

## **AIR QUALITY OBJECTIVES (AQO) REVIEW WORKING GROUP**

**Digest of the 2<sup>nd</sup> Meeting**  
**held on 22 December 2016 at 2:00 p.m.**  
**in Room WP01, Podium Floor, West Block,**  
**Education Bureau Kowloon Tong Centre,**  
**Kowloon Tong**

### **Present:**

Ms. Christine LOH	Under Secretary for the Environment ( <b>Chairperson</b> ), ENB
Mrs. Alice CHEUNG	Deputy Director of Environmental Protection (3) ( <b>Vice-Chairperson</b> ), EPD
Mr. Jeff BENT	
Mr. Stanley Tandon Lal CHAING	
Ir. Cary CHAN	
Dr. CHAN Ka-lung	
Ms. Suzanne CHEUNG Kit-yee	
Mr. CHIANG Sui Ki	
Prof. Larry CHOW	
Mr. Patrick FUNG Kin-wai	
Ir. Dr. David HO Chi-shing	
Dr. HUNG Wing-tat	
Mr. KEUNG Siu-fai	
Dr. Nicky LAM Yun-fat	
Mr. Alfred LEE Tak-kong	
Mr. Paul LI	
Ir. LO Pak-cheong	
Mr. LOONG Tsz-wai	
Dr. MAN Chi-sum	
Mr. Aaron NG Hoi-shan	
Mr. Simon NG	
Ms. Susanna NG	
Dr. Loletta SO Kit-ying	
Mr. Tony TONG	
Prof. WANG Tao	
Mr. Matthew WONG Leung-pak	
Ir. YEE Tak-chow	

Dr. William YU	
Ms. Irene PANG	Chief Assistant Secretary (Works) 3, DEVB
Mr. Raymond LEE	Assistant Secretary (Works Policies) 14, DEVB
Ms. Queenie LEE	Principal Assistant Secretary for the Environment (Electricity Reviews), ENB
Ms. Fanny CHEUNG <sup>(1)</sup>	Assistant Secretary for the Environment (Energy) 1, ENB
Ms. Louisa YAN	Principal Assistant Secretary (Transport)10, THB
Mr. Alex LAU <sup>(2)</sup>	Assistant Secretary (Transport)2B, THB
Ms. Alice PANG	Deputy Project Manager (Kowloon), CEDD
Mr. Louie LAU <sup>(3)</sup>	Senior Engineer 4, Land Works, CEDD
Dr. Eddy NG	Principal Medical Officer (Non Communicable Diseases, DoH
Mr. Barry CHU	Chief Engineer (Energy Efficiency), EMSD
Mr. Y.K. LAI	Chief (Marine Policy), MD
Ms. Amy CHEUNG	Assistant Director of Planning (Territorial), PlanD
Ms. Rachel KWAN	Assistant Commissioner (Bus & Railway), TD
Mr. MOK Wai-chuen	Assistant Director of Environmental Protection (Air Policy), EPD
Mr. Brian LAU	Acting Principal Environmental Protection Officer (Air Policy), EPD
Mr. Terence TSANG	Principal Environmental Protection Officer (Air Science), EPD
Mr. Dave HO	Principal Environmental Protection Officer (Mobile Source), EPD
Mr. Freeman CHEUNG	Consultants' Representative (AECOM)
Mr. Ping KONG	Consultants' Representative (AECOM)
Mr. Karl AN	Consultants' Representative (AECOM)
Dr. LAO Xiang-qian	Consultants' Representative (CUHK)
Prof. Jimmy FUNG Chi-hung	Consultants' Representative (HKUST)

Note:

1. Representing Mrs. Dorothy MA, Principal Assistant Secretary for the Environment (Energy), to attend the meeting.
2. Representing Mr. Tony LI, Principal Assistant Secretary (Transport) 2, to attend the meeting.

