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**Subcommittee on Fourth Technical Memorandum for Allocation of
Emission Allowances in Respect of Specified Licences**

**Background brief
prepared by the Legislative Council Secretariat**

Purpose

1. This paper provides background information on the development of the Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences ("TM"), and gives a brief account of the views and concerns expressed by Members on the subject.

Background

2. The Air Pollution Control Ordinance (Cap. 311) ("the APCO"), empowers the Administration to set emission caps for power plants for improving air quality in Hong Kong. Section 26G of the APCO provides for the Secretary for the Environment ("SEN") to allocate emission allowances for three specified pollutants, i.e. sulphur dioxide ("SO₂"), nitrogen oxides ("NO_x") and respirable suspended particulates ("RSP"), for electricity power plants by way of a TM.

3. Three TMs were issued in 2008, 2010 and 2012 respectively. The First TM sets the emission allowances for the emission years between 2010 and 2014, the Second TM tightens the emission allowances starting from 1 January 2015, and the Third TM further reduces the emission allowances starting from 1 January 2017.

4. Section 2.7 of the Third TM requires SEN to review the emission allowances not less than once every two years after its commencement. If the new emission allowances for the emission years starting from 1 January 2019 are promulgated by a new TM within 2014, the new emission allowances will

take effect from 2019 pursuant to section 26G(4) of the APCO, which requires a TM to be issued at least four years before the commencement of the emission year that it takes effect.

Fourth TM

5. According to the Administration, when working out the emission allowances for the two power companies for 2019, it has taken into consideration new developments or information revealed after the setting of the Third TM. These include –

- (a) the emission reduction efficiency of the emission control devices retrofitted in recent years has been better than the design level;
- (b) the natural gas delivered so far from the West-East Gas Pipeline II that was commissioned in 2013 contains less sulphur than the limit prescribed in the supply contract; and
- (c) the power sector will complete the phasing out of heavy fuel oil by ultra-low sulphur diesel for assisting coal-burning by 2019.

6. The projected emission allowances for existing electricity works in 2019 (tonnes per year) are set out in the table below –

	SO ₂	NO _x ^[@]	RSP
Hongkong Electric Company, Limited			
Lamma Power Station and Lamma Power Station Extension (mixed fuel)	4 250 [-18%]	8 980 [-5%]	200 [-20%]
CLP Power Hong Kong Limited			
Black Point Power Station (gas-fired)	290 [-80%]	4 140 [-0%]	110 [-0%]
Castle Peak Power Station (coal-fired)	4 678 [+25%]	12 358 [-0%]	389 [-0%]
Penny's Bay Gas Turbine Power Station (oil -fired)	2 [-0%]	2 [-0%]	1 [-0%]
Total of CLP's Stations	4 970 [-4%]	16 500 [-0%]	500 [-0%]

^[@] Expressed as nitrogen dioxide.

Note: The figures in square brackets are the percent reduction comparing with the emission allowances stipulated in the Third TM.

Emission allowances for new electricity works

7. Similar to the previous three TMs, the Administration will provide an allocation of not more than 1% of the total emission allowances of the power sector in respect of each of the specified pollutants for any possible new electricity works¹ so as to ensure that they will not be debarred from starting their business even with the use of the most advanced emission reduction technology. The Administration proposes to retain the same mechanism adopted in the Third TM to cater for the possible intake of renewable energy ("RE") by new electricity works.

Setting emission caps for PM2.5

8. The Administration has explored the feasibility of setting emission caps for PM2.5 having regard to the latest international practices. At present, environmentally advanced countries such as USA, the European Union, etc. have not set limits on PM2.5 emissions from power plants. The measurement of PM2.5 in power plant emissions is still under development. As such, the Administration considers that it would not be practicable to set limits on PM2.5 emissions at this stage.

Environmental benefits

9. As compared with the Third TM, the Fourth TM will see a further tightening of 11% for SO₂, 2% for NO_x and 7% for RSP for the power sector. The reduction will help improve local air quality given that emissions from the power sector account for 47%, 28% and 16% respectively of the territory-wide emissions of these pollutants in 2012.

