

A. Introduction

The Audit Commission ("Audit") conducted a review to examine the implementation of air-quality improvement measures by the Environment Bureau ("ENB"), the Environmental Protection Department ("EPD"), the Transport and Housing Bureau ("THB"), the Transport Department ("TD") and the Marine Department ("MD").

2. **Hon Abraham SHEK Lai-him** declared that he was currently an Independent Non-executive Director of the Mass Transit Railways Corporation, and the NWS Holdings Limited under which the New World First Bus Services Limited and Citybus Limited run franchised bus business.

3. **Hon NG Leung-sing** declared that he was currently an Independent Non-executive Director of the Mass Transit Railways Corporation.

B. Emission control of vehicles

4. According to paragraph 4 of the Executive Summary of the Audit Report, in 2010, emissions from vehicles accounted for 30% of nitrogen oxides ("NOx") and 21% of particulate matters with a diameter of 10 micrometres or less ("PM₁₀") of the total emissions in Hong Kong. In 2011, five of the 13 roadside air quality objective ("AQO") measurements had exceeded the AQO limits and there were 172 days with the roadside air pollution index exceeding the very high air pollution level of 100, ranging from 101 to 192. According to the EPD, diesel commercial vehicles were the main source of roadside pollution. As of March 2012, there were 53 724 pre-Euro, Euro I and Euro II diesel commercial vehicles running on the streets, causing serious air pollution.

5. **Mr WONG Kam-sing**, the **Secretary for the Environment**, said that the Administration would promulgate further emission-control measures at an appropriate time to address roadside pollution problem. In coming up with these measures, regard would be given to striking a balance in attaining the new emission-reduction targets for 2015 and 2020 reached with the Environmental Protection Department of the Guangdong Provincial Government ("Guangdong EPD") and allowing adequate time for owners of aged diesel commercial vehicles to replace their vehicles with new ones which met the prevailing statutory emission standard. He further said that tackling air pollution was the top priority of the ENB

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and the EPD, and safeguarding public health would be the cornerstone when formulating clean air policy.

6. **Professor Anthony CHEUNG**, the **Secretary for Transport and Housing**, said that he, the Secretary for the Environment and the Secretary for Development all agreed that improving the air quality of Hong Kong must be dealt with expeditiously. To this end, they and their respective staff had been holding meetings on a regular basis to come up with effective measures to address air pollution, including adopting a "carrot and stick" approach to tackling the problem.

Emissions from aged diesel commercial vehicles

7. The Committee noted that whilst the one-off grant scheme introduced by the EPD from August 2000 to December 2003 to replace diesel taxis by liquefied-petroleum-gas ("LPG") ones ("the 2000 Taxi Grant Scheme") had been effective (i.e. about 99.8% participation rate), the one-off grant scheme introduced by the EPD from August 2002 to December 2005 to replace diesel light buses with LPG ones ("the 2002 Public Light Bus Grant Scheme") had been less effective (i.e. 54% participation rate). The Committee asked why the response to the 2002 Public Light Bus Grant Scheme was lukewarm, and the measures which would be taken by the EPD to replace the remaining 34% of the public light buses by LPG or Euro V or above ones and the time targets for implementing these measures.

8. **Mr MOK Wai-chuen**, the **Assistant Director of Environmental Protection**, responded that:

- owners of diesel public light buses did not replace their buses by LPG ones because most of these light buses were green minibuses operating on fixed routes and/or schedules and in areas not serviced by LPG filling stations; and
- the Government had a standing policy since 2000 that petrol filling stations on the land sale programme would have to provide LPG filling services, taking into account the safety and technical feasibility of individual sites concerned.

9. **Ms Anissa WONG Sean-ye**, the **Director of Environmental Protection**, stated in her letter dated 28 December 2012 (in *Appendix 12*) that:

- there were at present 12 designated LPG filling stations and 49 petrol-cum-LPG filling stations throughout the territory. The EPD planned to increase the proportion of LPG nozzles in petrol-cum-LPG filling stations up to 25% where the site conditions and safety requirements permitted upon the expiry of the current lease of such stations; and
- in view of the shortfall of LPG filling facilities on Hong Kong Island, the EPD had identified two potential sites for setting up petrol-cum-LPG filling stations at Fung Mat Road, Western District and Tin Wan, Southern District respectively. The Central and Western District Council had objected to the former due to the development of waterfront consideration. As for the latter, it was currently used as a temporary works area for a sewage project and would be available around 2014. Subject to the support of the Southern District Council, the site could be developed into a petrol-cum-LPG station in 2016 the earliest.

10. The Committee noted that the participation rate of the one-off grant scheme introduced by the EPD from April 2007 to March 2010 to replace pre-Euro and Euro I diesel commercial vehicles with Euro IV ones ("the 2007 Grant Scheme") was only 29%. The Committee asked why this was the case.

11. The **Director of Environmental Protection** responded that:

- the EPD had carried out a lot of publicity work and had widely consulted the relevant stakeholders before launching the 2007 Grant Scheme. Nevertheless, as the Scheme was a partially subsidization programme based on the "polluter pays" principle, it was understandable that owners of aged diesel commercial vehicles would consider a number of factors, such as their financial situation and future business environment, before deciding whether or not to take up the grant;
- given the relatively lukewarm response towards the voluntary vehicle replacement programme, the EPD had sought the views of the Panel on Environmental Affairs ("the EA Panel") of the Legislative Council ("LegCo") in 2008 on the proposal of raising the licence fee for aged diesel commercial vehicles. However, the proposal was not supported

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by the LegCo EA Panel and the transport trade. In March 2010, the EPD also put forward a proposal to the LegCo Subcommittee on Improving Air Quality with a view to introducing disincentives but the proposal was also not supported; and

- in order to phase out the highly polluting diesel vehicles more effectively, the EPD considered it necessary to adopt both incentives and disincentives in introducing new schemes for vehicle replacement.

12. **Mr Andrew LAI Chi-wah, the Deputy Director of Environmental Protection**, supplemented that the reasons why the outturn participation rate of the 2007 Grant Scheme was much lower than that of the 2000 Taxi Grant Scheme and the 2002 Public Light Bus Grant Scheme were twofold:

- although savings in fuel cost could be achieved by using LPG in the case of taxis and light buses (for instance, according to an estimation made some 10 years ago, a LPG taxi could save fuel cost of about \$40,000 a year compared to a diesel taxi), diesel commercial vehicles could not be converted to run on LPG due to technical constraints; and
- amendments were made to the relevant legislation to stop importation of diesel taxis to Hong Kong from 1 August 2001. Similar disincentive was not adopted to complement the 2007 Grant Scheme.

13. The Committee was concerned that the total grants only amounted to \$772 million out of the provision of \$3,176 million for the 2007 Grant Scheme (24% of \$3,176 million), and that the unspent public money could have been better used in other areas in need.

14. The **Deputy Director of Environmental Protection** responded that:

- the provision of funding for the 2007 Grant Scheme was to ensure that all eligible owners who wished to take up the grant could receive the grant. In this connection, no estimation of the participation rate of the Scheme was made prior to seeking funding support from the Finance Committee ("FC") of LegCo; and
- in light of the experience of the 2007 Grant Scheme, funding for the three-year one-off grant scheme introduced in July 2010 to encourage

owners of Euro II diesel commercial vehicles to replace their vehicles by Euro IV or V ones ("the 2010 Grant Scheme") was provided on the assumption that about 30% of these owners would take up the grant.