3. Representing Mr. Keith TANG, Deputy Head of Civil Engineering Office (Port & Land), to attend the meeting.

**In Attendance:**

Ms. Josephine HO	Acting Senior Environmental Protection Officer (Air Policy) 1, EPD
Mr. C.H. KAN	Senior Environmental Protection Officer (Air Policy) 4, EPD
Dr. Peter LOUIE	Senior Environmental Protection Officer (Air Policy) 5, EPD
Dr. Kenneth LEUNG	Senior Environmental Protection Officer (Air Science) 4, EPD
Mr. Nelson IP	Acting Senior Environmental Protection Officer (Mobile Source) 3, EPD
Mr. Simon LAM	Environmental Protection Officer (Air Policy) 11, EPD
Mr. Nick TSANG	Environmental Protection Officer (Air Policy) 43, EPD
Mr. Roy TSANG	Environmental Protection Officer (Air Science) 42, EPD
Mr. Ambrose CHEN	Environmental Protection Officer(Mobile Source) 31, EPD
Mr. Ivan SHEK	Environmental Protection Officer(Mobile Source) 34, EPD
Dr. Jackie NG	Assistant Environmental Protection Officer (Air Policy) 12, EPD
Ms. Queenie CHAU	Assistant Environmental Protection Officer (Air Policy) 14, EPD

**Absent with apologies:**

Mr. Evan AUYANG  
Prof. Peter BRIMBLECOMBE  
Mr. Arthur BOWRING  
Hon CHAN Choi-hi  
Mrs. Christine CHEUNG  
Mr. Ellis CHUNG

Ms. Jessie CHUNG  
Ir. Edmond FONG Wai-man  
Ir. FUNG Man-keung  
Mr. Sunny HO Lap-kee  
Mr. David KONG  
Mr. Prentice KOO  
Hon KWAN Sau-ling  
Mr. KWOK Tak-kee  
Prof. Alexis LAU Kai-hon  
Mr. Joseph LAW Ka-chun  
Dr. Ringo LEE Yiu-pui  
Mr. Roger LEE Chak-cheong  
Dr. Roland LEUNG Chung-chuen  
Mr. LING Chi-keung  
Mr. Brandon LIU  
Prof. John LIU Jianhua  
Dr. Eunice MAK Hoi-cheung  
Ms. Sandy MAK  
Mr. Daniel NG  
Dr. NING Zhi  
Mr. SO Sai-hung  
Prof. Raymond SO Wai-man  
Mr. Madison TANG Wing-hong  
Prof. TIAN Lin-wei  
Mr. TUNG Ching-leung  
Mr. David WONG Yui-cheong  
Mr. Danny WU  
Dr. Steve YIM Hung-lam

### **Opening Remarks**

The **Chairperson** welcomed Members to the second meeting and introduced AECOM Asia Co. Ltd. as the Consultant appointed by EPD to work on the AQO Review. She also informed Members that two former members of the Air Science and Health

Sub-group, Prof. Wong Tsz Wai and Prof. Jimmy Fung, had joined the consultant team and resigned from the Working Group.

### **Agenda Item 1 – Confirmation of digest of the first meeting**

2. The draft digest of the first meeting held on 25 May 2016 was confirmed without amendment.

### **Agenda Item 2 – Report on the Sub-Groups’ work progress (WG paper 3/2016)**

3. The WG paper 3/2016 which summarized the progress of the review of the four sub-groups in the last six months had been circulated to Members for information. **Mr. Brian Lau** briefed the Members on the overall progress of the Marine Transportation Sub-group.

4. The following views were raised by Members:

(a) Members suggested that provision of On-shore Power Supply (OPS) facilities at Kai Tak Cruise Terminal should be expedited given that the space had been reserved for the installation of OPS. They opined that the availability of OPS facilities might facilitate operation of cruise ships and attract business to the cruise terminal.

