LEGISLATIVE COUNCIL BRIEF

Air Pollution Control Ordinance (Cap. 311)

Ninth Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences

INTRODUCTION

Pursuant to Section 26G of the Air Pollution Control Ordinance (Cap. 311) (the Ordinance), the Secretary for the Environment (the Secretary) has made the "Ninth Technical Memorandum for Allocation of Emission Allowances in respect of Specified Licences" (the Ninth TM) at **Annex A** to further tighten the emission allowances for the two power companies with a view to improving air quality. The emission allowances will apply to three types of air pollutants, i.e., sulphur dioxide (SO_2), nitrogen oxides (NO_X) and respirable suspended particulates (RSP), to be allocated in respect of each specified licence to conduct electricity works for each emission year from 1 January 2026.

JUSTIFICATIONS

2. Since 2008, the Secretary has been issuing technical memorandum (TM) to allocate the emission allowances for each type of specified pollutants allocated in respect of each specified licence to conduct electricity works in accordance with Section 26G(2) of the Ordinance. The Secretary, in making the emission allocations, shall:

(a) have regard to the best practicable means (BPM) for preventing the emission of that type of pollutant;

(b) have as his purpose the attainment and maintenance of any relevant air quality objective; and

(c) have regard to whether the emission of that type of pollutant would be, or be likely to be, prejudicial to health.

3. In 2019, the Secretary issued the "Eighth Technical Memorandum for

Allocation of Emission Allowances in respect of Specified Licences" (the Eighth TM) to allocate emission allowances in relation to each emission year commencing on 1 January 2024 for power plants of the two power companies. The emission allowances under the Eighth TM were determined with due regard to the electricity demand forecasts in the period 2024 - 2025 by both the CLP Power Hong Kong Limited (CLP) and The Hongkong Electric Company, Limited (HEC), the progress of increasing local gas generation to around 57% of the total fuel mix for electricity generation by 2024, the new technology to upgrade CLP's existing old gas-fired units to improve their NO_x emission performance and thermal efficiency, the projected electricity intake from renewable energy (RE) sources and CLP's continued efforts to import 80% of nuclear power output from the Daya Bay Nuclear Power Station (DBNPS) beyond 2023. Both power companies shall continue to maximise the use of existing gas-fired units, prioritise the use of coal-fired units equipped with emission control devices, use low-emission coal as far as possible and uphold the performance of emission control devices of the power generation units to meet the emission allowances.

4. When setting the emission allowances under the Eighth TM in 2019, we indicated that a review of the TM would be conducted in two years (i.e. 2021) to take account of all factors that could affect the emissions of the generation units of the two power companies in future years. When reviewing the Eighth TM, we have taken account of the following –

(a) the progress of the construction of new gas-fired units for replacement of some existing coal-fired units, which are scheduled for retirement after reaching the end of their service life in coming years;

(b) the progress of upgrading existing old gas-fired units for improving their NO_x emission performance as well as thermal efficiency;

(c) the estimated amount of electricity imported from the DBNPS in the future;

(d) the quantity of low-emission coal to be acquired by the power companies in 2026 and 2027;

(e) the projected local electricity consumption from 2026 to 2027; and

(f) the projected electricity intake from RE sources.

5. Based on the above considerations, our assessment for HEC is summarised as follows –

(a) the electricity demand for the Hong Kong Island is forecasted to drop by around 1.4% during 2026 and 2027 as compared to that of 2024 when setting the Eighth TM. The anticipated reduction in electricity demand is partly due to the energy efficiency measures outlined in the Energy Saving Plan[1]; and partly due to new incentives to promote energy efficiency and conservation (EE&C)[2] under the post-2018 Scheme of Control Agreements (SCAs);

(b) the construction of two new gas-fired units, Units L11 and L12[3], each with an installed capacity of 380 megawatt (MW), at the Lamma Power Station Extension is underway and is expected to complete by 2022 and 2023, respectively. With the inclusion of these two new gas-fired units in HEC's generation fleet, the gas generation ratio (on sent-out basis) will increase from around 50% in 2020 to about 70% in 2026;