15. The Committee was of the view that instead of introducing the 2010 Grant Scheme, consideration should be given to extending the duration of the 2007 Grant Scheme to enable more owners of pre-Euro and Euro I diesel commercial vehicles to replace their vehicles with those complying with the prevailing statutory emission standard.

16. The **Director of Environmental Protection** responded that the EPD had considered extending the duration of the 2007 Grant Scheme and decided not to do so. Not only extending the duration of the 2007 Grant Scheme might not be effective in attracting more vehicle owners to join the Scheme, but vehicle owners might be discouraged from participating as soon as possible in similar replacement scheme after it was rolled out.

17. On the suggestion of re-introducing the 2007 Grant Scheme, the **Director of Environmental Protection** said that the EPD was examining how to phase out more effectively heavily polluting diesel commercial vehicles and would consult the relevant stakeholders when a proposal was worked out. She reiterated that a regulatory-cum-incentive approach was necessary to make the exercise successful.

Emissions from LPG vehicles

18. According to paragraph 2.11 of the Audit Report, as of March 2012, nearly all taxis and 66% of public light buses were fuelled by LPG and were installed with emission-reduction devices which would wear out within a certain period of time (about 18 months) and needed to be replaced. According to the EPD:

- if worn-out emission-reduction devices are not timely replaced, emissions of NO_x by LPG vehicles will increase by at least 10 times; and
- in 2012, emissions from LPG taxis and light buses accounted for about 40% of total vehicular NO_x emissions on heavy-traffic roads.

The Committee asked about the cost of the emission-reduction device, and the measures which would be taken by the EPD to prevent excessive emissions from LPG vehicles.

19. The **Assistant Director of Environmental Protection** replied that:

- the cost of the emission-reduction device was about \$1,000;
- in April 2012, the FC approved \$150 million for implementing a six-month scheme to provide a one-off grant to fully subsidize the replacement of emission-reduction devices installed in LPG taxis and light buses; and
- upon the completion of the replacement scheme, the EPD would deploy roadside remote sensing equipment to screen out in-use petrol and LPG vehicles that emitted excessively, and required their owners to rectify the problem. A total of five remote sensing teams would be deployed to different locations in the territory for the screening. In line with the existing Smoky Vehicle Control Programme, those vehicles screened as emitting excessively would be required to pass an advanced emission test done with the aid of a chassis dynamometer at a designated vehicle emission testing centre within a prescribed period for ascertaining the rectification of the excessive emission problem. Failure to comply with the requirement would lead to cancellation of vehicle licence.

Emissions from Euro II diesel Government vehicles

20. The Committee noted that Euro II Government diesel vehicles would be replaced by new ones which met the prevailing statutory emission standard and the number of these vehicles would be reduced from 243 in December 2011 to 129 by March 2013. Whilst 122 of the 129 Euro II Government diesel vehicles would be phased out in 2013-2014, the remaining seven would be replaced in 2014-2015. Given the low emission standards of Euro II diesel vehicles vis-à-vis those of Euro IV and V ones, the Committee considered that the remaining seven Euro II Government diesel vehicles should also be replaced with new ones earlier.

21. The **Assistant Director of Environmental Protection** replied that according to the Government Logistics Department ("GLD") which monitored Government vehicles, the reason for not replacing the seven Euro II Government

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diesel vehicles with new ones earlier was that these vehicles were large special-purpose vehicles, such as a command vehicle used for fire-fighting, which were not used frequently and were costly, i.e. around \$3 million to \$4 million per vehicle.

Emissions from franchised buses

22. According to paragraph 6 of the Executive Summary of the Audit Report, franchised buses could account for up to 40% of the total vehicular emissions at busy traffic locations, causing health risks. The EPD consultant also estimated that a 10% reduction of bus trips could help reduce 156 tonnes of roadside NO_x emissions, and the rationalization of bus services was the most cost-effective air-quality improvement measure as it did not involve significant additional costs for implementation. However, from 2009 to 2011, only 1.1% of bus trips had been reduced in three busy locations. The Committee asked about the measures which had been and would be taken by the Administration to address the problem and the time targets for implementing these measures.

23. **Mrs Ingrid YEUNG HO Poi-yan, the Commissioner for Transport,** replied that:

- bus service rationalization was an on-going exercise in response to changing passenger demand and the opening of new transport infrastructure. The TD would continue to pursue bus service rationalization and would make use of the commissioning of new railway lines in putting forward large-scale rationalization proposals; and
- to avoid the introduction of excessive direct bus services, help relieve congestion and minimize the environmental impact on busy corridors, the TD encouraged the bus companies to introduce more bus-bus and bus-rail interchange schemes and to offer the interchanging passengers with fare discounts. As at end September 2012, there were a total of about 248 bus-bus interchange schemes. Starting from 26 December 2012, the Tuen Mun Road Bus-Bus Interchange ("BBI") located on Tuen Mun Road (Kowloon-bound) near Siu Lam Interchange would be commissioned. Bus passengers could interchange at the BBI from short-haul routes to long-haul routes destined for Sha Tin and areas on Kowloon side. The Administration would continue to explore more suitable sites for implementation of the interchange schemes.

24. The **Commissioner for Transport** further elaborated in her letter dated 21 December 2012 (in *Appendix 13*) other measures that had been taken and would be taken by the Administration to reduce emissions from franchised buses, summaries of which are as follows:

- increasing as far as possible the ratio of low emission franchised buses running in Causeway Bay, Central and Mongkok, with the target of having only low emission buses in these areas by 2015;
- encouraging franchised bus companies to take measures to reduce emissions, including retrofitting emission reduction device on their buses;
- a trial scheme to retrofit Euro II and Euro III diesel buses with selective catalytic reduction devices to reduce emissions of NO_x had been undertaken jointly by the Government and the franchised bus companies since September 2011. Subject to satisfactory results, the EPD would fund the capital costs for retrofitting such devices on Euro II and Euro III franchised buses. The TD would report the findings of the trial to the LegCo EA Panel in January 2013. Subject to promising trial results and funding approval from FC of LegCo, the TD aimed at completing, on a best endeavour basis, the large scale retrofit by 2015;
- the Government would fund the full cost of procuring six hybrid and 36 electric buses for trial by the franchised bus companies. Trials of hybrid and electric buses would last for two years; and
- to reduce the black smoke emission from vehicles manufactured after 1 January 1990, the exhaust smoke limit was tightened in May 2008 from 60 to 50 Hartridge Smoke Unit in line with EPD's standard. The TD carried out annual inspections and spot checks on franchised buses to monitor the compliance with tightened smoke requirement.

25. The Committee noted from paragraph 2.23(a) of the Audit Report that in recent years, many bus route rationalization proposals which the TD considered worth pursuing were not taken forward because of concerns raised by the local communities through the District Councils ("DCs"). The Committee was of the view that the TD, the EPD and other departments concerned should make clearer to DCs the health risks caused by emissions from buses when seeking their support for bus route rationalization proposals.

