For discussion on
27 October 2008

LEGISLATIVE COUNCIL

PANEL ON ENVIRONMENTAL AFFAIRS

Technical Memorandum to Stipulate the Quantities of Emission Allowances for Power Plants

PURPOSE

The paper seeks Members' advice on the proposal to make the "Technical Memorandum For Allocation Of Emission Allowances In Respect of Specified Licence" [1] (the TM) (see **Appendix)** by the Secretary for the Environment (the Secretary) under section 26G of the Air Pollution Control Ordinance (Cap. 311) to allocate quantities of emission allowances for the three specified pollutants, namely sulphur dioxide (SO2), nitrogen oxides (NOx) and respirable suspended particulates (RSP), to the power plants in Hong Kong for the year 2010 and beyond.

JUSTIFICATION

2. Section 26G of the Air Pollution Control Ordinance provides that the Secretary shall allocate a quantity of emission allowances for each type of specified pollutant in respect of each specified licence in relation to each emission year commencing on or after 1 January 2010 to the power plants in Hong Kong by a TM. In making such allocation, the Secretary shall –

(a) have regard to the best practicable means for preventing the emission of that type of pollutant;
(b) have as his purpose the attainment and maintenance of any relevant air quality objective (AQO); and
(c) have regard to whether the emission of that type of pollutant would be, or be likely to be, prejudicial to health.

3. The proposed TM is essential in ensuring the achievement of the 2010 emission reduction targets agreed with the Guangdong Provincial Government in April 2002 for achieving our AQO and improving the air quality in the region.

---

[1] Specified licence means a licence to conduct the process specified in item 7 of Schedule 1 (i.e. Electricity Works) of the Air Pollution Control Ordinance, other than a licence to conduct such process for the sole purpose of providing a stand-by power supply in the event of a loss of normal power supply.

4. The 2010 emission reduction targets require us to reduce emissions of SO2, NOx, RSP and volatile organic compounds by 40%, 20%, 55% and 55%, respectively by 2010 compared to 1997 levels. Being the largest emission source, power generation accounted for 89% of SO2, 44% of NOx and 32% of RSP emitted locally in 2006. It is essential to reduce substantially the emissions of these three key air pollutants from the power generation sector. Since 2005, we have imposed and progressively tightened up emission caps on power plants upon renewal of their specified licences to ensure the achievement of these emission reduction targets.

DETAILS OF THE PROPOSED TECHNICAL MEMORANDUM

Emission Allowances for 2010

5. After taking into account the relevant considerations spelt out in paragraph 2 above, including the need to achieve the 2010 emission reduction targets under the 2002 consensus with Guangdong as well as emissions from other sources and sectors, the proposed 2010 emission allowances for the power generation sector, which were already made known to the two power companies in 2005, are as follows –

	1997 Baseline emissions (tonnes)	2010 Emission allowances to be included in the TM (tonnes)	Reduction compared to 1997 (%)
SO2	54,400	25,120	54%
NOx [*]	56,100	42,600	24%
RSP	2,610	1,260	52%

[*] *Expressed as nitrogen dioxide*

Allocation of Emission Allowances to Individual Power Plants

6. We propose to allocate the emission allowances to individual power plants on a pro-rata basis in accordance with their respective share of the total amount of electricity generated for local consumption. This will ensure all power plants will receive same quantity of emission allowances per unit of electricity generated.

7. For the 2010 emission allowances, the allocation to individual power plants is determined with reference to their total amount of electricity generated for local consumption for the five-year period from 1999 to 2003. The power plants will be allocated with these quantities of emission allowances until the quantities are updated regularly with respect to the change of market share of electricity generated for local consumption (see paragraph 8 below), or when the

Secretary issues a new TM with due consideration to the criteria as stipulated under paragraph 2 above.