(b) Another member pointed out that, to fulfil the emission requirements, all major cruise ship operators in recent years were installing scrubbers on-board both new and existing ships. Scrubbers could be used both while sailing and at berth. OPS is regarded as a sunset technology by the marine industry. Of the approximately 30,000 OGVs calls to Hong Kong in 2017, only about 300 are by cruise ships. Of these, 13 cruise ship visits are OPS capable, of which only half would be able to connect to OPS due to tidal constraints. OPS is also not considered a viable option by many countries whose electricity is generated by coal which is both more polluting than marine fuel oil, and is often significantly more expensive than generating electricity on board the ships. The member added that many new cruise ships currently on order and scheduled for delivery from 2019 would be fueled by Liquefied Natural Gas (LNG), which is considered to be the future technology, and cleanest option both while at berth and when sailing. The trend for other LNG-powered vessels such as ferries and bulk carriers was also moving forward worldwide. As local power companies are planning for an off-shore

LNG bunkering facility to support the increase use of LNG for power generation, the share use of the facility for LNG ship-to-ship bunkering could be feasible.

- (c) A member considered the use of OPS had an advantage over scrubbers or LNG that there would be no emission from the cruise while at berth and electricity generation in power plants were under stringent control requirements.
- (d) A member opined that restricting the use of a particular type of fuel, say LNG, in incoming marine vessels would be challenging as the feasibility of using a particular fuel by a vessel was largely dependent on the model design of the vessel. Instead, the member suggested that tightening the fuel requirements would be more practical.
- (e) A member suggested that Hong Kong could take lead in controlling marine emissions given that the recent control measures were implemented effectively.

5. The Administration's responses were as follows:

- (a) The **Chairperson** advised that the use of LNG for marine vessels in Hong Kong could be viable, provided that the proposed development of an off-shore LNG floating storage and regasification unit could be brought forward.
- (b) The Administration pointed out that subject to the approval of the LegCo, a Domestic Marine Emission Control Area (DECA) would be established from 1 January 2019 in the Hong Kong waters in conjunction with a similar Emission Control Area in the rest of the Pearl River Delta (PRD) waters. Within the zone, all vessels would be required to use low sulphur fuel with sulphur content not exceeding 0.5%.
- (c) The Administration considered that requiring cruises to use OPS in Hong Kong might not be effective in terms of the current cruise business. Nevertheless, given the evolving development of OPS facilities at other cruise terminals in the PRD region, the cruise companies might be willing to deploy more OPS-ready cruise ships to the PRD region. The

Administration would keep in view of the OPS development for cruise ships in a regional context, so that timely action could be taken to pursue this measure further.

*[Post-meeting note: a member submitted further comments to the Secretariat after the meeting stating that the use of OPS would induce substantial cost implications with inferior abatement effectiveness compared to newer emissions abatement technologies, and would not help in complying with the DECA's requirements from 2019 onwards. On the other hand, LNG as a marine fuel is becoming popular in many places, e.g. the Baltic, North America and the Mediterranean, and under development at some nearby Asian ports. A PRD ferry operator in Hong Kong has also expressed the intention to switch to LNG for its fleet, which can be retrofitted for LNG operation at relatively low cost.]*

- (d) In response to a member's suggestion to take lead in controlling marine emissions, the Government was working closely with the Guangdong maritime authorities to jointly establish a domestic emission control area in the Pearl River Delta waters. The Administration considered that regional collaboration could also maximize the overall environmental gains.

6. **Mr. Dave Ho** briefed the Members on the progress of the Road Transportation Sub-group and Members' views were summarized below.

- (a) In order to raise awareness on the importance of vehicle maintenance and repair, a member suggested the Administration should consider providing additional support to the vehicle maintenance trade, and regulating the existing voluntary registration schemes for vehicle mechanics and vehicle maintenance workshops.
- (b) A member opined that the proposed new air quality improvement measures for vehicle emission control were mainly related to traffic management. He enquired about the progress of the current tailpipe emission control measures associated, and suggested if further end-of-pipe solutions could be introduced, particularly for more polluting heavy vehicles like trucks and lorries.
- (c) A member also suggested that the Administration might make reference to experience of London to expedite the introduction of "zero emission" buses.

