

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

**List of Follow-up Actions Arising from the Discussion
at the Meeting on 2 November 2010**

Administration's Response

I. In respect of the Black Point Power Station, Castle Peak Power Station, Lamma Power Station and Lamma Power Station Extension, and Penny's Bay Gas Turbine Power Station;

- (i) the allocation of emission allowances for each of the power stations in 2010;**
- (ii) the actual emission levels of each of the power stations from January to September 2010; and**
- (iii) the method for ascertaining the quantity of emission allowance as set out in the Second Technical Memorandum (TM) for each of the power stations.**

- (i). The allocation of emission allowances for each of the power stations in 2010 was made in accordance with the allocation methodology stipulated in section 2.3 of the First Technical Memorandum, i.e., to allocate the total emission allowances of the power sector to individual power plants on a pro-rata basis in accordance with their respective shares of the total amount of electricity generated for local consumption from 1999 to 2003, regardless of their respective actual or potential emission performance. The respective emission allowances for the four power stations are as follows-

Power Stations	Allocated Emission Allowances for 2010 (in Tonnes)		
	Sulphur dioxide, SO₂	Nitrogen oxides, NO_x	Respirable Suspended Particulates, RSP
Lamma Power Station and Lamma Power Station Extension	9,370	15,890	470
Black Point Power Station	8,617	14,612	433

Castle Peak Power Station	7,135	12,099	358
Penny's Bay Gas Turbine Power Station	2	2	1
CLP Total	15,754	26,713	792

- (ii) Below are the emission levels of each of the power stations from January to September 2010, which are preliminary figures and subject to change upon auditing and verification by the independent verifiers –

Power Stations	Emissions (in Tonnes) between January – September 2010		
	SO ₂	NO _x	RSP
Lamma Power Station and Lamma Power Station Extension	3,553	7,364	176
Black Point Power Station	128	1,378	50
Castle Peak Power Station	9,981	11,520	522
Penny's Bay Gas Turbine Power Station	0.003	0.46	0.01

- (iii) The method for ascertaining the quantity of emission allowance in the Second TM is explained at Annex 1.

II. The estimated percentage of contribution in achieving the emission reduction targets under the Second TM by-

- (i) **energy conservation having regard to the forecast Gross Domestic Product from 2011 to 2015;**
(ii) **maximizing the use of existing gas-fired generation units; and**
(iii) **prioritizing the use of coal-fired generation units that have been retrofitted with emission abatement equipment.**

- (i) It is difficult to estimate the exact contribution of energy conservation in achieving the emission reduction targets. However, promoting energy conservation has been an on-going effort on the part of both the Government and the community at large. Taking account of such effort and other relevant factors, both the power companies and the Government have forecast that the annual growth rate in electricity demand for the coming years is estimated to

be in the order of 1 to 2%, as opposed to the forecast Gross Domestic Product growth rate of about 4% or more per annum.

- (ii) With sufficient supply of natural gas, the CLP will be able to increase the local electricity generation by natural gas from the current level of about 10,900 GWh to about 16,430 GWh and the HEC from about 3,680 GWh to about 4,060 GWh. Depending on the individual specified pollutants, maximizing the use of gas-fired generation units would contribute about 74% to 96% and about 67% to 72% of reductions required for achieving the emission reduction targets under the Second TM for CLP and HEC, respectively.
- (iii) Prioritizing the use of coal-fired generation units that have been retrofitted with emission abatement equipment would contribute the remaining emission reductions, i.e., about 4% to 26% and about 28% to 33% for CLP and HEC, respectively, required for achieving the new emission reduction targets.

III. Consider amending section 2.1 of the Chinese text of the Second TM from "每種指明污染物獲配的排放限額" to "每種指明污染物獲分配的排放限額".

We will amend section 2.1 from "每種指明污染物獲配的排放限額" to "每種指明污染物獲分配的排放限額". The draft amendment is at Annex 2.

IV. Consider conducting a review of the Second TM within two years after its coming into operation and reporting the review outcome to the Panel on Environmental Affairs accordingly.

Reviewing the TM at a frequency not less than once every three years is considered appropriate and consistent with the existing provision stipulated in section 2.4 of the First TM. Following the major tightening of the emission caps as set out in the Second TM by maximizing the utilization of the existing gas-fired power generation units and completion of the retrofitting of emission abatement equipment in the coal-fired power generation units, any further major reduction in the emissions from the power sector could only be achieved through major revamp of the fuel mix, which requires advanced planning and consultation, and in all likelihood would require sufficient lead time. We remain of the view that the current requirement stipulated in the TM that a review must be conducted not less than every three years is appropriate.