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26. The **Commissioner for Transport** responded that the TD would, in collaboration with the EPD, step up efforts in reducing franchised bus trips and formulate a better strategy for reducing franchised buses with more focus/emphasis on the environmental benefits to society in consultation with franchised bus companies and related DCs.

27. On the question of whether consideration would be given to identifying suitable land to provide more bus interchanging facilities, the **Commissioner for Transport** replied that:

- the TD would continue to identify suitable land to provide more BBIs and explore the possibility of setting up more BBIs at major public transport interchanges and road corridors wherever appropriate so as to enhance passenger convenience and bus network efficiency; and
- suitable facilities, such as electronic information panels, shelters and benches, toilet facilities and vending machines, etc., would be included to enhance comfort and convenience of interchanging passengers where practicable.

28. To better control emissions from franchised buses, the Committee asked whether consideration would be given to reducing the serviceable life of these buses from the current 18 years to, say, 15 years.

29. The **Commissioner for Transport** considered that it would be more cost effective to reduce the emissions of franchised bus fleet through bus route rationalization and retrofitting after-treatment devices on in-use franchised buses for the following reasons:

- reducing serviceable life of franchised buses would have impacts on bus operation and the financial position of bus companies, which in turn would exert pressure on bus fare increase; and
- there were views questioning whether it was cost-effective to phase out franchised buses pre-maturely. According to the current age distribution of the franchised bus fleet, there would be about 3 000 buses, representing 50% of the entire franchised bus fleet, to be retired between 2013 and 2017. All the retired buses would be replaced by new buses which had to meet the bus design and facilities

requirements and the emission standards set by the TD and the EPD respectively. In addition, suitable emission-reduction devices might be installed as appropriate to upgrade the emission standards.

C. Emission control of marine vessels

Enforcement of international standards

30. According to paragraph 7 of the Executive Summary of the Audit Report, in 2010, emissions from marine vessels accounted for 48% of sulphur dioxide ("SO₂"), 36% of PM₁₀, and 32% of NO_x of the total emissions in Hong Kong. According to the International Maritime Organisation ("IMO"), air pollution from vessels is substantial and growing, causing serious and increasing public health and environmental impacts. Owing to increased maritime activities in Hong Kong and the Pearl River Delta ("PRD") region, emissions from vessels have substantially increased and become a significant source of air pollution in Hong Kong.

31. The Committee noted that between March 2009 and April 2012, the MD had informed the THB on five occasions on the need to introduce legislative amendments for adopting the IMO 2010 Standards. However, up to today, legislative amendments had still not been introduced. The Committee asked why the related legislative amendments were not introduced in a timely manner.

32. The **Secretary for Transport and Housing** and **Mr Francis LIU Hon-por**, the **Director of Marine**, explained that the Administration did not accord the highest priority to the legislative amendments for IMO 2010 Standards for the following reasons:

- nine pieces of marine-related legislation had been taken forward by the Administration since 2009, a list of which is in *Appendix 14*;
- pending local legislative amendments, the MD had promulgated guidelines through the Merchant Shipping Notices to facilitate compliance by Hong Kong registered ocean-going vessels ("OGVs") with the latest international standards and that in practice, the IMO 2010 Standards were already being complied with by the OGVs navigating in Hong Kong waters;

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- the Merchant Shipping (Prevention of Air Pollution) Regulation (Cap. 413M) allowed the MD to conduct port state control inspection on vessels within the waters of Hong Kong according to the latest IMO Standards. Section 39 of Cap. 413M specified that if the inspection revealed any deficiencies, the MD might take appropriate steps to ensure that the vessel concerned did not proceed to sea until the situation had been rectified in accordance with the requirements of the latest IMO Standards. In 2009, 2010 and 2011, the MD conducted 776, 820 and 854 port state control inspections on OGVs respectively, and no non-compliance with the IMO 2010 Standards was identified; and
- whilst the IMO 2010 Standards were primarily set for OGVs, the local vessels and river-trade vessels in Hong Kong waters were already using a fuel with a sulphur content of about 0.5% which was much lower than the IMO 2010 Standards (i.e. 3.5%).

33. As regards the timing for introducing legislative amendments for incorporating the IMO 2010 Standards into the local legislation, the **Secretary for Transport and Housing** advised in his letter dated 28 December 2012 (in *Appendix 15*) that the THB aimed to consult the LegCo Panel on Economic Development by June 2013 on the proposed legislative amendments. Furthermore, in taking forward the legislative amendment exercise, the THB would consider expanding the use of the direct reference approach in the relevant legislation as far as possible. This would enable the local legislation to follow the latest IMO Standards automatically and hence reduce the need for going through the legislative processes in view of the frequent updates of the IMO Standards.

Measures to lower emissions from marine vessels

34. The Committee noted from paragraph 3.19 of the Audit Report that some overseas countries, such as Australia and Canada, had already adopted more stringent standards for local vessels to use diesel with a sulphur limit of 0.001% to 0.0015%, and the Mainland would also adopt from July 2013 a standard with a sulphur limit of 0.035% for diesel used by local vessels. The Committee asked why Hong Kong had no plan to require local vessels to use ultra-low-sulphur diesel ("ULSD") which had a sulphur content not exceeding 0.005%, despite the fact that it was technically feasible to do so according to the findings of a trial scheme conducted by the EPD in October 2007 on exploring the feasibility of using ULSD on local ferries. The Committee further asked why the Government only planned to lower the sulphur

limit of the diesel used by local vessels from the existing 0.5% to 0.05% referred to in paragraph 3.17 of the Audit Report.

35. The **Director of Environmental Protection** replied that:

- whilst the trial scheme demonstrated that the use of ULSD to local ferries was technically feasible, the fuel cost would increase by more than 20% due to additional handling costs for supplying ULSD for this specific segment in the local marine sector;
- to avoid the additional handling costs and maximize the air quality improvement benefit, it was considered that the use of ULSD should best be applied to all local vessels instead of ferries alone. However, as engines of many local vessels were old home-made ones, the local marine trade and the MD had expressed concerns about the impacts of the use of USLD on the operation and safety of local vessels; and
- being a fuel with closer resemblance to the existing 0.5% sulphur-content diesel used by local vessels but with much lower emission levels, the 0.05% sulphur diesel would better address these operational and safety concerns. The 0.05% sulphur-content diesel could reduce SO₂ emission by 90% from the current levels.

36. On the question of whether the EPD had any plan to lower the sulphur content of the diesel used by local and river-trade vessels plying in Hong Kong waters to 0.035% so as to dovetail with the standard to be adopted by the Mainland for its local vessels from July 2013, the **Assistant Director of Environmental Protection** replied in the negative for the following reasons:

- diesel fuel with 0.05% sulphur content, but not 0.035%, was a common grade of diesel for fuel suppliers in the East Asian markets. To ensure satisfactory fuel supply to the marine industry of Hong Kong, there was a need to make reference to the norm of major fuel suppliers to local vessels; and
- due to the small difference in the sulphur content between the two diesel fuels and that fuel suppliers would also maintain a sufficient margin in complying with sulphur limit, it was expected that the sulphur content of fuel to be supplied in Hong Kong after the tightening would be close to that adopted in the Mainland.