8. To cater for the change of the market share in electricity generation, we propose that starting from 2010, the allocation to individual power plants will be updated regularly on the first of January of the year, and in any event not less than once every three years, in accordance with their respective share of total amount of electricity generated for local consumption for the past 60 months.

Arrangements for Adjusting the Allocation of Emission Allowances

9. To provide sufficient lead time for power companies to adjust their operation (e.g. installation of additional emission abatement facilities, adjustment of fuel strategy and securing emissions trading opportunities), we propose that an advance notice of no less than four years will be given to the power companies before any changes to the allocation of emission allowances arising from the regular updating to take effect.

Arrangements for New Comers

10. To cater for the requirements of potential new comers, we propose to temporarily allocate to each new comer a small amount of emission allowances up to around 1% of the total emission allowances for the power sector, which should be sufficient for the new comer to enter the local electricity market. Details are as follows –

Total installed capacity of the new electricity works	SO2 (tonnes)	NOx [*] (tonnes)	RSP (tonnes)
Less than 300 MW	2/3 × Total installed capacity in MW	4/3 × Total installed capacity in MW	1/30 × Total installed capacity in MW
Equal or more than 300 MW	200	400	10

[*] *Expressed as nitrogen dioxide*

Since all new power generation units in Hong Kong must use gas or cleaner fuel, the quantity of emission allowances required is small and has little impact on the overall emission levels of Hong Kong. The proposed emission allowances should be sufficient to allow new comers to start a reasonably sized business. The new comer will also be included in the subsequent updates and will be allocated with the updated quantity of emission allowances according to paragraph 8 above.

IMPLICATIONS

Financial and Civil Service Implications

11. There are no financial and staffing implications as the TM will be implemented with existing resources.

Economic Implications

12. We have been communicating with the power companies on the requirements to achieve the 2010 emission reduction targets since 2003 and advise them of the 2010 emission caps in 2005. Power companies have therefore already built into their operational plans to provide for the installation of the necessary pollution abatement equipments and use of cleaner fuels to achieve the emission reduction targets.

13. The stipulation of the emissions of power plants by the TM will help in improving the air quality in Hong Kong, which in turn will help enhance the image of Hong Kong, strengthen Hong Kong's attractiveness to tourists and foreign investment, thereby maintain our competitiveness in the long run.

Environmental Implications

14. The emission reduction requirements stipulated in the TM will facilitate Hong Kong to achieve the 2010 emission reduction targets agreed with Guangdong in 2002. It will help alleviate the visibility impairment, smog as well as acid rain problems in Hong Kong and its neighbouring region.

CONSULTATION

15. We have engaged the two local power companies since 2003 regarding the extent of emission reduction required on the part of the power generation sector for achieving the 2010 emission reduction targets. Both companies have been advised of the quantity of emission allowances stipulated in the draft TM as early as 2005 and were consulted on the details of the draft TM in early 2008.

16. The Advisory Council on the Environment and the Panel on Environmental Affairs of the Legislative Council have been consulted on the quantity of emission allowance for the power sector and the allocation principles proposed in the draft TM on 10 December and 17 December 2007 respectively. During the vetting of the Air Pollution Control (Amendment) Bill 2008, we have also provided the Bills Committee with the details of the allocation and a draft copy of the TM for discussion on 26 May 2008.

LEGISLATIVE TIMETABLE

17. Subject to Members' views, we plan to gazette and table the TM to the Legislative Council in November 2008 for negative vetting with a view to bringing the TM into operation before the end of 2008. As the licence of the Lamma Power Station will be expired by end of this year, to ensure timely renewal of the licence for the minimum licensing period of two years as required by the Air Pollution Control Ordinance, the issue of the TM is urgently required. Without the promulgation of emission allowances for the power generation sector and the methodology of allocation of emission allowances among the power stations by the TM before end of this year, we will not be able to impose the 2010 emission caps on the Lamma Power Station accordingly.

