

**Transport
Department**

**Environmental
Report 2006**



FOREWORD

In view of the alarming air quality, the Hong Kong SAR Government launched the Action Blue Sky Campaign and endorsed the Clean Air Charter as efforts to improve the air quality. In order to maintain Hong Kong as an international city with high quality of life, the Transport Department (TD) continued her environmental improvement measures to reduce air pollution in the transport system.

In 2006, we accomplished successfully various tasks in making efficient use of road spaces, reducing vehicular emissions, implementing pedestrian schemes and applying information technologies (IT) to the transport system, such as:

- ◆ encouraging the use of environmentally friendly railways by implementing more public transport-rail interchange schemes with fare discounts;
- ◆ encouraging the conversion of up to 42% diesel light buses to liquefied petroleum gas (LPG) or electric models and over 99.9% of diesel taxis to LPG taxis;
- ◆ encouraging the franchised bus companies to retrofit buses of model Euro II or above with diesel particulate filters to improve the air quality;
- ◆ rationalising the bus services in Central, Yee Wo Street and Nathan Road to reduce bus trips and relieve congestion;
- ◆ tightening the emission standard for all new franchised buses, and medium and heavy goods vehicles over 3.5 tonnes registered in Hong Kong to Euro IV;
- ◆ disseminating traffic information and average vehicle speed along the cross-harbour tunnels approaches on TD's website for better routing choice by the motorists, and hence reduce fuel consumption and emissions due to traffic congestion;
- ◆ implementing pedestrianisation schemes in over 35 streets and adopting traffic claming measures in over 30 streets to improve the local air quality and hence the pedestrian environment; and
- ◆ undertaking green office practices and adopting e-filing system in more office, in order to save energy and reduce paper consumption.

We shall continue to strive for the highest standards in the provision of an efficient and environmentally friendly transport system to Hong Kong.

“Hong Kong SAR Government has set a clear strategy for creating a sustainable transport system and has many initiatives taking place to achieve that goal. With commitment and endeavour, we will be able to meet today's transport need without compromising the ability of future generations to satisfy theirs.”

ENVIRONMENTAL POLICY

We are committed to providing transport systems and services in an environmentally acceptable manner to ensure the sustainable development of Hong Kong.

TD AND THE ENVIRONMENT

In providing the transport system which meets the economic, social, recreational and environmental needs of the community, we endeavour to take every opportunity to enhance the environment so as to support the sustainability and the future development of Hong Kong. To protect and enhance the environment, we are taking the following measures:

TD Environmental Improvement Measures	
(A) Reduction in Traffic	<ul style="list-style-type: none"> (i) Interchange between Railways and other Public Transport; (ii) Bus-Bus Interchange Schemes; (iii) Rationalization of Bus Routes & Stops; (iv) Park and Ride Facilities; and (v) Cycle Parks at Railway Stations
(B) Tightening of Emission Control	<ul style="list-style-type: none"> (i) Retrofitting of Diesel Catalysts by Franchised Bus Companies; (ii) Deployment of Environmentally Friendly Buses in Busy Corridors; (iii) Tightened Emission Standard; and (iv) Vehicle Emission Tests
(C) Use of Alternative Fuel Vehicles	<ul style="list-style-type: none"> (i) Conversion of LPG Taxis; (ii) Incentive Scheme for LPG/Electric Public Light Buses; (iii) LPG Refilling Station; and (iv) Use of Ultra Low Sulphur Diesel by Franchised Bus Companies
(D) Improving Pedestrian Environment	<ul style="list-style-type: none"> (i) Pedestrian Schemes
(E) Application of Advanced Technologies	<ul style="list-style-type: none"> (i) Intelligent Transport Systems; (ii) Journey Time Indication System; and (iii) Area Traffic Control Systems

PERFORMANCE IN 2006 AND TARGET IN 2007

(A) Reduction in Traffic

Railway is the most environmentally friendly and efficient mass carrier in Hong Kong, carrying about 36% of our public transport passengers. With railway as the backbone of Hong Kong's public transport system, efforts have been devoted to enhancing the co-ordination between railway and other public transport modes. This avoids wasteful duplication of public transport resources. Apart from the implementation of more interchange schemes between railway and the other modes of transport, bus-bus interchange schemes, rationalisation of bus routes and stops, and park-and-ride schemes, will further reduce the traffic in the busy areas and hence the impact on the environment.