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37. According to paragraph 3.20 of the Audit Report, a three-year incentive scheme (by waiving half of the port facilities and light dues) was launched by the EPD and the MD in September 2012 to encourage OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters. The Committee asked about the number of OGVs which had participated in the scheme so far.

38. The **Deputy Director of Environmental Protection** advised that as of December 2012, only 682 of the about 5 800 OGV arrivals between September and December 2012 (12%) had applied for the incentive scheme.

39. To increase the participation rate of the incentive scheme, the Committee asked whether consideration would be given to waiving all or more than half of the port facilities and light dues so as to encourage more OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters.

40. The **Deputy Director of Environmental Protection** replied that:

- when setting the level of subsidy at 50% of the port facilities and light dues, due consideration had been given to the "polluter pays" principle, the prudent use of public fund, the expectation of the ship operators and overseas practices. Indeed, the level of subsidy of the incentive scheme was comparable to and even better than some of the ports that had similar incentive schemes in place. For example, Singapore had implemented a similar incentive scheme where ships switching to the use of cleaner fuels upon entering the waters of Singapore (not just during berthing) enjoyed only a 15% reduction in port dues; and
- as the incentive scheme had just been introduced for three months, the EPD and the MD would keep monitoring the responses of the trade and the development of the international practices in considering any further measures on this front.

41. In response to the enquiry as to whether the Government would make it mandatory for OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters as opposed to a sulphur limit of 3.5% stipulated in IMO 2010 Standards to further reduce emission, the **Director of Environmental Protection** said that:

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- the EPD was now actively exploring with the Guangdong authorities on the feasibility of requiring OGVs to switch to using diesel with a sulphur limit of 0.5% while berthing at ports of Hong Kong and PRD region; and
- in the meantime, the MD would step up efforts in communicating with the shipping industry to encourage more OGVs to join the incentive scheme when berthing in Hong Kong waters.

42. The **Secretary for Transport and Housing** supplemented that two points needed to be taken into account when considering the proposal of requiring OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters. First, the impact of the proposal on Hong Kong's port competitiveness, as neighbouring ports, including PRD ports, presently did not impose such a requirement on OGVs. Second, as Hong Kong and the PRD region shared the same air shed, for Hong Kong to implement the proposal on its own would not help significantly improve the ambient air quality of Hong Kong.

43. On the suggestion of exploring the feasibility of requiring OGVs to consume only electricity from shore after docking in Hong Kong waters, the **Deputy Director of Environmental Protection** replied that the Government encouraged the use of onshore power by vessels for reducing emissions. In the design of the Kai Tak Cruise Terminal, provisions for the use of onshore power supply ("OPS") had already been made. With the harmonized international standard for OPS released jointly by the International Organisation for Standardisation, the Institute of Electrical and Electronics Engineers and the International Electrotechnical Commission in July 2012, it was envisaged that more ship liners would equip their cruises with onboard facilities to facilitate the use of OPS. The EPD would closely monitor the development and liaise with the Tourism Commission on practices adopted overseas.

44. According to paragraph 3.21 of the Audit Report, as of December 2010, there were 791 Government vessels and their emissions accounted for 8% of NO_x and 6% of PM₁₀ emissions from local vessels. Since 2011, all new Government vessels with engine power output greater than 130 kilo-Watt have been required to meet the IMO Tier II standards. In April 2012, the EPD informed the LegCo EA Panel that it intended to conduct a trial scheme to replace the engines of some Government vessels with a view to reducing their emissions, particularly NO_x emissions. As of August 2012, of the 116 Government vessels installed with

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engines with power output greater than 130 kilo-Watt, 56 (48%) had been replaced with engines meeting the IMO Tier I standards. The MD informed Audit in August 2012 that most of the engines of the remaining 60 (116 less 56) Government vessels were more than 12 years old and it might be more cost-effective to replace them when they reached the end of their useful lives (i.e. 15 or 20 years depending on vessel types). The Committee asked whether consideration would be given to expediting the replacement of the engines of these remaining 60 Government vessels with more environmental-friendly ones to reduce their emissions.

45. The **Director of Marine** replied that should the Government decide to accelerate the replacement of the engines of these remaining 60 Government vessels with more environmental-friendly ones, the MD would render its utmost support for the replacement.

46. On the question why the Government had never launched any one-off grant scheme to encourage owners of high polluting vessels to replace their vessels with new ones which met the prevailing emission standard, the **Assistant Director of Environmental Protection** replied that:

- amongst various measures to reduce marine emissions, the use of cleaner fuel was the most cost-effective and sustainable control measures. Vessel replacement would be very costly and could not help reduce the emissions of SO₂ and PM₁₀ significantly without the use of clean fuel. It was also a common international practice to require the upgrading of fuel quality for reducing the emissions from marine sector. The IMO had also been advocating for this environmental-friendly means; and
- in controlling marine emissions, OGVs were the primary target as they contributed to nearly 80% of PM₁₀ and SO₂ emissions from the marine sector in Hong Kong. As OGVs were operating internationally, it would not be cost-effective to incentivize early replacement of OGVs because such OGVs might only make a few calls to Hong Kong per year. Incentivizing the replacement of OGVs would not bring substantial air quality improvement to Hong Kong.

Dark-smoke control of vessels

47. The Committee noted that since 2005, the MD had adopted the Ringelmann Chart as a reference in conducting annual ship surveys and during visual surveys for dark smoke control. The Ringelmann Chart is a device with four shades of gray of different intensity (Shade 1 being the lightest and Shade 4 the darkest). The Committee asked how visual surveys of vessels were conducted by the MD.

48. **Mr Tony CHAN Cheuk-sang, General Manager (Operations), MD,** explained that:

- MD officers in patrol launches took random visual surveys of different types and sizes of vessels in the waters of Hong Kong. The surveys could be made whilst the vessel was stationary or while it was moving. The MD patrol launches would follow the vessels being surveyed, and observe the emission by comparing the level of darkness of the smoke emitted against the Ringelmann Chart and time the duration of the emission; and
- MD officers would issue an advisory letter if a vessel was found emitting dark smoke of an intensity of Shade 1 of the Ringelmann Chart for three minutes or more, or of Shade 2 for less than three minutes. A warning letter would be issued if the related dark smoke was found of an intensity of Shade 2 lasting for three minutes or more. Prosecution action would be taken when there was sufficient evidence to prove the cause of the nuisance.

49. According to Table 7 in paragraph 3.29 of the Audit Report, during the MD's dark-smoke visual surveys of vessels in recent years, the number of vessels surveyed had increased from 706 in 2009 to 1 442 (up to August in 2012) and the percentages of vessels surveyed found with visible emission had decreased from 40.8% in 2007 to 1.2% (up to August in 2012). The Committee enquired the reasons for the upsurge in the number of vessels surveyed for dark-smoke emissions and for the drastic reduction in the number of vessels found emitting dark smoke in recent years.

