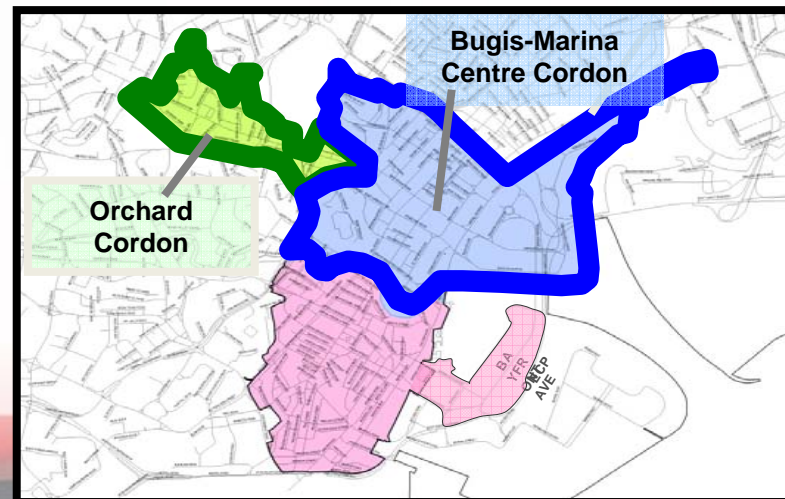
Managing Intra-City Traffic

- In mid-2008, 5 new gantries were introduced in CBD to form:
 - Singapore River Line on Weekdays 6-8pm
 - 2 separate cordons on Saturdays
- Reduce through-traffic passing adjacent sub-cordon to get out of town (dropped by 28% - 37%)

Weekday Evenings (6 - 8pm)



Saturdays



Related Issues

- Availability of Alternative Travel Options
 - Mode, Time, Space
- Privacy of Road Users
 - E.g. Transaction records erased within 24hrs
- ERP is not a Revenue Tool
 - Continual Publicity



Lessons Learnt

- Be flexible and adaptive in making changes to road schemes
- Road pricing based on the travel speeds experienced on the roads
- Continual publicity and communication with public to increase awareness and acceptance
- Availability of alternatives
- Work hand-in-hand with other transport initiatives to manage travel demand



Thank you

