

# **立法會**

## ***Legislative Council***

LC Paper No. CB(1)31/19-20(05)

Ref. : CB1/PL/EA

### **Panel on Environmental Affairs**

**Meeting on 28 October 2019**

#### **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 control of air pollution from electricity generation through Technical Memoranda for Allocation of Emission Allowances in Respect of Specified Licences ("TMs"). It also gives a brief account of the views and concerns expressed by Members on related issues when the issuance and reviews of TMs were discussed at relevant committees of the Legislative Council.

### **Background**

#### Emission caps for the power sector

2. The Air Pollution Control Ordinance (Cap. 311) ("APCO") empowers the Government to set emission caps for power plants for improving air quality in Hong Kong. Section 26G of APCO provides for the Secretary for the Environment ("SEN") to allocate emission allowances for three specified pollutants, i.e. sulphur dioxide ("SO<sub>2</sub>"), nitrogen oxides ("NO<sub>x</sub>") and respirable suspended particulates ("RSP"), for power plants by way of a TM.<sup>1</sup>

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<sup>1</sup> Under Section 37B of APCO, a TM is subject to the negative vetting procedure. Pursuant to Section 30B(1) of APCO, non-compliance with the emission caps is an offence liable on a first conviction to a fine of \$30,000 in respect of each tonne in excess of the relevant allowed emission, and on a second or subsequent conviction to a fine of \$60,000 in respect of each tonne in excess of the relevant allowed emission plus imprisonment for six months.

Section 26G(2) stipulates that in making emission allocations, SEN should have regard to the following:

- (a) the best practicable means for preventing the emission of a specified type of pollutant;
- (b) whether the emission of that type of pollutant would be, or is likely to be, prejudicial to health; and
- (c) the attainment and maintenance of any relevant air quality objective.

Previous Technical Memoranda for Allocation of Emission Allowances in Respect of Specified Licences

3. In accordance with section 26G(4) of APCO, an allocation of emission allowances made by a TM in relation to an emission year can only take effect at least four years after the commencement of the TM. Seven TMs were issued from 2008 to 2017 as follows:

- (a) the First TM, issued in 2008, set the emission allowances for the emission years between 2010 and 2014; and
- (b) the Second to Seventh TMs were issued in 2010, 2012, 2014, 2015, 2016 and 2017 to tighten the emission allowances with effect from 1 January 2015, 1 January 2017, 1 January 2019, 1 January 2020, 1 January 2021 and 1 January 2022 respectively.<sup>2</sup>

Increasing the use of natural gas for electricity generation

4. The Administration announced during the public consultation on "Future Development of the Electricity Market" in 2015 that it had determined to increase the percentage of gas generation of the two local power companies to around 50% of the total fuel mix for electricity generation in 2020 ("fuel mix target"). The two power companies had to build additional gas-fired generating units ("gas-fired units") in order to increase the use of natural gas to achieve the fuel mix target.

5. In connection with the above, the Hongkong Electric Company, Limited has started the construction of two new gas-fired units (known as "L10" and "L11") at the Lamma Power Station Extension, which are expected to be commissioned in 2020 and 2022 respectively. Meanwhile, the new gas-fired

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<sup>2</sup> Compared with the emission caps set out in the First TM for 2010, the emission allowances of SO<sub>2</sub>, NO<sub>x</sub> and RSP will be reduced by 79%, 59% and 61% respectively by 2022 under the Seventh TM.

unit (known as "D1") at the Black Point Power Station of the CLP Power Hong Kong Limited and Castle Peak Power Company Limited (collectively referred to as "CLP") is expected to be commissioned in end 2019.

6. In July 2018, the Government approved the new five-year development plans of the two power companies. Each of the two power companies has planned to construct a new gas-fired unit of its own, which will be commissioned in 2023. Together with the above-mentioned gas-fired units currently under construction, the portion of gas-fired electricity generation of the two power companies will increase from the present level of about 26-34% to about 50-70% by 2023.

7. According to the Administration, when determining the emission allowances for the two power companies under the latest TM (i.e. the Seventh TM), it had taken into account:

- (a) the progress of increasing local gas generation to meet the fuel mix target;
- (b) new technology to upgrade existing gas-fired units for improving their NO<sub>x</sub> emission performance as well as thermal efficiency;
- (c) practicability to maintain the current import of 80% of nuclear output from Daya Bay Nuclear Power Station to CLP after 2018; and
- (d) projected local electricity consumption in the period from 2022 to 2023.