Tariff implications

10. According to the Administration, achieving the proposed 2019 emission caps does not involve new capital investment by power companies nor major changes on the fuel mix of power companies. The power companies will present their tariff assessment to the Administration annually in accordance with the prevailing regulatory mechanism under the Scheme of Control Agreement.

Next review

11. In order to meet electricity demand in the long run and to improve the environment, the Environment Bureau launched a three-month public consultation on the Future Fuel Mix for Electricity Generation for Hong Kong

¹ "New electricity works" refers to new entrant comes into the electricity generation industry after the commencement of the proposed TM.

in March 2014. Since the findings of the consultation and the decision on the fuel mix in the long run will have significant implications for setting emissions allowances for electricity generation in 2020 and beyond, the Fourth TM will be reviewed again in 2015 when the outcome of the fuel mix review are available.

Deliberation by Members

12. The Panel on Environmental Affairs ("the Panel") was consulted on the proposals to reduce emission allowances for power plants by way of issuing the First, Second, Third and Fourth TMs respectively. Besides, respective subcommittees were formed to examine the previous three TMs. The major views and concerns expressed by members at the meetings of the Panel and the subcommittees are summarized below.

First TM

13. When the First TM was discussed by the Panel at its meeting on 27 October 2008, some members questioned the bases upon which the emission allowances for SO₂ and NO_x were arrived at. They also urged the Administration to tighten control of RSP, which was the cause for many respiratory diseases in Hong Kong. Some other members were concerned that the two power companies would pass the costs to achieve the emission reduction targets (using cleaner fuels and installation of pollution abatement equipment) to consumers through increased electricity tariffs. Questions were also raised on the low emission allowances for new comers and efficacy of emission trading among power plants in Hong Kong and Guangdong.

14. Following the publication of the First TM in the Gazette on 7 November 2008, a subcommittee was set up to examine the TM. To allay members' concern about including an expiry date in the First TM, the Administration acceded to the subcommittee's request to provide an undertaking in writing that a review on the First TM would be conducted within two years after it had come into operation. The report of the subcommittee (LC Paper No. CB(1)323/08-09) is hyperlinked in the **Appendix** for ease of reference.

Second TM

15. The Panel held a meeting on 22 September 2010 to discuss the Second TM. While welcoming the tightening of emission allowances for power plants, some members pointed out that the capability of the two power companies to meet the emission caps would very much depend on whether they could make full use of their gas-fired generation units, and the timely availability of replacement natural gas to be delivered under the Memorandum of Understanding on Energy Co-operation. Given the volatility of the fuel market

and Hong Kong's reliance on the import of natural gas, these members considered that a better fuel mix should be worked out to ensure a reliable supply of electricity taking into account the implications on electricity tariffs on the community at large.

16. Following the gazettal of the Second TM on 15 October 2010, a subcommittee was set up to examine the TM. At members' repeated request, the Administration agreed to amend section 2.5 of the Second TM and change the frequency of reviewing the TM to not less than once every two years. The report of the subcommittee (LC Paper No. CB(1)517/10-11) is hyperlinked in the **Appendix**.

Third TM

17. The review of the Second TM and the new Third TM were discussed by the Panel at its meeting on 4 July 2012. Panel members expressed concern about the cost implications of the Third TM on electricity tariff since the increased use of cleaner fuels (such as natural gas and low-emission coal) and RE would come with a cost. They also urged the power companies to strive to enhance their emission performance through acquisition of more emission reduction facilities in order to further improve air quality.