(c) the decrease in electricity generation from the coal-fired units in 2026 and 2027 will enable their operations at the optimum loading range with a better performance in NOx emission;

(d) the scheduled retirement of an old coal-fired unit (i.e. Unit L6) in the first half of 2027 is subject to the decision and government's approval for the construction of a new gas-fired unit (i.e. Unit L13);

(e) HEC will continue its effort to acquire adequate quantity of low-emission coal for electricity generation in 2026 and 2027 as far as

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1 The "Energy Saving Plan for Hong Kong's Built Environment 2015~2025+" sets a target of reducing Hong Kong's energy intensity by 40% by 2025 using 2005 as the base year.

2 Power companies have strengthened the support to customers on adopting energy efficiency and conservation initiatives, such as enhancing the energy efficiency performance of building services installations and encouraging households to save energy.

3 Emission reductions resulting from the commissioning of Units L11 and L12 have been considered in the Seventh TM in 2017 and Eighth TM in 2019, respectively.

possible and maintain the performance of the emission control devices of its coal-fired units;

(f) the anticipated increase in electricity intake from RE in 2026 and 2027 will be similar to that in the Eighth TM (See **Annex B**); and

(g) based on the above considerations, it is estimated that HEC's emission allowances in the new TM could be reduced by 2% for SO_2, 10% for NO_x and 3% for RSP, as compared to the levels in the Eighth TM.

6. As for CLP, our assessment is summarised as follows –

(a) the electricity demand for CLP is forecasted to slightly increase by around 0.7% during 2026 and 2027 as compared to that of 2024 when setting the Eighth TM;

(b) the construction of a new gas-fired unit, Unit D2[4], with an installed capacity of around 600 MW at the Black Point Power Station is expected to complete by 2023. After the commencement of operation of Unit D2, CLP's gas generation ratio (on sent-out basis) will increase from around 48% in 2020 to about 50% in 2026;

(c) with the completion of the scheduled periodic safety review in 2024, the projected annual nuclear power imports from the DBNPS to CLP will gradually resume normal and will be around 16% higher than that when setting the Eighth TM, allowing further reduction in the emission allowances due to the reduction in local electricity generation;

(d) the decrease in electricity generation from the coal-fired units in 2026 and 2027 will enable their operations at the optimum loading range with a better performance in NO_x emission;

(e) the scheduled retirement of the two remaining coal-fired units at the Castle Peak A (CPA) Station (i.e. Units A3 and A4) in 2024 and 2025

[4] Emission reduction resulting from the commissioning of Unit D2 has been considered in the Eighth TM.

respectively is subject to uncertainty[5]. Nevertheless, the utilisation of these two units will be kept to the absolute minimum as they are mainly for meeting peak electricity demand in the summer period and serving as backup units during the outage of the coal-fired units at the Castle Peak B (CPB) Station;

(f) CLP will continue its effort to acquire adequate quantity of low-emission coal for electricity generation in 2026 and 2027 as far as possible; optimize the number of start-up and shut-down operations of their coal-fired units during summer period; and maintain the performance of the emission control devices to reduce emissions from their coal-fired units;

(g) five of the eight existing old gas-fired units at the Black Point Power Station have been upgraded, thereby increasing their generation capacity by 8 %, i.e. 125 MW or 25 MW each, and reducing its NO_x emissions by around 30%. CLP will upgrade the remaining three existing old gas-fired units before 2024, which will further reduce its NO_x emissions;

(h) there will be projected increase in electricity intake from RE sources mainly owing to the higher participation under the Feed-in Tariff (FiT) Scheme (See **Annex B)**; and

(i) in view of the above-mentioned development, it is estimated that CLP's emission allowances could be reduced by 17% for SO_2, 10% for NO_x and 8% for RSP in 2026 and beyond, as compared to the levels in the Eighth TM.

