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Panel on Environmental Affairs

Special meeting on 30 September 2014

**Updated background brief on "Technical Memorandum for Allocation of
Emission Allowances in respect of Specified Licences"
prepared by the Legislative Council Secretariat**

Purpose

This paper provides updated 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. Two TMs were issued in 2008 and 2010 respectively. The First TM sets the emission allowances for the emission years between 2010 and 2014 while the Second TM tightens the emission allowances starting from 1 January 2015. The emission allowances in the second TM were determined with due regard to maximizing the use of existing gas-fired generation units and prioritizing the use of coal-fired generation units equipped with advanced emission control devices. SEN also committed to reviewing the TM not less than once every two years after its commencement.

4. After reviewing the Second TM, the Administration has found scope to further reduce the emission allowances for the two power companies, namely the CLP Power Hong Kong Limited and the Hongkong Electric Co. Ltd., starting from 1 January 2017 as long as they continue their efforts to use low emission coal as far as possible, upkeep the performance of the existing advanced emission abatement equipment and take up the surplus of electricity generated from renewable energy ("RE") and waste-to-energy ("WTE") facilities, on top of their efforts to meet the emission allowances in the Second TM.

Third TM (from 1 January 2017)

5. The Third TM was gazetted on 19 October 2012 and tabled in the Legislative Council for negative vetting on 24 October 2012. The new set of emission allowances would take effect four years after its commencement, i.e. starting from the emission year of 2017 in accordance with section 26G(4) of the APCO. To enable timely revision of the emission allowances, the Third TM would be reviewed no less than once every two years.

6. Under the Third TM, the emission allowances for existing electricity works of the two power companies starting 2017 (tonnes per year) are set out in the table below –

	Emission allowances for existing electricity works starting 2017 (tonnes per year)		
	SO ₂	NO _x ^[@]	RSP
Hongkong Electric Co. Ltd. Lamma Power Station and Lamma Power Station Extension (mixed fuel)	5 200	9 450	250
Subtotal	5 200 [-23%]	9 450 [-6%]	250 [-17%]
CLP Power Hong Kong Limited			
Black Point Power Station (gas-fired)	1 440	4 140	110
Castle Peak Power Station (coal-fired)	3 757 [-12%]	12 358 [-8%]	389 [-7%]
Penny's Bay Gas Turbine Power Station (oil-fired) ^[#]	2	2	1

Subtotal	5 199 [-9%]	16 500 [-6%]	500 [-6%]
Total	10 399 [-17%]	25 950 [-6%]	750 [-10%]

[[@]] Expressed as nitrogen dioxide.

[#] As the Penny's Bay Gas Turbine Power Station is for emergency and peak-opping purposes, the projected SO₂, NO_x and RSP emissions are nominal, i.e. one to two tonnes.

[¹] The figures in square brackets are the percent reduction comparing with the emission allowances stipulated in the Second TM.

7. As compared with the Second TM, the Third TM tightens the emission allowances for SO₂, NO_x and RSP by 17%, 6% and 10% respectively.

Deliberations of the Subcommittee

8. A subcommittee was formed to examine the Third TM ("the Subcommittee") in October 2012. The Subcommittee did not make any suggestions to amend the Third TM. The major views and concerns expressed by members of the Subcommittee are summarized in the ensuing paragraphs.

Emission allowances for existing electricity works

Allocation methodology

9. The Subcommittee had discussed how the quantities of emission allowances to be allocated to the four existing electricity works (i.e. the Lamma Power Station and Lamma Power Station Extension, the Black Point Power Station, the Castle Peak Power Station and the Penny's Bay Gas Turbine Power Station) under the Third TM were determined. The Administration explained that in determining the emission allowances under the new TM, it had made reference to a number of considerations, including the best practicable means for electricity works to reduce emissions by using more low emission coal, upkeeping the performance of the existing emission control equipment, and taking up the generation of RE and WTE. A mechanism had been provided in the Third TM for ascertaining the emission allowances according to the actual annual intake of the electricity generated from RE and WTE.