(i) Interchange Schemes between Railways and other Public Transports

The implementation of interchange schemes between railway and other public transport modes encourages more pedestrians to use railways. The schemes include:-

(a) Bus-Rail Interchange Scheme

The MTR Corporation Limited continued the bus-rail interchange schemes with New Lantau Bus's (NLB) services and a cross-boundary bus route in 2006. Passengers were offered \$1 fare discount for interchanging between MTR Tung Chung Line and NLB's routes 37, 38, 38P and N38. Fare discount up to \$3 was offered for transferring between MTR Kwun Tong Line and Kwun Tong Cross-boundary Express. KCR West Rail passengers could interchange with New World First Bus (NWFB) routes 701, 702 and 971 free of charge at Nam Cheong Station throughout 2006.

(b) GMB-Rail Interchange Scheme

58 green minibus (GMB) routes offered discount for interchanging with the MTR and KCR railways. Passengers were offered \$0.3 to \$1 fare discount for interchange with MTR and \$0.3 to \$3.5 for KCR West Rail, East Rail and Ma On Shan Rail.

(c) *Taxi–Rail Interchange Scheme*

A trial taxi-rail interchange scheme has been implemented since 1 October 2003 to encourage passengers to use taxis as feeder when travelling to the Airport by the Airport Express Line. Taxi passengers enjoyed a 50% discount on the Airport Express Line by presenting a taxi receipt of an amount not less than \$70 on the same day at the Kowloon and Tsing Yi Stations. The scheme continued in 2006 and the taxi receipt amount has been lowered to \$60 or above since 1 October 2005.

Taxi passengers interchanging to West Rail at the North West New Territories Stations were offered a \$2 discount for travelling to Tsuen Wan West, Mei Foo or Nam Cheong Station in 2006.

We will continue to encourage the bus and green minibus operators and the railway corporations to provide interchange schemes. The taxi-rail scheme for the Airport Express Line will continue to 30 June 2007.

The opening of the Kowloon Southern Link (KSL) in 2009 will significantly change the travel pattern and modal choice of passengers along the railway corridors. Transport Department will commission the Study on the Co-ordination of Other Public Transport Services with KSL in later half of 2007 to ensure the provision of appropriate level of public transport services to meet the demand and to optimise the use of resources. Findings of the study will form the basis for the planning and implementation of a co-ordinated public transport network that meets our objective of maximising the use of railways.

(ii) *Bus-Bus Interchange Scheme*

Bus-bus interchange schemes are pursued as a measure to:

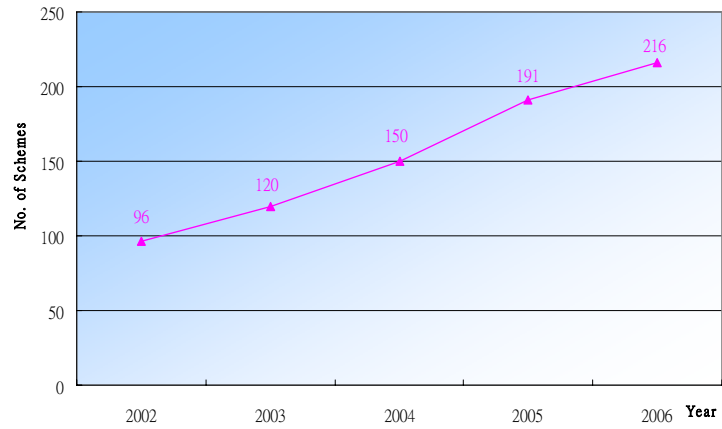
- ◆ achieve more efficient use of bus resources
- ◆ relieve congestion and minimise the environmental impact on busy corridors
- ◆ reduce the need for long-haul point-to-point bus routes

As at end 2006, there were 216 bus-bus interchange schemes with 120,000 passengers using them daily. The schemes have facilitated and enhanced inter-district travel without the need of introducing additional bus routes.