In any case, under the Second TM the Administration may conduct a review any time following its promulgation though the review should not be less frequently than every three years.

We agree to report the review outcome to the Panel on Environmental Affairs upon completion of any future review of the TM.

Environment Bureau/Environmental Protection Department
November 2010

Method for ascertaining the quantity of emission allowances as set out in the Second Technical Memorandum

1. This note set out the assumptions and methodology for determining the quantity of emission allowances in the Second Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences.

Basic Principles

2. In determining the quantity of emission allowances for the power stations as set out in the Second Technical Memorandum, we have assumed that the power stations will -
 - (i) maximize the use of existing gas-fired generation units so as to minimize the use of the more polluting coal-fired units; and
 - (ii) prioritize the use of coal-fired generation units equipped with emission reduction facilities to reduce the emission from coal-fired electricity generation.
3. The emission allowances to be allocated for each specified pollutants are determined according to the following formula-

$$\boxed{\begin{array}{c} \text{Emission allowances to be allocated} \\ \text{for each of the specified pollutants} \\ \text{(tonnes)} \end{array}} = \boxed{\begin{array}{c} \text{Electricity} \\ \text{generation} \\ \text{(GWh)} \end{array}} \times \boxed{\begin{array}{c} \text{Emission factor}^{[1]} \text{ for} \\ \text{specified pollutant} \\ \text{(tonnes per GWh)} \end{array}}$$

^[1] Emission factor refers to emissions per unit electricity generation.

Electricity Generation

4. The annual growth rate in electricity demand is estimated to be in the order of 1 to 2%, as opposed to the forecast Gross Domestic Product of about 4% or more. According to the latest Auditing Reviews of the two power companies, the forecast local electricity generation requirements in 2015, excluding the export sale, are 13,097 GWh and 26,516 GWh for HEC and CLP, respectively.
5. With the supply of addition natural gas under the Memorandum of Understanding on Energy Co-operation, the power companies are able to maximize the use of their gas-fired generation units by 2015. Thus, HEC and CLP would be able to generate 4,057 GWh and 16,425 GWh from their gas-fired units respectively with the remaining demands to be supplied by coal-fired units.

Emission Factors

6. The emission factors of the generation units for 2015 are as follows-

(i) HEC:

Types of Generation Units	Emission Factors (tonnes/GWh)		
	SO ₂	NO _x	RSP
Gas-fired units ^[2]	0.020	0.394	0.007
Coal-fired units ^[2]			
Without additional control	4.227	2.568	0.073
With additional control	0.682	0.904	0.029

(ii) CLP:

Types of Generation Units	Emission Factors (tonnes/GWh)		
	SO ₂	NO _x	RSP
Gas-fired units ^[2]	0.088	0.252	0.007
Coal-fired units ^[2]			
Without additional control	4.016	2.29	0.118
With additional control	0.196	1.266	0.037

^[2] Due to the difference in the design and ages of the generation units and control technology adopted for the emission reduction facilities, different generation units have different specific emission factors. The figures presented in the table are the overall emission factor figures for the respective category.

Emission Allowances to be Allocated

7. According to the formula in paragraph 3 above, the emission allowances to be allocated to the respective power stations are as follows:

Power Stations	Allocated Emission Allowances for 2015 (in Tonnes)		
	Sulphur dioxide, SO₂	Nitrogen oxides, NO_x	Respirable Suspended Particulates, RSP
Lamma Power Station and Lamma Power Station Extension	6,780	10,020	300
Black Point Power Station	1,440	4,140	110
Castle Peak Power Station	4,260	13,390	420
Penny's Bay Gas Turbine Power Station ^[3]	2	2	1

^[3] Penny's Bay Gas Turbine Power Station is a peak lopping plant for meeting the peak electricity demands only. A nominal quantity of emission allowances same as the existing allocation is to be allocated in 2015.

Resolution of the Legislative Council

1

Air Pollution Control Ordinance

Resolution

(Under section 37B(2) of the Air Pollution Control Ordinance
(Cap. 311))

**Second Technical Memorandum for Allocation of Emission Allowances
in Respect of Specified Licences**

Resolved that the Second Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences, published in the Gazette as Special Supplement No. 5 to Gazette No. 41/2010 and laid on the table of the Legislative Council on 20 October 2010, be amended as set out in the Schedule.

Resolution of the Legislative Council

Schedule

2

Schedule

Amendment to Second Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences

1. Section 2.1 amended

In the Chinese text of section 2.1, add "分" after "獲".