50. The **General Manager (Operations), MD,** explained that the number of surveys carried out in a particular year would depend on the resources available and operational needs. As regards the drastic reduction in the number of vessels found

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emitting dark smoke, the MD believed that it was the result of the MD's continued efforts to deter dark smoke emission through, notably, enforcing the Ringelmann Chart Shade 2 standard as a reference in the annual ship surveys since 2005. If a vessel emitted smoke darker than Shade 2 of the Ringelmann Chart for more than three minutes, the MD would not issue the relevant certificate of survey which was required for applying for or renewing a vessel licence. Other relevant factors might include higher engine standards on new builds and the use of cleaner fuel over the years.

51. Referring to paragraph 3.30 of the Audit Report, the Committee noted that of the 5 360 vessels surveyed in 2010 and 2011, the MD only had one successful prosecution case against the master of the vessel found emitting dark smoke. The Committee asked about the reason for such a low success rate.

52. The **General Manager (Operations), MD**, pointed out that under the Shipping and Port Control Ordinance (Cap. 313) and the Merchant Shipping (Local Vessels) Ordinance (Cap. 548), the specified person, e.g. the owner and master/coxswain of a vessel, would only be subject to prosecution if the vessel emitted smoke in such a quantity as to be a nuisance. However, it was difficult to gather sufficient evidence to show that the dark-smoke emission was in such quantity as to be a nuisance for taking prosecution action. In this connection, the MD had proposed to the THB to introduce legislative amendments to these two Ordinances to give effect to adopting the Ringelmann Chart as a reference to measure dark-smoke emissions from vessels, as practised in overseas countries such as the United Kingdom ("UK").

53. The Committee noted from paragraph 3.32 of the Audit Report that in October 2009, the THB said that it needed more time to consider details of introducing proposed legislative amendments for adopting the Ringelmann Chart as an objective standard for gauging smoke emission from vessels. The Committee asked why the THB needed such a long time on this issue.

54. The **Secretary and Transport for Housing** explained that:

- in April 2008, the MD consulted the local vessel trade on the introduction of an offence for dark smoke emissions by vessels which would appear to be as dark as or darker than Shade 1 of the Ringelmann Chart. Shade 1 was also the standard adopted in the Air Pollution

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Control (Smoke) Regulations (Cap. 311C) to determine whether it was "dark smoke" as defined under the Regulations. The trade raised objection to the proposal, arguing that different standards should be used for vessels due to the different engine specifications and operations involved. As there was no consensus, the legislative proposal was not taken forward then. Meanwhile, the MD had continued to deter dark smoke emission through enforcing the Ringelmann Chart Shade 2 standard in the annual ship survey;

- having considered the industry's views and overseas experience (ports in the UK and the United States ("US") had adopted Shade 2 of the Ringelmann Chart as the benchmark for determining excessive dark smoke emission), the THB and the MD had drawn up a revised proposal for consultation with the trade shortly. Subject to the feedback of the industry, the THB aimed to consult the LegCo Panel on Economic Development on the legislative proposals by June 2013; and
- subject to enactment of the legislative amendments, the MD would review whether to re-launch the Smoky Vessels Spotter Programme under which spotters were trained to assist in detecting dark-smoke emissions from vessels in Hong Kong waters.

55. On the question of whether consideration would be given to raising the penalty under the Shipping and Port Control Ordinance and the Merchant Shipping (Local Vessels) Ordinance for emitting dark smoke to increase deterrence, the **Secretary and Transport for Housing** replied that the THB and the MD would review the need for adjusting the penalty level when drawing up the legislative proposals.

D. Emission control of power plants

56. According to paragraph 11 of the Executive Summary of the Audit Report, emissions from local power plants accounted for 50% of SO₂, 25% of NO_x and 16% of PM₁₀ of the total emissions in Hong Kong in 2010. Two electricity companies are operating a total of four power plants which together supply 77% of electricity for local consumption. In 2011, these four power plants used coal or natural gas as fuel, with coal accounting for 71% of local electricity generation and natural gas 29%. Table 9 in paragraph 4.4 of the Audit Report further shows that for electricity generated locally in 2011, emissions of SO₂, NO_x and PM₁₀ by using natural gas were far lower than those by using coal. As it transpires, emissions of SO₂, NO_x

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and PM₁₀ per unit of electricity generated by using natural gas were 98%, 75% and 82% respectively less than those generated by using coal.

57. The Committee noted that the annual NO_x emission allowance of 25 950 tonnes for power plants stipulated in the Third Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences ("Third Technical Memorandum") (to be effective from 2017) still exceeded the annual NO_x emission allowance of 17 375 tonnes for power plants recommended by the consultant commissioned by the EPD in 2007 to review the AQOs in Hong Kong by 49%. The Committee was concerned that this might affect the achievement of a new and more stringent set of AQOs aimed for adoption by the Government in 2014.

58. The **Assistant Director of Environmental Protection** explained that:

- the EPD consultant proposal was based on desk-top research without the benefit of investigation of the design and site conditions of existing power plants;
- due to space constraints, it was not feasible for the power plants to retrofit their electricity-generation units with emission-reduction devices for further emission reductions; and
- the EPD would continue requiring the power plants to use best practicable measures to reduce their NO_x emission.

59. The **Secretary for the Environment** supplemented that as the major sources of air pollution in Hong Kong were motor vehicles, marine vessels and power plants, the ENB and the EPD would tackle these sources through the implementation of a package of 22 air-quality improvement measures as set out in Appendix B to the Audit Report. He assured the Committee that the ENB and the EPD would not drag their feet in taking forward any emission-reduction measures for power plants, motor vehicles and marine vessels to achieve the new 2014 AQOs by 2020.

60. The **Secretary for the Environment** further said that although the use of gas for local electricity generation would need to be raised to 50% by 2017 in order to meet the emission allowances stipulated in the Third Technical Memorandum, the ENB and the EPD would embark on a review of the fuel mix for local electricity

generation in 2013 with a view to substantially reducing its pollutant emissions. In the mid-term review of the Scheme of Control Agreements entered with the two power companies to be conducted next year, discussions would be held with the two power companies on ways to further reduce emissions from their power plants.

61. The Committee enquired whether consideration would be given to requiring the two power companies to use low emission coal for local electricity generation, so as to reduce emission pollutants from the coal-fired generation units in the power plants.

62. **Mr PANG Sik-wing, the Principal Environmental Protection Officer (Air Policy), EPD,** replied that:

- in controlling emissions from coal-fired generation units, overseas advanced countries, such as the European Union ("EU") countries and the US, had specified the emission concentration limits and/or quantities but not the restriction on the types of coal to be used. To ensure lowest possible emissions, the EPD had also imposed the maximum sulphur and ash contents of the coal used by the four local power plants at 1% and 16% to 19% by weight respectively, which were in line with the international standards for emissions from coal-fired generation;
- as Hong Kong did not have indigenous coal supply, the power companies had to procure coal from diversified sources, such as from Indonesia, Australian and Russia, to ensure stable and reliable electricity generation; and
- low emission coal had already been extensively used for local electricity generation. In order to meet the tightened emission caps specified in the Third Technical Memorandum, it would be necessary for the local power plants to increase the percentage of low emission coal to 45% by 2017.