Through the provision of fare discount incentives and selection of convenient interchanging locations, passengers generally welcome these schemes. The numbers of bus-bus interchange

scheme in the past few years is shown in *Graph A*.

To reduce the number of bus trips and the demand for more direct bus services, particularly those in the Central Business District, we will continue to promote bus-bus interchange schemes. About 20 new bus-bus interchange schemes will be implemented in various districts in 2007.

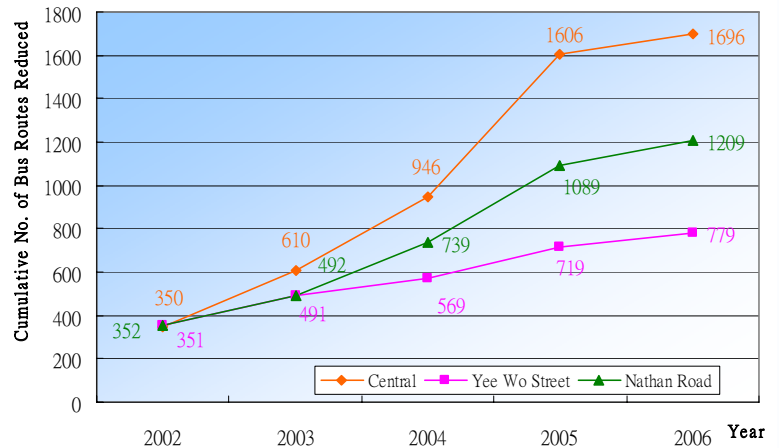


Graph A – No. of Bus-Bus Interchange Schemes

(iii) Rationalization of bus routes and stops

To improve the efficiency of bus operation and to alleviate their traffic and environmental impact, the Government has been working with the franchised bus companies to rationalize bus services and improve bus stopping arrangement.

Through route amalgamations, truncations, modifications, and frequency adjustments, 90 bus trips passing through Central and 60 bus trips passing through Yee Wo Street per day were removed in 2006. On the Kowloon side, 120 bus trips were removed from Nathan Road. The reduced numbers of bus trips under the Bus Routes/Stops Rationalization scheme since 2002 is shown in *Graph B*.

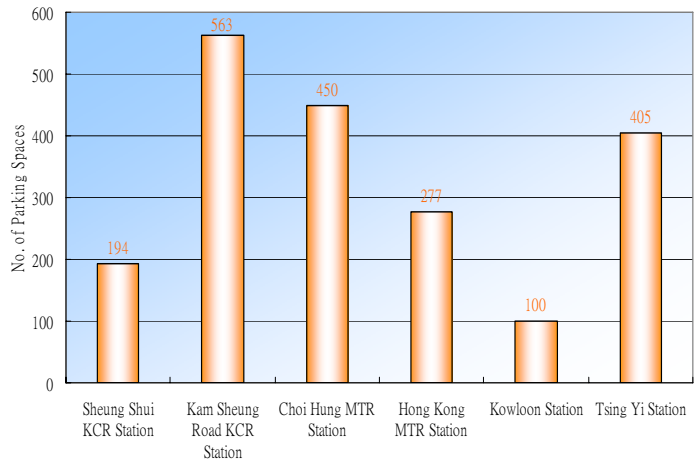


Graph B – Cumulative No. of Bus Routes Reduced

We plan to further rationalise the bus services, in particular those in Causeway Bay and Nathan Road through route diversion to less congested roads, merging of bus routes and adjusting the bus service level to match passenger demands. We will explore the feasibility to truncate low occupancy bus routes at the periphery of the congested areas. In addition, we also plan to rationalise the bus stop arrangement in the busy corridors to make more efficient use of road space.