ADVICE SOUGHT

18. Members' comments are sought on the proposed promulgation of the TM as summarized in paragraphs 5 to 10 above.

Environmental Protection Department
October 2008

Appendix

TECHNICAL MEMORANDUM FOR ALLOCATION OF EMISSION ALLOWANCES IN RESPECT OF SPECIFIED LICENCES

1. PRELIMINARY

1.1 *Citation and Commencement*

This Technical Memorandum is the first technical memorandum issued pursuant to Section 26G of the Ordinance and may be cited as the "Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences". This Technical Memorandum shall come into operation in accordance with Section 37C of the Ordinance.

1.2 *Application and Scope*

This Technical Memorandum sets out the total quantity of emission allowances for all of the specified licences and the allocation principles and determination methods of the quantity of emission allowances to be allocated in respect of each specified licence for each emission year.

1.3 *Interpretation*

In this Technical Memorandum, unless the context otherwise requires, the following definitions apply-

"Electricity Works" means the process of Electricity Works specified in item 7 of Schedule 1 to the Ordinance.

"Emission allowance" has the same meaning as in the Ordinance.

"Emission year" has the same meaning as in the Ordinance.

"Existing Electricity Works" means the Electricity Works conducted in any of the following power stations in respect of which a valid specified licence is in force on the commencement date of this Technical Memorandum-

(a) Black Point Power Station at Yung Long Road, Lung Kwu Tan, Tuen Mun, New Territories;
(b) Castle Peak Power Station at Lung Yiu Street, Tuen Mun, New Territories;
(c) Lamma Power Station and Lamma Power Station Extension at Lot 1934 and Lot 2200, DD 3, Po Lo Tsui, Lamma Island; and

(d) Penny's Bay Gas Turbine Power Station at Lot 23, DD 256, Penny's Bay, Lantau Island, New Territories.

"specified licence" has the same meaning as in the Ordinance.

"specified licence holder" has the same meaning as in the Ordinance.

"New Electricity Works" means any Electricity Works, other than the Existing Electricity Works, which comes into existence after the commencement of this Technical Memorandum.

"Ordinance" means the Air Pollution Control Ordinance (Cap. 311).

2. ALLOCATION OF EMISSION ALLOWANCES

2.1 Subject to Sections 2.2 and 2.5, the total quantity of emission allowances allocated for each and every emission year for all of the specified licences from 1 January 2010 shall be as follows –

Sulphur dioxide	25 120
Nitrogen oxides [(i)]	42 600
Respirable suspended particulates	1 260

[(i)] Expressed as nitrogen dioxide

2.2 Notwithstanding Section 2.1 and subject to Section 2.4, the quantity of emission allowances to be allocated to the specified licence of each of the New Electricity Works shall be determined in accordance with the respective quantity set out in Annex 1 until its first updated quantity of emission allowances determined according to Section 2.4 and Annex 3 comes into effect in accordance with Section 2.6.

2.3 Subject to Section 2.5, the quantity of emission allowances to be allocated to the specified licence of each of the Existing Electricity Works for each and every emission year from 1 January 2010 shall be determined in accordance with the formula set out in Annex 2 until the first updated quantity of emission allowances determined according to Section 2.4 and Annex 3 comes into effect in accordance with Section 2.6.

2.4 The Authority shall, in the year 2010 and thereafter, not less than once every three years, update the respective quantity of emission allowances to be allocated among the specified licences of both the Existing Electricity Works and those New Electricity Works in respect of which the specified licence has been granted for 12 months or more prior to the update in question. The said

update shall be made on the first of January of the year and shall be determined solely on the basis of the shares of electricity generation among the specified licences covered by this Section according to the formulae set out in Annex 3.

2.5 The quantity of emission allowances determined or updated under Sections 2.2 to 2.4 for allocation to each of those specified licences shall be rounded up to the next whole number.

2.6 The Authority shall notify the respective specified licence holders in writing the results of the updating of the quantity of emission allowances conducted according to Section 2.4 no less than four years before the updated quantity of emission allowances comes into effect.