7. The projected emission allowances for power plants of the two power companies in 2026 and beyond are presented in Table 1 below, together with the reductions relative to the respective Eighth TM levels –

[5] According to CLP, the retirement plan of the remaining two coal-fired units at CPA station is subject to various factors including the commissioning schedule of, and availability of additional power import through, the enhanced Clean Energy Transmission System (CETS). As the enhancement of the CETS is still at an early stage, the present review does not take into account the implication of the CETS to local electricity generation from CLP power plants in 2026 and beyond.

Table 1: Emission Allowances in 2026 and beyond (tonnes per year)

		Sulphur dioxide	**Nitrogen oxides** [@]	**Respirable suspended particulates**
HEC	Lamma Power Station and Lamma Power Station Extension (mixed fuel)	1 564 [-2%]	2 906 [-10%]	113 [-3%]
CLP	Black Point Power Station (gas-fired)	133 [-48%]	2 050 [-11%]	115 [-8%]
	Castle Peak Power Station (coal-fired)	1 153 [-12%]	6 186 [-10%]	138 [-7%]
	Penny's Bay Gas Turbine Power Station (oil-fired)	2 [0%]	2 [0%]	1 [0%]
	Total of CLP's Stations	1 288 [-17%]	8 238 [-10%]	254 [-8%]
Electricity sector		2 852 [-9%]	11 144 [-10%]	367 [-6%]

[@] Expressed as nitrogen dioxide

Note: The figures in square brackets are the reduction in percentage when compared with the emission allowances stipulated in the Eighth TM.

8. The Government is committed to promoting as well as spearheading the development of local RE in recent years. Details of the measures and efforts are at **Annex B**.

9. Nevertheless, the generation of RE could be affected by exogenous factors such as changes in weather patterns as well as the heat contents of the refuse, sludge, organic waste and landfill gas. In ascertaining the emission allowances for HEC and CLP, we will follow the established mechanism by introducing a correction term to add/deduct any underestimated/overestimated emission allowances according to the actual intake of the electricity generated from RE and the unit emission factors of coal-fired and gas-fired units.

THE NINTH TECHNICAL MEMORANDUM

10. Based on the above review, we propose to promulgate a new TM to allocate the emission allowances from 2026 onwards to each of the existing power plants by the following method, as adopted in the Eighth TM:

Emission allowances to be allocated and ascertained	
=	Emission allowances that are required with the use of BPM (i.e., those presented in Table 1 above)
plus/minus	Emission allowances for coal-fired/gas-fired units to be added/deducted owing to deviation of the actual intake of RE[6] from the anticipated intake (i.e., about 7 GWh and 794 GWh for HEC and CLP respectively)

11. The formulae for allocating the emission allowances to the four power plants are presented in the tables below –

Table 2(a): Lamma Power Station and Lamma Power Station Extension

	2026 and thereafter
SO_2	1 564 + (7 – A) × 0.151*
NO_x [@]	2 906 + (7 – A) × 0.282*
RSP	113 + (7 – A) × 0.011*

Table 2(b): Black Point Power Station

	2026 and thereafter
SO_2	133 + (603[&] – B) × 0.008^
NO_x [@]	2 050 + (603[&] – B) × 0.118^
RSP	115 + (603[&] – B) × 0.007^

[6] Anticipated RE sources include the wind and photovoltaic systems (including the distributed RE systems), waste to energy facilities and the enhancement of the CETS by CLP for the supply of clean energy to Hong Kong.