(iv) Park-and-ride Facilities

Park-and-ride (PnR) facilities are designed to encourage existing commuters who normally use their private cars to travel to busy urban areas to switch to public transport. PnR facilities are usually provided at public transport hubs strategically located on the fringe of busy business / urban areas so that motorists can leave their cars behind and use public transport to complete their trips. The number of parking spaces provided in each PnR facility is shown in *Graph C*.



Graph C – No. of Parking Spaces in Each PnR Facility

PnR facilities have been planned at the future property developments in the vicinity of KCR stations at Tsuen Wan West, Tin Shui Wai, Tuen Mun Centre and Wu Kai Sha. In planning future rail stations and major transport interchanges, especially those on the fringe of the Urban Area, we will provide PnR facilities wherever practicable.

(v) Cycle Parks at Railway Stations

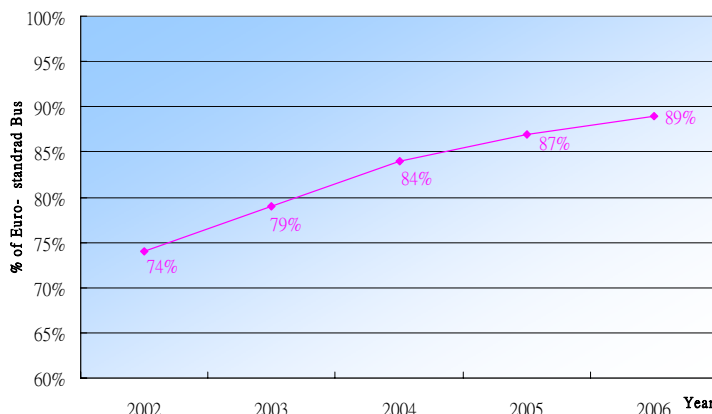
With residential developments generally more scattered and further away from railway stations, riding bicycles is a popular and environmental- friendly means of accessing railway stations in the New Territories. To meet such demands, bicycle parking facilities are provided in the vicinity of the East Rail, Ma On Shan Rail and West Rail stations in the New Territories. Provision of these facilities would also reduce the demand for vehicular short trips and shuttle services to and from the stations.

We will continue to monitor the supply and demand of cycle parks at railway stations. If necessary, more cycle parks will be provided to cater for public needs.

(B) Tightening of Emissions Control

(i) Retrofitting of Diesel Catalysts by Franchised Bus Companies

As at end 2006, 89% of the 5900 franchised buses operating in Hong Kong were running with engines in compliance with Euro emission standards. The change of percentage of franchised with engines complying with Euro emission standard in the past few years is shown in *Graph D*. All the remaining pre-Euro buses and Euro I buses have been retrofitted with diesel catalysts or diesel particulate filters in 2002 and 2003 respectively to reduce emission.



Graph D – Percentage of Bus Complying Euro Emission Standard

TD will continue to encourage franchised bus companies to retrofit diesel particulate filters on their Euro II and III buses to upgrade the performance.

(ii) Deployment of Environmentally Friendly Buses in Busy Corridors

The franchised bus companies have deployed cleaner Euro II or above buses on Yee Wo Street since early 2002. To further improve the air quality in Hong Kong, we have been discussing with the franchised bus companies on the deployment of Euro II or above buses on other busy corridors, namely Hennessy Road, Queensway, Des Voeux Road Central and Nathan Road.

(iii) Tightened Emission Standards

With effect from 1 October 2006, all new franchised buses and newly imported medium and heavy diesel vehicles over 3.5 tonnes are required to comply with Euro IV emission standards when they are registered in Hong Kong.