2.7 Unless otherwise provided or required in the Ordinance or its subsidiary legislation, the Authority shall allocate to each specified licence the respective quantity of emission allowance determined in accordance with this Technical Memorandum.

Annex 1

Quantity of Emission Allowances for a Specified Licence of New Electricity Works referred to in Section 2.2

A.1.1 The quantity of emission allowances for a specified licence of New Electricity Works for a full emission year shall be as follows-

Total Installed Capacity of the New Electricity Works	Sulphur dioxide	Nitrogen oxides [(ii)]	Respirable suspended particulates
Less than 300 MW	2/3 × Total installed capacity in MW	4/3 × Total installed capacity in MW	1/30 × Total installed capacity in MW
Equal or more than 300 MW	200	400	10

[(ii)] Expressed as nitrogen dioxide

A.1.2 Where the specified licence of a New Electricity Works does not commence in January of an emission year, the quantity of emission allowances for that specified licence for the remaining months of that emission year shall be allocated on a pro-rata monthly basis and part of a month is taken as a full month in the determination.

Annex 2

Quantity of Emission Allowances for a Specified Licence of Existing Electricity Works referred to in Section 2.3

A.2.1 The quantity of emission allowances for a specified licence of an Existing Electricity Works shall be determined according to the following formula –

$$A \times \frac{B}{C}$$

where –

A represents the quantity of emission allowances in respect of each type of pollutants set out in Section 2.1.

B represents the quantity of electricity generation for local consumption from the Existing Electricity Works under consideration from 1999 to 2003 inclusive.

C represents the sum of the quantity of electricity generation for local consumption from all Existing Electricity Works under consideration from 1999 to 2003 inclusive.

A.2.2 For the purpose of this Annex, "quantity of electricity generation for local consumption" means the quantity of gross electricity generation of the Electricity Works concerned minus the quantity of its electricity sales for export outside the Hong Kong Special Administrative Region irrespective of whether the export sales are directly conducted by the subject specified licence holder or indirectly dealt with by other dealers. Both quantities shall be expressed in electricity unit of GWh.

Annex 3

Updated Quantity of Emission Allowances for a Specified Licence of Electricity Works referred to in Section 2.4

A.3.1 The updated quantity of emission allowances for a specified licence of all Electricity Works which are subject to the updating as referred to in Section 2.4 shall be determined according to the following formula –

$$A \times \frac{B}{C}$$

where –

A represents the quantity of emission allowances in respect of each type of pollutants set out in Section 2.1.

B represents the adjusted quantity of electricity generation for local consumption from the Electricity Works under consideration in the period between October of the 6th preceding year and September of the preceding year, both months inclusive, immediately before the update.

C represents the sum of the adjusted quantity of electricity generation for local consumption from all Electricity Works which are subject to the updating as referred to in section 2.4 in the period between October of the 6th preceding year and September of the preceding year, both months inclusive, immediately before the update.

A.3.2 For the purpose of this Annex, the adjusted electricity generation for local consumption from an Electricity Works shall be determined as follows –

$$D \times \frac{60}{E}$$

where –

D represents the quantity of electricity generation for local consumption from the Electricity Works in the period between October of the 6th preceding year and September of the preceding year, both months inclusive, immediately before the update.

E represents the number of consecutive calendar months counted from the first month of issue of the specified licence for the Electricity Works until September of the preceding year, both months inclusive, immediately before the update,
or 60, whichever is smaller.

A.3.3 For the purpose of this Annex, "quantity of electricity generation for local consumption" means the quantity of gross electricity generation of the Electricity Works concerned minus the quantity of its electricity sales for export outside the Hong Kong Special Administrative Region irrespective of whether the export sales are directly conducted by the subject specified licence holder or indirectly dealt with by other dealers. Both quantities shall be expressed in electricity unit of GWh.