18. Following the gazettal of the Third TM on 19 October 2012, a subcommittee was set up to examine the TM. Members expressed concern about the lack of initiatives in the Third TM to encourage the two power companies to achieve emission reduction by promoting energy conservation. The Administration responded that it would monitor the change in demand and take this into account when reviewing the Third TM for further tightening of the emission caps. If the overall electricity demand fell, there would be a case to reduce the emission caps in the new TM. Members were also concerned about the cost implications of the Third TM on electricity tariff due to the increased use of cleaner fuels (such as natural gas and low emission coal) and RE by the two power companies. The report of the subcommittee (LC Paper No. CB(1)162/12-13) is hyperlinked in the **Appendix**.

Fourth TM

19. The review of the Third TM and the Fourth TM were discussed by the Panel at its meeting on 6 October 2014. Panel members did not raise any objection to the proposal.

Attainment of emission caps under the Fourth TM

20. Noting that the Fourth TM would further tighten the emission allowances for power plants starting from 2019, some Panel members expressed concern as

to whether the two power companies would be able to attain the proposed emission caps given that there was no major changes in the fuel mix for local electricity generation before the completion of the fuel mix review.

Emission of carbon dioxide ("CO₂")

21. Some members pointed out that the emission of CO₂ from power plants was not regulated in any TM and queried whether imposing caps on the emissions of only SO₂, NO_x and RSP from power plants was in line with international practices. They suggested that the Administration should consider exploring the use of green coal for power generation in order to reduce CO₂ emission and mitigate climate change.

Tariff implications

22. Some Panel members pointed out that any change in the fuel mix of the two power companies or tightening of the emission allowances for power plants might have tariff implications. They expressed concerns that the affordability of the public was not one of the factors of consideration in making emission allocations. They requested the Administration to strike a proper balance between tightening the emission allowances for power plants and any possible impact on electricity tariff. The Administration advised that since attaining the proposed emission caps for 2019 did not involve new capital investment by the two power companies nor major changes in the fuel mix, there should not be any significant tariff implication.

Use of cleaner fuel and RE

23. Other members expressed concern that the price of Mainland natural gas supplied to Hong Kong had been on the rise and over reliance on natural gas from the Mainland might increase the susceptibility of electricity tariffs to the price volatility of natural gas. These members urged the Administration to consider diversifying the source of supply of natural gas for power generation in Hong Kong with a view to stabilizing the price of natural gas at a reasonable level. There was also the suggestion that the two power companies should increase the use of low-sulphur coal under the existing fuel mix structure to further reduce power plant emissions.

24. Some Panel members expressed grave concern about the safety hazards that nuclear power might pose for Hong Kong. They opined that the Administration should promote the greater use of RE instead of increasing the share of nuclear power in the future fuel mix for electricity generation.

New air quality objectives ("AQOs") and the Fourth TM

25. The Panel noted that the new AQOs had been implemented since 1 January 2014 to improve air quality and would be reviewed at least once every five years to see whether further tightening of AQOs in future was practicable. Noting that the proposed emission allowances would take effect from 1 January 2019 if the Fourth TM commenced before the end of 2014, some members enquired how the Fourth TM would tie in with the goal to achieve the new AQOs by 2020.

26. The Administration responded that the Fourth TM would contribute towards the attainment of the new AQOs by 2020. Apart from the Fourth TM, the Administration had also been implementing a wide spectrum of air quality improvement measures to help alleviate air pollution problems. Since the public consultation on the future fuel mix would have significant implications on the setting of emissions allowances for electricity generation in 2020 and beyond, the Administration would review the Fourth TM again in 2015 when the outcome of the fuel mix review was available and explore whether there was room to further tighten the emission caps for power plants.

Latest development

27. The Fourth TM was gazetted on 17 October 2014 and tabled in the Legislative Council for negative vetting on 22 October 2014. At the House Committee meeting on 24 October 2014, Members agreed that a subcommittee should be formed to examine the Fourth TM.