Euro IV Bus

(iv) Vehicle Emission Tests

TD requires all private cars, taxis, light buses, goods vehicles, buses and special purpose vehicles to pass the smoke or emission tests during their annual inspection. TD also selects

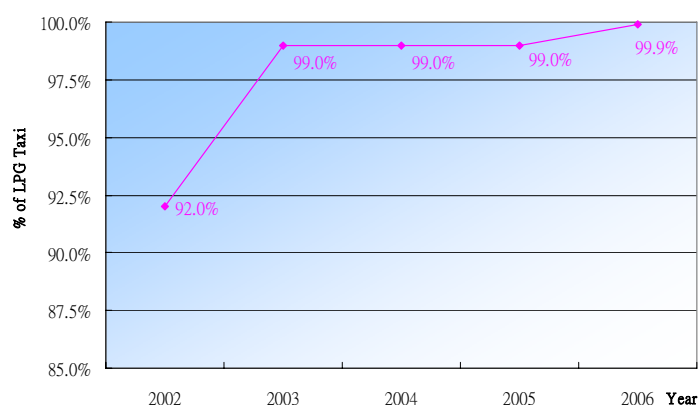
certain percentage of diesel vehicles to undergo dynamometer smoke test at the Kowloon Bay Vehicle Examination Centre. Legislative amendment is in progress to tighten the in-use diesel vehicle emission standard from 60 Hartridge Smoke Units (HSU) to 50 HSU to better improve the environment.

To encourage the use of environment-friendly petrol private cars with low emissions and high fuel efficiency, starting from 1 April 2007, a 30% reduction in the First Registration Tax has been offered to buyers of newly registered environment-friendly petrol private cars, subject to a cap of HK\$50,000 per car.

(C) Use of Alternative Fuel Vehicles to Replace Diesel Vehicles

(i) Conversion of LPG Taxis

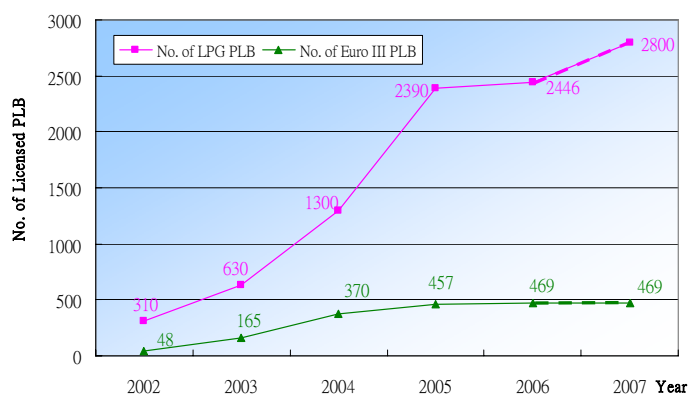
Following the successful completion of the trial of LPG taxis in late 1998, most taxi owners have replaced their diesel taxis with LPG ones. As at end 2006, 18134 taxis (over 99.9%) were operated on LPG. The percentage of LPG taxi in Hong Kong in the past few years is shown in *Graph E*.



Graph E – Percentage of LPG Taxi

(ii) Incentive Scheme for LPG/Electric Public Light Buses

An incentive scheme was launched on 27 August 2002 to offer a one-off grant of \$60,000 or \$80,000 to Public Light Bus (PLB) owners to replace their diesel PLBs by LPG or electric ones respectively. At year-end of 2006, 2446 LPG PLBs and 469 Euro-III model diesel PLBs (which emit less pollutant than older diesel PLBs) were operating on the roads. The numbers of licensed LPG PLB and Euro-III model Diesel PLB in the past few years are shown in *Graph F*.



Graph F – No. of Licensed LPG PLB and Euro-III PLB

As the Light Bus Using Cleaner Fuel Scheme was ended in end 2005, the number of licensed LPG PLBs and Euro-III model Diesel PLBs increased steadily in year 2006. Notwithstanding, it is predicted that the number of licensed LPG PLBs will have a greater increase in 2007 as a result of the new incentive scheme for the replacement of Pre-Euro and Euro I Diesel commercial vehicles by new commercial vehicles with effect from 1 April 2007. We predict the number of licensed LPG PLBs would reach 2800 at the end of 2007.

On the other hand, with the implementation of Euro IV emission standard on 1 October 2006, and the incentive scheme mentioned above, the number of licensed Euro-III model Diesel PLBs is expected remain constant in 2007 while the number of licensed Euro-IV model Diesel PLBs is expected to reach 300 at the end of 2007.