The Administration has commenced the review of the Seventh TM in 2018 with a view to further tightening the emission caps for power plants from 2024 onwards.

### **Major views and concerns expressed by Members**

8. The Panel on Environmental Affairs ("EA Panel") was consulted on the issuance of the Seventh TM at the meeting on 17 July 2017. A subcommittee was formed under the House Committee in October 2017 to study the Seventh TM. Related issues were also brought up during examination of the Estimates of Expenditure in recent years. Members' major views and concerns are summarized in the ensuing paragraphs.

### Emission caps for carbon dioxide and fine suspended particulates

9. Members generally supported the Administration to further reduce emission allowances for power plants. They enquired about the feasibility to measure the carbon dioxide ("CO<sub>2</sub>") and fine suspended particulates ("PM<sub>2.5</sub>") emissions from power plants, and set emission caps for these emissions.

10. The Administration advised that there was currently no proven practicable technology for controlling or measuring CO<sub>2</sub> and PM<sub>2.5</sub> emissions from electricity generation. Thus, it was infeasible to set limits on CO<sub>2</sub> and PM<sub>2.5</sub> emissions from local power plants. The Administration further explained that some countries which had set CO<sub>2</sub> emission caps had been storing captured CO<sub>2</sub> emissions in underground caverns to meet the caps. Hong Kong lacked deep underground caverns for storing captured CO<sub>2</sub> and thus the setting of CO<sub>2</sub> emission caps was infeasible. Nevertheless, increasing the use of natural gas for electricity generation in lieu of coal would effectively reduce CO<sub>2</sub> and PM<sub>2.5</sub> emissions.

### Monitoring of compliance

11. Members asked about the potential difficulties faced by the power companies in complying with the tightened emission caps set in the Seventh TM, and the mechanism to ensure effective monitoring of particulates emissions from the power plants. Some Members suggested the Administration disseminate real-time emission data of specified pollutants including SO<sub>2</sub>, NO<sub>x</sub> and RSP to the public to enhance monitoring.

12. The Administration advised that the two power companies had indicated that the achievement of the emission allowances under the Seventh TM would hinge on a number of factors, including the availability of fuels of the right quality, performance of the generating units or emission control equipment, the supply of low-emission coal with sufficiently high heating value, etc. Notwithstanding the difficulties, the power companies were prepared to support the Administration's policy objective to continuously reduce emissions.

13. The Administration further advised that power plants were required to continuously monitor their particulates emission by means of opacity from the stack in accordance with the internationally recognized methods specified by the Environmental Protection Department ("EPD") and the relevant data were transmitted to EPD for online monitoring to ensure compliance with the requirements. Moreover, the Administration would review the dissemination of relevant data such as the air quality health indexes compiled by EPD to the public from time to time.

### Tariff implications

14. Members enquired about the potential impact on electricity tariff arising from the capital investment for building new gas-fired units by the power companies.

15. The Administration advised that the tariff impact of the additional gas-fired units would be subject to a number of critical factors, such as operating costs, sales volume, fuel prices and balances of the Tariff Stabilization Fund and the Fuel Clause Recovery Account. It was estimated that the tariff impact would not be significant before the new gas-fired units commenced operation as no additional fuel costs would be incurred for electricity generation.

### Regional collaboration in emission reduction

16. Members asked about the progress of the implementation of regional air quality improvement measures to reduce the concentration levels of various air pollutants (including SO<sub>2</sub>, NO<sub>x</sub>, ozone, RSP and PM<sub>2.5</sub>).

17. The Administration advised that the Hong Kong Government and the Guangdong Provincial Government had been striving to reduce emissions from major sources such as power plants, vehicles and industries in the Pearl River Delta ("PRD") region since 2002. In 2012, the two governments endorsed a set of 2015 emission reduction targets and 2020 emission reduction ranges of four major air pollutants (i.e. SO<sub>2</sub>, NO<sub>x</sub>, RSP and volatile organic compounds ("VOCs")) for Hong Kong and the PRD Economic Zone, adopting 2010 as the base year. In addition, the two governments had been collaborating on the implementation of ambient pollution control on vessels. Looking forward, the Administration would strengthen cooperation with cities in the Guangdong-Hong Kong-Macao Greater Bay Area on improving air quality under the Outline Development Plan. Major initiatives in this regard included strengthening joint preventive and control measures against O<sub>3</sub>. To this end, the Administration would conduct a joint study with the Mainland authorities to identify the key sources of VOCs contributing to the formation of O<sub>3</sub>, with a view to facilitating the formulation of suitable control measures.

