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Panel on Environmental Affairs

Meeting on 26 April 2021

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 ("SO₂"), nitrogen oxides ("NO_x") and respirable suspended particulates ("RSP"), for power plants by way of a TM.¹

¹ 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. Eight TMs were issued from 2008 to 2019.² Compared with the emission caps set out in the First TM for 2010, the emission allowances of SO₂, NO_x and RSP will be reduced by 87%, 71% and 69% respectively by 2024 under the Eighth TM. It is the Administration's current practice to review a TM at a frequency of no less than once every two years to enable timely revision of the emission allowances.

Fuel mix for electricity generation

4. The Government announced during the public consultation on "Future Development of the Electricity Market" in 2015 of the plan to increase the percentage of gas generation of the two local power companies (i.e. CLP Power Hong Kong Limited ("CLP") and Hongkong Electric Company, Limited ("HEC")) to around 50% of the total fuel mix for electricity generation in 2020. In the Hong Kong's Climate Action Plan 2030+ published in January 2017,³ the Government stated its direction to phase down coal and use more natural gas and non-fossil fuel sources for electricity generation to help reduce carbon emissions and achieve the carbon intensity reduction target for 2030.

² The First TM, issued in 2008, set the emission allowances for the emission years between 2010 and 2014. The Second to Eighth TMs were issued in 2010, 2012, 2014, 2015, 2016, 2017 and 2019 to tighten the emission allowances with effect from 1 January 2015, 1 January 2017, 1 January 2019, 1 January 2020, 1 January 2021, 1 January 2022 and 1 January 2024 respectively.

³ The Hong Kong's Climate Action Plan 2030+ sets out Hong Kong's new carbon emissions reduction target for 2030 (i.e. reducing carbon intensity by 65% to 70%, which is equivalent to 26% to 36% absolute reduction, by 2030 using 2005 as the base) and the concerted plans of relevant bureaux/departments for meeting it.

Major views and concerns expressed by Members

5. The Panel on Environmental Affairs ("EA Panel") was consulted on the reviews of previous TMs. 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

6. Members generally supported the Administration to further reduce emission allowances for power plants. They enquired about the feasibility to set emission caps for carbon dioxide ("CO₂") and fine suspended particulates ("PM_{2.5}") emissions from power plants.

7. The Administration advised that there was currently no proven practicable technology for measuring or controlling CO₂ and PM_{2.5} emissions from electricity generation. Thus, it was infeasible to set limits on CO₂ and PM_{2.5} emissions from local power plants. While some countries had been storing captured CO₂ emissions in underground caverns to meet emission caps, Hong Kong did not have potential for implementing similar measure. Nevertheless, CO₂ and PM_{2.5} emissions could be reduced by increasing the use of natural gas in lieu of coal for electricity generation.

Monitoring of compliance

8. Members asked about the mechanism to ensure effective monitoring of particulates emissions from the power plants and suggested the Administration disseminate real-time emission data of specified pollutants including SO₂, NO_x and RSP to the public to enhance monitoring.

9. The Administration advised that the 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. 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

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

11. The Administration advised in October 2019 that the construction of one new gas-fired unit by each of the two power companies would allow them to achieve the proposed emission allowances for 2024 and onwards under the Eighth TM.⁴ The total estimated expenditures of HEC's and CLP's new gas-fired unit were about \$5 billion and \$6 billion respectively. As for their tariff implication, the Administration considered it premature at this stage to make any meaningful assessment for 2024 and beyond because how the increase in capital investment would be reflected in electricity tariff would depend on a host of factors, including future fuel costs, pace of capital investments, operating costs, sales volume, as well as future movements in the Tariff Stabilisation Fund and the Fuel Clause Recovery Account.⁵

Future fuel mix

12. Regarding members' concern about Hong Kong's capacity to further diversify the fuel mix beyond 2030, the Administration advised that related matters were being considered in the context of formulating the Long-term Decarbonisation Strategy ("LTDS"). It was envisaged that there would be a need to reduce the use of fossil fuels and increase the use of sustainable energy (such as biomass and waste-to-energy generation) or even zero-carbon energy (such as nuclear energy and certain types of renewable energy) in order to achieve the carbon reduction target for 2050 in accordance with the Paris Agreement's relevant target.⁶ In this connection, the Council on Sustainable

⁴ According to the Administration, the two gas-fired units will come into operation in 2023.