(iii) LPG Refilling Stations

As at end 2006, 56 LPG filling stations (increased from 41 in 2002) were operating in various locations of Hong Kong. These stations provide convenient refilling facilities for LPG taxis and light buses.

(iv) Use of Ultra Low Sulphur Diesel by Franchised Bus Companies

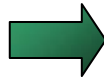
Since 1 February 2001, all franchised buses have switched to use ultra low sulphur diesel. This change in fuel has reduced particulate emission by 5 to 10%.

In order to improve the air quality, the Government has initiated to offer a time-limited one-off grant with effect from 1 April 2007 to vehicle owners to replace their pre-Euro and Euro I diesel commercial vehicles by new vehicles complying with the prevailing statutory emission standard.

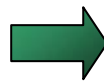
(D) Improving Pedestrian Environment

Since March 2000, we have implemented pedestrianisation schemes in over 35 streets and completed traffic calming measures in over 30 streets in Causeway Bay, Central, Wan Chai, Stanley, North Point, the Peak, Tsim Sha Tsui, Jordan, Mong Kok, Sham Shui Po, Sheung Shui and Yuen Long. These pedestrian schemes have greatly improved the overall pedestrian environment through reduction of vehicle/pedestrian conflicts, discouraging access of non-essential traffic, enhancing streetscape and improving local air quality. The schemes are very welcomed by the general public. The pedestrian schemes introduced or completed in 2006 are shown below.

(i) Central	◆ Elgin Street	[Traffic calming street]
	◆ Peel St	[Traffic calming street]
	◆ Staunton St	[Traffic calming street]
(ii) Wan Chai	◆ Johnston Road (between Landale Street and Thomson Road)	[Traffic calming street]
	◆ Johnston Road (between Triangle Street and Wan Chai Road)	[Traffic calming street]
(iii) Jordan	◆ Nanking Street (between Nathan Road and Parkes Street)	[Traffic calming street]
	◆ Temple Street (between Nanking Street and Kansu Street)	[Streetscape works]



Traffic Calming Street: Johnston Road (between Landale Street and Thomson Road)

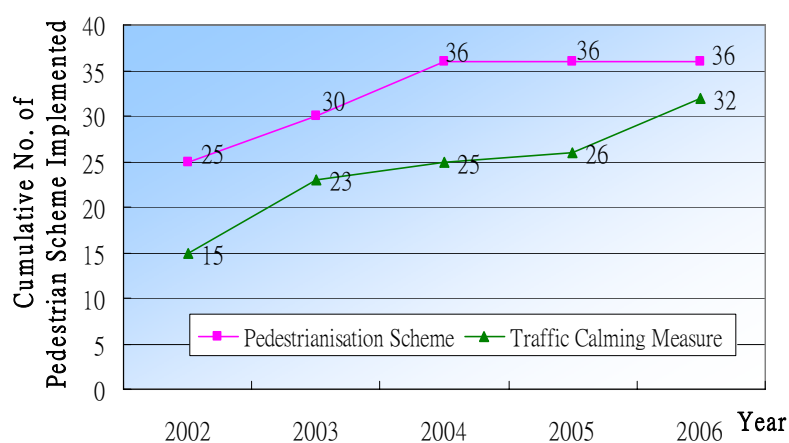


Traffic Calming Street: Nanking Street (between Nathan Road and Parkes Street)

The progress of the pedestrian schemes implemented in the past few years are shown in *Graph G*:

In 2006, we continued to work together with the Planning Department to formulate feasible schemes for the enhancement of the pedestrian environment, urban design, streetscape and landscape in Tsim Sha Tsui. The landscape enhancement works outside the MTR Tsim Sha

Tsui Station entrance at Haiphong Road commenced in October 2006 for completion in mid 2007 while a small landscape piazza at the northern end of Ashley Road will commence in mid 2007. In the coming years, we will implement the schemes progressively to improve the pedestrian environment in Tsim Sha Tsui.