63. The Committee was concerned that the emission allowances of the Third Technical Memorandum, which was enacted in 2012, would not be effective enough in lowering the NO_x emission allowance for local power plants when it came into effect in 2017.

64. The **Assistant Director of Environmental Protection** pointed out that to enable timely revision of the emission allowances, they would be reviewed no less than once every two years. The EPD would continue to review and tighten the emission caps in light of fuel mix in future and advancement in emission control technology.

65. The Committee enquired whether, to better control emission reduction, consideration would be given to increasing the electricity supply in Hong Kong by nuclear power plant.

66. **Ms Christine LOH Kung-wai**, the **Under Secretary for the Environment**, replied that in working out a proposal of the future fuel mix for Hong Kong, the ENB and the EPD would continue to consult different stakeholders and would strive to strike a balance amongst the considerations of safety, reliability, environmental protection and affordability.

E. Emissions control of non-road mobile machinery

67. Mobile machines, transportable industrial equipment and non-road vehicles are commonly referred to as non-road mobile machinery ("NRMM"). They are widely used in construction sites (e.g. excavators), the airport (e.g. catering trucks) and container terminals (e.g. loaders). According to paragraph 5.2 of the Audit Report, emissions from NRMM accounted for 6% of NO_x and 8% of PM₁₀ of the total emissions in Hong Kong in 2010. As stated in paragraph 5.3 of the Audit Report, as of February 2012:

- there were 13 500 NRMM units operating in Hong Kong (comprising 11 300 units at construction sites, 1 600 units at the airport and 600 units at container terminals);
- the estimated average age of the NRMM was eight years old;
- the estimated average service life of the NRMM was 14 years; and
- if all the units of existing NRMM were replaced by those meeting emission standards of the EU, the US and Japan, 4% and 5% of the local emissions of NO_x and PM₁₀ could be reduced respectively.

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68. The Committee noted that the EPD planned to introduce emission control over all NRMM units (either new or second-hand) to be sold, leased or supplied for local use. These units would have to meet specified emission standards (broadly in line with those of the EU, the US and Japan) and be approved by the EPD. The EPD aimed to complete the related legislative procedures in the 2012-2013 legislative session, and it would review the situation after implementation of the control system, and decide on the need for further control over existing NRMM at a later stage. The Committee asked why the proposed new emission control requirement would not cover existing NRMM units at the outset.

69. The **Deputy Director of Environmental Protection** explained that:

- it was not a common practice in overseas countries to control the emissions of in-use NRMM. Although the State of California of the US had implemented an emission-control system for existing NRMM units as referred to in paragraph 5.8 of the Audit Report, such a practice was not adopted by other States in the US. In fact, it was the common practices of other advanced countries/economies, such as the EU countries, not to impose new control requirements on existing NRMM units;
- due regard must be given to the impacts of introducing the new emission control requirements on existing NRMM units on owners of these units and on public works and other construction projects. For instance, many of the existing NRMM units still had an average remaining serviceable life of six years and some of them were costly. There was also the concern about the availability and procurement time of the NRMM units which could meet the new emission standards;
- the EPD considered it more prudent, as a start, to impose the new requirement on new NRMM first. The EPD would build up a database of existing NRMM with a detailed profile, after which the EPD would map out the next step. Whether any further measure should be introduced to control emissions from existing NRMM units would be studied at a later stage, taking account of data collected, stakeholders' views, overseas experience, viability and potential benefits; and
- in the meantime, the EPD would continue to keep up efforts to ensure the operation of existing NRMM units complying with the existing requirements under the Air Pollution Control Ordinance (Cap. 311),

i.e. these units must not cause air nuisances and emit dark smoke over the restriction limits, and must use ULSD.

70. The Committee considered that the Government should take the lead to use only NRMM which met specified environmental standards in its works projects. The Committee enquired about the strategies that would be adopted by the Development Bureau ("DEVB") to progressively stipulate the use of all types of NRMM units meeting specified environmental standards in public works contracts; and in the interim, whether consideration would be given to awarding extra merit points to the bidders in public works tenders if the bidders indicated in their bids to use certain types of NRMM units which met specified environmental standards although such NRMM units were not stipulated in the tender documents.

71. **Ms Grace LUI Kit-yuk, Permanent Secretary for Development (Works) (Acting)**, stated in the public hearing and the **Secretary for Development** affirmed in his letter dated 24 December 2012 (in *Appendix 16*) that:

- the DEVB would adopt a progressive approach to introduce the requirements of using NRMM units meeting specified environmental standards in public works contracts with due consideration to market availability, procurement time and cost of new NRMM units complying with the standards, remaining serviceable life of the existing NRMM units, effect on tender price of public works contracts and impacts to small and medium size contractors and owners of NRMM units not complying with the specified environmental standards for use or rental purpose. The DEVB would also consult relevant stakeholders, including contractor associations, NRMM trade and suppliers associations, to work out the implementation details, including the requirements to be stipulated in public works contracts; and
- the DEVB agreed to consider feasibility of the proposal of giving extra merit points to tenderers indicating the use of certain types of NRMM units meeting the specified environmental standards in public works contracts. The proposal would be raised with relevant stakeholders.

F. Regional emission control

72. To tackle the regional air quality problem, the Hong Kong Special Administrative Region ("HKSAR") Government and the Guangdong Government issued a Joint Statement in April 2002 to reduce, on a best endeavour basis, the regional emissions of SO₂ by 40%, NO_x by 20%, PM₁₀ by 55% and volatile organic compound ("VOC") by 55% by 2010, using 1997 as the baseline year. On 10 October 2012, Hong Kong announced the attainment of 2010 emission reduction targets. For Guangdong Province, the 2010 targets for SO₂, NO_x and PM₁₀ were met, but not that for VOC. In the 2009-2010 Policy Address, the former Administration announced the plan to work with Guangdong Province to formulate emission reduction proposals for 2010 onwards.

73. The Committee noted from paragraph 6.8 of the Audit Report that in August 2009, the HKSAR Government and the Guangdong Provincial Government signed the Environmental Co-operation Agreement. Under the Agreement, in order to improve the regional air quality further, a joint study group was set up in October 2009 to formulate post-2010 emission-reduction targets for the PRD region, and arrangements for implementation. In June 2012, the ENB informed the LegCo EA Panel that the two Governments were still discussing arrangements for the post-2010 emission-reduction targets. The Committee enquired about the progress in this regard.

74. The **Assistant Director of Environmental Protection** advised that the EPD had announced on 23 November 2012 the air pollutant emission reduction targets for Hong Kong and PRD region for 2015 and 2020 respectively, using 2010 as the baseline year. As regards the air quality improvement measures for Hong Kong up to 2020, apart from the 22 air quality improvement measures announced for achieving the new 2014 AQOs, which formed the basis for drawing up the emission reduction targets for 2015, the implementation of additional measures, such as increasing the use of clean fuel or changing fuel mix for power generation, as well as designating PRD waters as an Emission Control Area ("ECA") for vessels by 2020, could possibly bring further reduction. The relevant LegCo Brief is in *Appendix 17*.

75. On the progress in taking forward the setting up of an ECA in PRD waters, the **Under Secretary for the Environment** replied that the ENB and the EPD had recently commenced talks with the Guangdong EPD and other Mainland authorities concerned on such pursuit. Due to the complexity of the matter, more time was

needed for both sides to come up with concrete implementation plan. Response from the Mainland side was positive.