7. The Administration's responses are that:

- (a) There were regular meetings with the vehicle repairing trade to provide necessary supports in relation to the maintenance and repair of vehicles complying with the latest emission standards. The proposed regulation of registration of vehicle mechanics and workshops would need further deliberation with the trade.
- (b) The mainstream technologies to-date to control end-of-pipe emissions from in-use vehicles were diesel particulate filter (DPF) and selective catalytic reduction (SCR). Nevertheless, the application and effectiveness of these technologies on old vehicles were not satisfactory due to unfavourable engine operating conditions (e.g. high temperatures). Instead, phasing out these old and polluting vehicles would be more effective from an emission control perspective. Given that all Pre-Euro IV diesel commercial vehicles would be phased out by end of 2019, there would be limited room for implementing further end-of-pipe control measures.
- (c) The Road Transportation Sub-group would deliberate on measures on the "Promotion of low-emission transport mode" which included electric vehicles and new-energy vehicles. .

8. **Mr. Brian Lau** gave a brief account of the progress in the Energy & Power Generation Sub-group.

9. The views raised by Members are as follows:

- (a) A member suggested the Administration should explore the potential of retrofitting the existing gas-fired generating units of power plants for further emission abatement. The member also concerned whether the available technology would be sufficient to help attaining the long term emission reduction target.
- (b) Another member opined that the Administration should open up the power grid and work out the repurchase price for renewable energy (RE) to attract investment in RE generation.



10. The Administration's responses are that:

- (a) A power company had upgraded one of their existing gas-fired generating units to improve the performance on fuel economy and emission and was reviewing the results.
- (b) The Government had issued a number of Technical Memorandums (TMs) under the Air Pollution Control Ordinance to set out the allocation of emission caps for power plants. The TM would be reviewed with due consideration of the installation of new gas-fired generating units, future electricity demand and the fuel mix for electricity generation which would be pivotal in further tightening the emission caps.
- (c) The **Chairperson** supplemented that the 2030 carbon reduction target for combating climate change would soon be released and there would be more information on the fuel mix for electricity generation in the longer term and the development of RE when the climate change action plan was published.
- (d) The power companies were conducting an environmental impact assessment (EIA) on an offshore LNG floating storage and regasification unit to cope with the increase use of gas for electricity generation.

11. **Mr. Terence Tsang** briefed members about the work progress of the Air Science and Health Sub-group. Two Task Forces on emission estimation and air quality modeling as well as health impact assessment were formed under this Sub-group to further deliberate on these specific areas in details.

12. The **Chairperson** invited comments from members of the Air Science and Health Sub-group to ensure that they agreed with the current approach to work with the other three sub-groups.

13. In response to an enquiry from a member, the **Chairperson** welcomed Members to share their views with other sub-groups by writing to the Secretariat for circulation.

14. The Administration gave an overview of the current control on volatile organic compounds (VOC) emission sources and advised that the possibility of enhancing the existing VOC control measures or imposing additional control measures would be explored during the AQO review with a view to further reducing VOC emissions.

15. The Administration supplemented that EPD was pursuing with the Guangdong Government to conduct routine VOC monitoring in the PRD regional air quality monitoring network. The VOC monitoring data would be useful in characterizing and evaluating the causes, spatial distribution and key emission sources holistically, and providing insights for controlling the formation of ozone in the PRD region.

16. The Administration informed Members that meeting documents of the AQO Review Working Group and Sub-groups would be uploaded to a dedicated AQO Review webpage in EPD's website for public information.

17. The Administration thanked Members' for their keen interest and participation in the review exercise and advised that additional meetings would be required to complete the deliberations on new air quality improvement measures proposed by the three dedicated sub-groups by the first quarter of 2017. The Air Science and Health Sub-group would commence the necessary groundwork for the air quality and health impact assessments in parallel with the deliberations of the new measures.

### **Agenda Item 3 – Any Other Business**

18. No other business was raised.

### **Agenda Item 4 – Date of the Next Meeting**

19. The next meeting would be held in June 2017. The Secretary would confirm the date and venue of the next meeting nearer the time.

20. The meeting was adjourned at 4:10 p.m.