### **Latest development**

18. At the meeting on 28 October 2019, the Administration will brief EA Panel on the review of the Seventh TM and the legislative proposal to further reduce emission allowances for power plants starting from 1 January 2024 by way of issuing a new TM.

**Relevant papers**

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

Council Business Division 1  
Legislative Council Secretariat  
21 October 2019

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

**List of relevant papers**

<b>Date of meeting</b>	<b>Event</b>	<b>Paper</b>
5 April 2017	Special meeting of the Finance Committee ("FC") for examination of Estimates of Expenditure 2017-2018	Written questions raised by Members and the Administration's replies (Reply serial numbers: <a href="#">ENB096, 109</a> )
17 July 2017	Meeting of the Panel on Environmental Affairs ("EA Panel")	<p>Administration's paper on "Review of the Sixth Technical Memorandum for Allocation of Emission Allowances for Power Plants" (LC Paper No. <a href="#">CB(1)1286/16-17(03)</a>)</p> <p>List of follow-up actions arising from the discussion at the meeting on 17 July 2017 (LC Paper No. <a href="#">CB(1)1355/16-17(01)</a>)</p> <p>Administration's response on issues relating to agenda item IV "Review of the Sixth Technical Memorandum for Allocation of Emission Allowances for Power Plants" raised at the meeting on 17 July 2017 (LC Paper No. <a href="#">CB(1)1355/16-17(02)</a>)</p> <p>Updated background brief on "Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences" prepared by the Legislative Council Secretariat (LC Paper No. <a href="#">CB(1)1286/16-17(04)</a>)</p> <p>Minutes of meeting (LC Paper No. <a href="#">CB(1)1419/16-17</a>)</p>

Date of meeting	Event	Paper
31 October 2017	Subcommittee on Seventh Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences	<p><a href="#">Seventh Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences</a></p> <p><a href="#">Legislative Council Brief</a></p> <p>Background brief prepared by the Legislative Council Secretariat (LC Paper No. <a href="#">CB(1)140/17-18(01)</a>)</p> <p>List of follow-up actions arising from the discussion at the meeting on 31 October 2017 (LC Paper No. <a href="#">CB(1)200/17-18(01)</a>)</p> <p>Administration's response to questions raised at the meeting on 31 October 2017 (LC Paper No. <a href="#">CB(1)200/17-18(02)</a>)</p> <p>Minutes of meeting (LC Paper No. <a href="#">CB(1)648/17-18</a>)</p>
24 November 2017	House Committee	Report of the Subcommittee on Seventh Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences (LC Paper No. <a href="#">CB(1)241/17-18</a> )
17 April 2018	Special meeting of FC for examination of Estimates of Expenditure 2018-2019	Written questions raised by Members and the Administration's replies (Reply serial numbers: <a href="#">ENB107, 139, 144</a> )
22 October 2018	Policy briefing cum meeting of EA Panel	<p>Administration's paper on "2018 Policy Address - Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. <a href="#">CB(1)10/18-19(01)</a>)</p> <p>Minutes of meeting (LC Paper No. <a href="#">CB(1)276/18-19</a>)</p>



<b>Date of meeting</b>	<b>Event</b>	<b>Paper</b>
9 April 2019	Special meeting of FC for examination of Estimates of Expenditure 2019-2020	Written questions raised by Members and the Administration's replies (Reply serial numbers: <a href="#">ENB105, 109, 144</a> )

**Other relevant document:**

<b>Government bureau</b>	<b>Document</b>
Environment Bureau	Legislative Council Brief on "2018-2023 Development Plans and 2019 Tariff Review of the Two Power Companies" issued on 3 July 2018. (File Ref: <a href="#">ENB CR 1/4576/08(18) Pt.27</a> <a href="#">ENB CR 1/4576/08(18) Pt.28</a> )