76. The **Deputy Director of Environmental Protection** supplemented that it was the consensus of the HKSAR Government and the Guangdong Province to pursue the setting up of an ECA in PRD waters and to require OGVs to switch to the use of diesel with a sulphur limit of 0.5% whilst berthing at ports of Hong Kong and the PRD region. However, as the difficulties involved in setting up an ECA in PRD waters were greater than those involved in requiring OGVs to switch to the use of cleaner fuel whilst berthing at ports of Hong Kong and the PRD region, priority would be accorded to implement the latter.

G. Conclusions and recommendations

77. The Committee:

Overall comments

- expresses serious dismay and finds it unacceptable that:
 - (a) the Administration had worked in a passive and fragmented manner to tackle the air pollution problem, as a result of which the health and well being of the public have been sacrificed; and
 - (b) despite the number of recommendations for improvement made by the Committee in its Report No. 29 of February 1998 and Report No. 44 of July 2005 to improve the air quality of Hong Kong in various areas, little progress has been made by the Administration to tackle the air pollution problem as evidenced by the following:
 - (i) the existing air quality objectives ("AQOs") have never been fully achieved since their adoption in 1987. The AQOs stipulate the concentration levels for seven major air pollutants, of which sulphur dioxide ("SO₂"), nitrogen dioxide, and particulate matters with a diameter of 10 micrometres or less ("PM₁₀") are the most relevant and significant ones in Hong Kong; and

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- (ii) in 2010, power plants and marine vessels accounted for 50% and 48% of total SO₂ emissions respectively; power plants, motor vehicles and marine vessels accounted for 25%, 30% and 32% of the total nitrogen oxides ("NO_x") emissions respectively; and power plants, motor vehicles and marine vessels accounted for 16%, 21% and 36% of the total PM₁₀ emissions respectively. All of these air pollutants have serious adverse health effects;
- welcomes the commitment made by the Secretary for Development, the Secretary for the Environment, and the Secretary for Transport and Housing that the Development Bureau ("DEVB"), the Environment Bureau ("ENB") and the Transport and Housing Bureau ("THB") will strengthen cross-bureaux and cross-departments co-operation and work closely with stakeholders in the formulation and implementation of air policies;
 - acknowledges the statement made by the Secretary for the Environment that the Government will proactively improve air quality and carefully consider public health when formulating clear air policy. According to a consultancy study commissioned by the Environmental Protection Department ("EPD") in 2007, upon attainment of the new 2014 AQOs, about 4 200 unnecessary hospital admissions and 7 400 statistical life years would be saved each year, or an improved average life expectancy of around one month for the entire population;
 - expects that the Administration will adopt a proactive attitude to address the serious adverse health effects of air pollution on members of the public by allocating more resources to tackle the air pollution problem, amongst others;
 - commends the detailed explanations given by the Deputy Director of Environmental Protection, the Assistant Director of Environmental Protection, and the Principal Environmental Protection Officer (Air Policy) on issues relating to air quality control, which had greatly helped the Committee to better understand the complex issues involved;

Specific comments

Emission control of vehicles

- expresses serious dismay and finds it unacceptable that:
 - (a) Hong Kong has a serious roadside pollution problem as illustrated by many roadside AQO measurements exceeding the AQO limits and many days with roadside air pollution index exceeding the very high level of 100, causing detrimental health effects on members of the public; and
 - (b) as of March 2012, 53 724 high-polluting pre-Euro, Euro I and Euro II diesel commercial vehicles were running on the streets, causing serious air pollution;

Emissions from pre-Euro, Euro I and Euro II diesel vehicles

- expresses grave dissatisfaction that the 2007 Grant Scheme to encourage owners of pre-Euro and Euro I diesel commercial vehicles to replace their vehicles with new ones complying with Euro IV emission standard and the 2010 Grant Scheme to encourage owners of Euro II diesel commercial vehicles to replace their vehicles by Euro IV or V ones have not been effective. As of March 2012, a total of 53 724 Euro II or below vehicles were running on the streets (i.e. 17 644 pre-Euro, 12 735 Euro I and 23 345 Euro II vehicles);
- expresses serious dismay and finds it unacceptable that:
 - (a) the EPD had not conducted any test or analysis to assess the estimated number of eligible vehicle owners who would take up the grant under the 2007 Grant Scheme, before seeking funding support of \$3,176 million for the Scheme from the Finance Committee ("FC") of the Legislative Council ("LegCo"). As a result, only 17 103 vehicles (29% of the 58 800 vehicles) were replaced and only \$772 million (24% of \$3,176 million) of the grant had been used. A total of \$2,404 million (76% of \$3,176 million) was left unspent for three years and the said money could have been deployed to other areas in need; and

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- (b) the EPD had failed to listen to the views of members of the LegCo Panel on Environmental Affairs to make the incentive provided by the 2007 Grant Scheme more attractive, so as to achieve the desired effect of adopting a "carrot and stick" approach to accelerate the replacement of aged diesel commercial vehicles;
- notes that the ENB and the EPD will formulate better strategies for reducing the number of pre-Euro, Euro I and Euro II diesel commercial vehicles running on the streets by drawing lessons from the implementation of previous replacement grant schemes, amongst others;
- urges the ENB and the EPD that in adopting a "carrot and stick" approach for implementing such measures, a right balance between incentives and disincentives must be struck to ensure the effectiveness of these measures and prudent use of public money;
- acknowledges that in his 2013 Policy Address, the Chief Executive ("CE") has proposed:
 - (a) to set aside \$10 billion as subsidies to owners of over 80 000 heavily polluting pre-Euro and Euro I to III diesel commercial vehicles in order to phase out these vehicles progressively having regard to their pollution level; and
 - (b) to set a service life limit for newly registered diesel commercial vehicles at 15 years;
- expects that the Administration has learnt from the experience of the 2007 and 2010 Grant Schemes and will take into account the views of the transport trade in devising any new vehicle replacement scheme to reduce roadside emissions;

Emissions from diesel light buses

- expresses grave dissatisfaction that insufficient suitably located liquefied-petroleum gas ("LPG") refilling stations have been put in place to facilitate the replacement of diesel public light buses by LPG ones, as a result of which 34% of the 4 350 public light buses were still fuelled by diesel. According to the EPD, the replacement of diesel public light buses by LPG ones contributed to an estimated reduction of 1.6% of roadside NO_x and 3.2% of roadside PM₁₀ emissions;

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- urges the EPD to come up with effective measures expeditiously to accelerate the replacement of diesel public light buses by LPG ones, including identifying more potential sites for setting up petrol-cum-LPG filling stations;

Emissions from LPG taxis and light buses

- expresses grave dissatisfaction that high emissions from LPG taxis and light buses with worn-out emission-reduction devices have caused serious roadside air pollution;
- notes that the EPD will expedite measures to prevent excessive emissions from LPG vehicles after implementation of the emission-reduction-device replacement scheme;