Graph G – Cumulative No. of Pedestrian Scheme Implemented

We will continue our efforts to implement more pedestrian schemes in 2007. In Mong Kok, the trial part-time pedestrian schemes at Sai Yeung Choi Street South, Nelson Street, Soy Street and Tung Choi Street are being closely monitored. Besides, we are making good progress on footpath widening and landscape works in various districts, including O'Brien Road (between Gloucester Road and Lockhart Road) in Wan Chai, Nathan Road (between Mody Road and Granville Road) and Minden Avenue in Tsim Sha Tsui, Pilkem Street in Jordan, Fuk Wa Street and Pei Ho Street in Sham Shui Po.

(E) Application of Advanced Technologies to Transport System

(i) Intelligent Transport Systems

We continued to promote the deployment of advanced information and telecommunication technologies to enhance the performance of the transport system in Hong Kong, thus improving its efficiency and hence the environment.

(ii) Journey Time Indication System (JTIS)

We plan to expand the JTIS to Kowloon to provide the estimated cross-harbour journey time information from Kowloon to Hong Kong via the three cross-harbour tunnels. A total of six sets of journey time indicators will be installed in advance of the critical traffic divergent points at roads on Kowloon leading to the three road-harbour crossings. With these indicators, the public can better plan their route choices to cross the harbour.



Photomontage of the proposed Journey Time Indicator

This will result in reduced travelling time and costs due to avoidance of congestion, improved safety and lower fuel consumption and emissions. The project is planned to commence in early 2008 for completion in end 2009.

In addition, we have been providing road traffic information service on the Internet since late 2003. The number of CCTV cameras is now 120. We were also arranging for the dissemination of these CCTV images to mobile phone users so that motorists or passengers will be able to know the traffic conditions at strategic locations, whenever and wherever they need them.



CCTV image shown on mobile phone

(iii) Area Traffic Control (ATC) Systems

We operate sophisticated computerised ATC systems in the urban areas, Tsuen Wan, Kwai Tsing, Sha Tin and Ma On Shan, Tai Po and North districts to optimize the utilization of road capacity, minimize traffic delay and reduce vehicle emission. The ATC systems provide real time co-ordination and adjustment of traffic signals timing to optimise the utilisation of road capacity and minimise traffic delay and improve environment. With the ATC system, the travel time and the number of stops were reduced by 30% and 28% respectively.

In view of the significant benefits, the system is being expanded to the Tuen Mun and Yuen Long districts by late 2008. By then, 95% of the signalized junctions will be covered by ATC.

With more and more applications of advanced technologies to the dissemination of transport information as well as the traffic control and management facilities, vehicle fuel consumption, emissions and travelling time will be further reduced.

(F) Other Measures

(i) Green Office Management

We continued to adopt measures to reduce paper consumption and save energy. We set the air conditioning temperature to 25.5 °C in the summer months and appointed energy wardens to ensure that all our offices adhered strictly to the 25.5 °C requirement. More offices joined the use of e-Filing system to replace the paper system. We are arranging for the de-lamping at the corridors to reduce power consumption in our Headquarters.

We will continue to adopt various green office practices including paper reduction, recycling, energy-saving and green procurement in the daily running of our offices. Also, we intend to encourage more offices to adopt the e-Filing system to replace the paper filing system.

(ii) Staff Awareness and Training

We continued to keep all staff aware of the Department's dedication to environmental protection by constantly and regularly issuing messages to remind colleagues of green office practices. Staff were also invited to join seminar/workshops organised by Environmental Protection Department/Electrical and Mechanical Services Department including "Seminar on Hong Kong Environment – Waste and Air", "Experience Sharing Workshop on Hong Kong Energy Efficiency Awards" and "Green Management Workshop for Green Managers", to further promote the awareness of environmental protection.

We will seek continuous improvement in the efficient use of resources and energy. We will continue to keep all staff aware of the department's dedication to environmental protection, support green events organised by the Government or other organisations and encourage our staff to attend training sessions and green activities.

Feedback

Should you have any comments or suggestions on this Environmental Report, please send to: tdenq@td.gov.hk

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