⁵ Electricity tariff charged by the two power companies is made up of two components, namely the basic tariff and Fuel Clause Charge ("FCC"), the total of which is the net tariff rate. While the basic tariff covers operating expenses, standard fuel charges and return to the power companies, FCC reflects the changing price of fuels and is borne by consumers and payable to the power companies on a cost-pass-through basis. To ensure that tariff adjustment is reasonable, the Administration is responsible for playing a gate-keeping role to control cost relating to the basic tariff. Furthermore, the Administration will use the two power companies' respective Tariff Stabilisation Fund to mitigate pressure of tariff increase, and Fuel Clause Recovery Account to tackle sharp fuel cost increase due to the expiry of existing fuel supply contracts or fluctuations in supply. It will also examine whether any special income of the two companies can be used to offset cost increase.

⁶ The Paris Agreement, which came into force on 4 November 2016, is an agreement adopted by 195 countries including China within the United Nations Framework Convention on Climate Change dealing with greenhouse gas emissions. All signatories of the Agreement are committed to holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. To achieve this, the world will need to reduce absolute carbon emissions by between 40% and 70% by 2050 compared with 2010. As this Agreement is applicable to Hong Kong, the Government is expected to draw up its own mid-century long-term decarbonization strategy.

Development ("SDC") had concluded the public interaction phase of the public engagement on LTDS. Based on the recommendations submitted by SDC in November 2020, the Administration would formulate LTDS for Hong Kong, including initiatives to decarbonize the electricity sector while ensuring the security of energy supply.

Regional collaboration in emission reduction

13. Members asked about the progress of the implementation of regional air quality improvement measures to reduce the concentration levels of various air pollutants (including SO₂, NO_x, ozone, RSP and PM_{2.5}).

14. 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. SO₂, NO_x, 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 O₃. 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 O₃, with a view to facilitating the formulation of suitable control measures.

Latest development

15. At the meeting on 26 April 2021, the Administration will brief EA Panel on the review of the Eighth TM and the legislative proposal to further reduce emission allowances for power plants starting from 1 January 2026 by way of issuing a new TM.

Relevant papers

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

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

List of relevant papers

Date of meeting	Event	Paper
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: ENB096, 109)
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. CB(1)1286/16-17(03))</p> <p>List of follow-up actions arising from the discussion at the meeting on 17 July 2017 (LC Paper No. CB(1)1355/16-17(01))</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. CB(1)1355/16-17(02))</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. CB(1)1286/16-17(04))</p> <p>Minutes of meeting (LC Paper No. CB(1)1419/16-17)</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>Seventh Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences</p> <p>Legislative Council Brief</p> <p>Background brief prepared by the Legislative Council Secretariat (LC Paper No. CB(1)140/17-18(01))</p> <p>List of follow-up actions arising from the discussion at the meeting on 31 October 2017 (LC Paper No. CB(1)200/17-18(01))</p> <p>Administration's response to questions raised at the meeting on 31 October 2017 (LC Paper No. CB(1)200/17-18(02))</p> <p>Minutes of meeting (LC Paper No. CB(1)648/17-18)</p>
24 November 2017	House Committee	<p>Report of the Subcommittee on Seventh Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences (LC Paper No. CB(1)241/17-18)</p>
17 April 2018	Special meeting of FC for examination of Estimates of Expenditure 2018-2019	<p>Written questions raised by Members and the Administration's replies (Reply serial numbers: ENB107, 139, 144)</p>
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. CB(1)10/18-19(01))</p> <p>Minutes of meeting (LC Paper No. CB(1)276/18-19)</p>

Date of meeting	Event	Paper
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: ENB105, 109, 144)
28 October 2019	Policy briefing cum meeting of EA Panel	Administration's paper on "Review of the Seventh Technical Memorandum for Allocation of Emission Allowances for Power Plants" (LC Paper No. CB(1)31/19-20(04)) Minutes of meeting (LC Paper No. CB(1)251/19-20)

Other relevant documents:

Government bureau	Document
Environment Bureau	Report on the Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong issued in March 2015
Environment Bureau	" Hong Kong's Climate Action Plan 2030+ " issued in January 2017
Council for Sustainable Development	" Report on Public Engagement on Long-term Decarbonisation Strategy" issued in November 2020