Relevant papers

28. A list of relevant papers is set out in the **Appendix**.

List of relevant papers

Council/ Committee	Date of meeting	Paper
Panel on Environmental Affairs	27 October 2008	<p>Administration's paper on "Technical Memorandum to Stipulate the Quantities of Emission Allowances for Power Plants" provided by the Administration (LC Paper No. CB(1)88/08-09(03)) http://www.legco.gov.hk/yr08-09/english/panels/ea/papers/ea1027cb1-88-3-e.pdf</p> <p>Minutes of meeting (LC Paper No. CB(1)222/08-09) http://www.legco.gov.hk/yr08-09/english/panels/ea/minutes/ea20081027.pdf</p>
House Committee	5 December 2008	<p>Report of the Subcommittee on Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences (LC Paper No. CB(1)323/08-09) http://www.legco.gov.hk/yr08-09/english/hc/papers/hc1205cb1-323-e.pdf</p>
Panel on Environmental Affairs	22 September 2010	<p>Administration's paper on "Review of the Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences" provided by the Administration (LC Paper No. CB(1)2841/09-10(01)) http://www.legco.gov.hk/yr09-10/english/panels/ea/papers/ea0922cb1-2841-1-e.pdf</p> <p>Updated background brief on "Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licence" prepared by the Legislative Council Secretariat (LC Paper No. CB(1)2841/09-10(02)) http://www.legco.gov.hk/yr09-10/english/panels/ea/papers/ea0922cb1-2841-2-e.pdf</p>

Council/ Committee	Date of meeting	Paper
		<p>Minutes of special meeting (LC Paper No. CB(1)318/10-11) http://www.legco.gov.hk/yr09-10/english/panels/ea/minutes/ea20100922.pdf</p>
House Committee	26 November 2010	<p>Report of the Subcommittee on Second Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences (LC Paper No. CB(1)517/10-11)) http://www.legco.gov.hk/yr10-11/english/hc/papers/hc1126cb1-517-e.pdf</p>
Panel on Environmental Affairs	4 July 2012	<p>Administration's paper on "Review of the Second Technical Memorandum for Allocation of Emission Allowances for Power Plants" provided by the Administration (LC Paper No. CB(1)2256/11-12(05)) http://www.legco.gov.hk/yr11-12/english/panels/ea/papers/ea0704cb1-2256-5-e.pdf</p> <p>Updated background brief on "Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licence" prepared by the Legislative Council Secretariat (LC Paper No. CB(1)2256/11-12 (06)) http://www.legco.gov.hk/yr11-12/english/panels/ea/papers/ea0704cb1-2256-6-e.pdf</p> <p>Minutes of meeting (LC Paper No. CB(1)2560/11-12) http://www.legco.gov.hk/yr11-12/english/panels/ea/minutes/ea20120704.pdf</p>
House Committee	9 November 2012	<p>Report of the Subcommittee on Third Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences (LC Paper No. CB(1)162/12-13) http://www.legco.gov.hk/yr12-13/english/hc/papers/hc1109cb1-162-e.pdf</p>

Council/ Committee	Date of meeting	Paper
Panel on Environmental Affairs	6 October 2014	<p>Administration's paper on "Review of the Third Technical Memorandum for Allocation of Emission Allowances for Power Plants" provided by the Administration (LC Paper No. CB(1)2028/13-14(01)) http://www.legco.gov.hk/yr13-14/english/panels/ea/papers/ea1006cb1-2028-1-e.pdf</p> <p>Updated background brief on "Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licence" prepared by the Legislative Council Secretariat (LC Paper No. CB(1)2028/13-14 (02)) http://www.legco.gov.hk/yr13-14/english/panels/ea/papers/ea1006cb1-2028-2-e.pdf</p> <p>Administration's supplementary paper on "Review of the Third Technical Memorandum for Allocation of Emission Allowances for Power Plants" (LC Paper No. CB(1)64/14-15(01)) http://www.legco.gov.hk/yr13-14/english/panels/ea/papers/ea1006cb1-64-1-e.pdf</p> <p>Minutes of meeting (LC Paper No. CB(1)125/14-15) http://www.legco.gov.hk/yr13-14/english/panels/ea/minutes/ea20141006.pdf</p>