Emissions from Euro II Government diesel vehicles

- expresses grave dissatisfaction that the number of Euro II Government diesel vehicles will only be reduced from 221 in June 2012 to 129 by March 2013, of which 122 will be phased out in 2013-2014 and the remaining seven in 2014-2015;
- urges the Government to take the lead in using environmental-friendly vehicles by replacing those high-polluting Government vehicles by new ones earlier;

Emissions from franchised buses

- expresses grave dissatisfaction that the implementation of the air quality improvement measure on franchised-bus-route rationalization has been slow;
- notes that the Transport Department ("TD") has undertaken to:
 - (a) apart from continuing to pursue bus service rationalization, continue to explore other measures, such as identifying more suitable sites and facilities for implementation of bus-bus and bus-rail interchange schemes; and
 - (b) in collaboration with the EPD, step up efforts in reducing franchised bus trips and formulate a better strategy for reducing franchised buses with more focus/emphasis on the environmental

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benefits to society in consultation with franchised bus companies and related District Councils;

- acknowledges that in his 2013 Policy Address, the CE has undertaken to explore ways to rationalize bus routing, enhance feeder service and improve interchange arrangements in order to reduce roadside pollution;

Emission control of marine vessels

- finds it appalling and inexcusable that:
 - (a) SO₂, NO_x and PM₁₀ emissions from vessels have substantially increased and become a significant source of air pollution in Hong Kong; and
 - (b) despite the fact that the Marine Department ("MD") informed the THB on five occasions on the need to introduce legislative amendments for adopting the more stringent International Maritime Organisation ("IMO") 2010 Standards, the THB has not sought legislative support for adopting these Standards. As a result, there is no statutory basis for the MD to refrain ocean-going vessels ("OGVs") from using high sulphur-content fuel and engines with high NO_x emissions in Hong Kong waters;
- notes that the THB aims to consult the LegCo Panel on Economic Development by June 2013 on the proposed legislative amendments;
- recognizes there are complications and difficulties in requiring OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters at this stage, as to do so will undermine Hong Kong's port competitiveness given that neighbouring ports, including Pearl River Delta ("PRD") ports, have not yet imposed such a requirement on OGVs berthing in their ports and the ambient air quality of Hong Kong will not be significantly improved given that Hong Kong and the PRD region share the same air shed. Notwithstanding this, the Committee considers that it is necessary for Hong Kong to require OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters;

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- urges the ENB and the EPD to:
 - (a) come up with an agreement with the Environmental Protection Department of the Guangdong Provincial Government ("Guangdong EPD") expeditiously on requiring OGVs to switch to using diesel with a sulphur limit of 0.5% whilst berthing at ports of Hong Kong and the PRD region; and
 - (b) in the interim, formulate proactively better strategies to encourage OGVs to switch to using diesel with a sulphur limit of 0.5% when berthing in Hong Kong waters by, say, increasing the level of subsidy under the incentive scheme referred to in paragraph 37 above and providing more facilities to enable the use of onshore power supply by OGVs;
- acknowledges that in his 2013 Policy Address, the CE plans:
 - (a) to submit to the Council in the next legislative session the legislative proposal to enforce OGVs at berth within Hong Kong waters to switch to low-sulphur diesel, following the completion of consultation with the maritime sector; and
 - (b) to seek funding from the FC of LegCo to install onshore power supply facilities at the Kai Tak Cruise Terminal for use by cruise vessels;
- notes the concern of the local marine trade about the impacts of the use of ultra-low-sulphur diesel ("ULSD") on the operation and safety of local vessels;
- urges the ENB and the EPD to set expeditiously a new sulphur limit lower than the existing 0.5% for local as well as river-trade vessels by making reference to fuel sulphur limits set in the Mainland and overseas countries;

Dark-smoke control of vessels

- expresses serious concern that the THB has not introduced legislative amendments for adopting the Ringelmann Chart for measuring dark-smoke emissions from vessels, thereby affecting the enforcement action in this area;

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- notes that the THB aims to consult the LegCo Panel on Economic Development the legislative proposal for adopting the Ringelmann Chart for measuring dark-smoke emissions from vessels by June 2013;

Emission control of power plants

- expresses serious concern that:
 - (a) SO₂, NO_x and PM₁₀ emissions from power plants account for a significant proportion of air pollutants in Hong Kong;
 - (b) the use of coal accounts for 71% of local electricity generation, notwithstanding that the use of coal for electricity generation emits far more pollutants than using natural gas;
 - (c) the NO_x emission allowances set for local power plants in the coming years are not low enough for achieving the 2014 AQOs; and
 - (d) no emission allowances for particulate matters with a diameter of 2.5 micrometres or less ("PM_{2.5}") have been set for local power plants, notwithstanding that they are more harmful to health than PM₁₀;
- notes that:
 - (a) the ENB and the EPD will review the long-term fuel mix for local electricity generation, taking account of the high emission of air pollutants by using coal vis-à-vis natural gas;
 - (b) the Secretary for the Environment has undertaken to discuss with the two power companies in 2013 on implementing measures to further reduce emissions from power plants for local electricity generation in its mid-term review of the Scheme of Control Agreements entered with the two power companies; and
 - (c) the ENB and the EPD will consider setting emission allowances for PM_{2.5} for local power plants, taking account of good practices abroad;

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- urges the ENB and the EPD to require the two power companies to use more low emission coal as far as practicable, so as to further reduce emission pollutants from power plants;

Emission control of non-road mobile machinery

- expresses concern that:
 - (a) there has been negligible statutory air-pollution-emission control over non-road mobile machinery ("NRMM"), although it emits substantial pollutants;
 - (b) emissions from existing NRMM units will not be controlled under the proposed NRMM emission-control system; and
 - (c) the Government has not imposed any emission-control requirements on NRMM units used in public works projects;
- notes that the EPD has planned to complete in the 2012-2013 legislative session the necessary legislative procedures for implementing the proposed NRMM emission-control system on all new NRMM units;
- urges the EPD to come up with measures expeditiously to better regulate emissions from in-use NRMM;
- acknowledges that the DEVB:
 - (a) will adopt a progressive approach to introduce the requirements of using NRMM units meeting specified environmental standards in public works contracts; and
 - (b) will consider the feasibility of giving extra merit points to tenderers indicating the use of certain types of NRMM units meeting the specified environmental standards in public works contracts;

Regional emission control

- urges the ENB and the EPD to:
 - (a) come up with the arrangements for implementing the air-quality improvement measures expeditiously so as to meet the

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emission-reduction targets in 2015 and 2020 reached with the Guangdong EPD; and

- (b) pursue with the Guangdong EPD and other authorities concerned proactively on:
 - (i) requiring OGVs to switch to using diesel with a sulphur limit of 0.5% whilst berthing at ports of Hong Kong and the PRD region; and
 - (ii) setting up an emission control area in PRD waters;

Way forward

- urges the ENB and the EPD, in close collaboration with the relevant burueax/departments, to take on board the recommendations of Audit and the Committee for implementing measures to improve the air quality of Hong Kong, so as to safeguard the health of members of the public; and

Follow-up action

- wishes to be kept informed of progress made in implementing the various recommendations of Audit and the Committee and the improvement in air quality after the Government's implementation of the 22 air-quality improvement measures.