Emission reduction targets

10. The Subcommittee had expressed concern as to whether the achievement of the new emission caps as stipulated in the Third TM would be conducive to

attaining the new Air Quality Objectives ("AQOs") for the relevant pollutants. The Administration responded that the further tightening of the emission allowances for the power sector under the Third TM was one of the emission control measures to help attain the new AQOs which would take effect in 2014. In response to the Subcommittee's concern about the emission reduction target of SO₂, the Administration advised that the Second TM had tightened the emission cap for SO₂ by 50% as compared to the First TM whereas the Third TM had required a further decrease of 17%, representing a substantial level of reduction starting 2015.

11. Some members of the Subcommittee were concerned about the relatively low reduction level of NO_x emission required by the Third TM. The Administration explained that NO_x was produced as a result of the combustion of fuels in power generation. Unlike SO₂ and RSP, the emission abatement means available for reducing NO_x emission was limited.

Penalty for non-compliance

12. In response to the Subcommittee's enquiry, the Administration had advised that under section 30B of the APCO, the maximum penalty for exceeding the emission caps for pollutants was a fine of \$30,000 in respect of each tonne of the relevant actual emission in excess of the relevant allowed emission on a first conviction. On a second or subsequent conviction, the maximum penalty was a fine of \$60,000 in respect of each tonne of the relevant actual emission in excess of the relevant allowed emission, and imprisonment for 6 months. Besides, the exceedance would be carried forward and considered as part of the emissions which needed to be reconciled in the following year.

Emission allowances for new electricity works

13. The Subcommittee had enquired whether the Administration anticipated that there would be any newcomers entering the electricity generation industry in Hong Kong by 2017, and if so, the type of fuel to be used by the newcomers. The Administration advised that similar to the First and Second TMs, the Third TM would 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 works, so as to ensure that they would not be debarred from starting their business even with the use of the most advanced emission reduction technology. As for the type of fuel to be used, the Administration advised that any new power generating units to be installed, whether by the existing power companies or newcomers, would be gas-fired under the established government policy.

Promotion of energy conservation and use of low emission coal

14. The Subcommittee had 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 explained that while energy conservation was not one of the direct technical considerations in setting the emission caps for the Third TM, the Government had taken various measures to encourage energy conservation as demand side management, including the provision of financial incentives to encourage members of public and non-government organizations to reduce electricity consumption. The Administration would monitor the change in demand and would 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.

15. The Subcommittee noted that the overall share of natural gas in the combined fuel mix of the two power companies for local electricity generation under the Third TM would be about 50%. Given that the supply of natural gas was not stable, members had asked whether the power companies were allowed to substitute natural gas with low emission coal in their fuel mix, thereby achieving the optimum fuel cost for the benefit of consumers.

16. The Administration advised that the two power companies had increased the use of low emission coal in recent years. To meet the requirements of the Second and Third TMs, it was expected that the use of low emission coal would be further increased and accounted for about 20% and about 40% of the total amount of coal used for electricity generation respectively in 2015 and 2017. Given that the energy performance of low emission coal was lower than that of other coal and their supply was limited, low emission coal could not fully replace other coal in electricity generation. Nevertheless, as it was the Government's policy that all new electricity generating units should be powered by natural gas with effect from 1997, the existing coal-fired generation units would be phased out and the share of coal in the future fuel mix of local electricity generation would be decreased progressively.

Tariff implications

17. The Subcommittee had expressed concern 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 Administration advised that achieving the proposed emission caps starting 2017 did not involve new capital investment by power companies. Also, the Third

TM had not proposed any significant change to the fuel mix of the power companies as compared with the Second TM. Hence, there should be no question of the power companies having to increase electricity tariff in order to meet the tightened emission requirements under the Third TM. In any case, the fuel cost was subject to international market prices and the power companies would present their tariff assessment to the Administration annually in accordance with the prevailing regulatory mechanism.

18. According to the Administration, investment of the two power companies in RE currently accounted for less than 1% of their respective total asset value and the impact on overall costs of electricity generation was negligible.

Latest development

19. The Administration will brief the Panel on the review of the Third TM following the review on future fuel mix for power generation and submission from the power companies on their plans for new generation units at the special meeting on 30 September 2014.

Relevant papers

20. 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	4 July 2012	<p>Administration's paper on "Review of the Second Technical Memorandum for Allocation of Emission Allowances for Power Plants" (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>Update 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>