Table 2(c): Castle Peak Power Station

	2026 and thereafter
SO_2	$1\,153 + (191^{\&} - C) \times 0.203^{\#}$
NO_x [@]	$6\,186 + (191^{\&} - C) \times 1.087^{\#}$
RSP	$138 + (191^{\&} - C) \times 0.024^{\#}$

Table 2(d): Penny's Bay Gas Turbine Power Station

	2026 and thereafter
SO_2	2
NO_x [@]	2
RSP	1

[@] Expressed as nitrogen dioxide

* Composite unit emission factors of coal-fired and gas-fired units in Lamma Power Station based on the projected electricity generation ratio (around 70% gas and 30% coal) in 2026/2027

^ Unit emission factors of gas-fired units in Black Point Power Station in 2026/2027

\# Unit emission factors of coal-fired units in Castle Peak Power Station in 2026/2027

& Electricity intake by CLP from the RE systems and other clean energy systems regarded as relevant by the Secretary will displace both gas and coal generation broadly according to the fuel mix ratio of CLP. It is projected that in the period 2026 to 2027, (i) the electricity generation from CLP's gas-fired and coal-fired units are around 76% to 24% respectively, and (ii) gas generation at Black Point Power Station and coal generation at Castle Peak Power Station to be offset by the RE electricity intake are 603 GWh (i.e. 76% of the total anticipated RE electricity intake of 794 GWh) and 191 GWh (i.e. 24% of the total anticipated RE electricity intake) respectively.

where –

A is the aggregate of total net sent-out electricity output (in GWh) from the RE Systems and other clean energy systems regarded as

relevant by the Secretary to the electricity grid connected to Lamma Power Station and Lamma Power Station Extension in the emission year;

B is the aggregate of total net sent-out electricity output (in GWh) from the RE Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to Black Point Power Station in the emission year; and

C is the aggregate of total net sent-out electricity output (in GWh) from the RE Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to Castle Peak Power Station in the emission year.

12. In the event that there will be new electricity works[7], we will, as in the past, allocate emission allowances based on the emission performance of a new gas-fired unit having adopted BPM for emission reduction. We also propose to retain the mechanism for new electricity works in the Eighth TM; adopt the same reference installed capacity, i.e. 300 MW; cater for the possible intake of RE; and use the formulae as presented in the table below for allocating and ascertaining the emission allowances in respect of each of the specified pollutants for possible new electricity works.

Table 3: New Electricity Works

	2026 and thereafter
SO_2	$16 \times (D/300) \times (E/12) - F \times 0.008^{\wedge}$
NO_x [@]	$55 \times (D/300) \times (E/12) - F \times 0.028^{\wedge}$
RSP	$14 \times (D/300) \times (E/12) - F \times 0.007^{\wedge}$

[@] Expressed as nitrogen dioxide

^ Unit emission factors of gas-fired units equipped with latest emission control device

where –

D is the total installed capacity (in MW) of the New Electricity Works; or 300 (i.e., reference installed capacity), whichever is

[7] "New electricity works" refers to new entrant (i.e. in addition to HEC and CLP) coming into the electricity generation industry after the commencement of the proposed TM. The use of coal in new electricity generation plants was banned since 1997. New generating units shall be gas-fired units.

smaller;

E is the total number of months in the emission year after the commencement of operation of the New Electricity Works and part of a month is taken as a full month in the determination; and

F is the aggregate of total net sent-out electricity output (in GWh) from the RE systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to the New Electricity Works in the emission year.

LEGISLATIVE TIMETABLE

13. The Ninth TM will be published in the Gazette on 7 May 2021 and tabled at the Legislative Council for negative vetting on 12 May 2021. Subject to the negative vetting by the Legislative Council, the new set of emission allowances will take effect on 1 January 2026, in accordance with Section 26G(4) of the Ordinance[8].

NEXT REVIEW

14. This review has taken account of all the new gas-fired generating units which have been approved by the Government. We will maintain the practice to review a TM once every two years to enable timely revision of the emission allowances.

BASIC LAW AND HUMAN RIGHTS IMPLICATIONS

15. The Ninth TM is in conformity with the Basic Law, including the provisions concerning human rights.

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[8] Section 26G(4) of the Ordinance provides that an allocation does not have effect in respect of an emission year unless the relevant TM issued has commenced to have effect at least 4 years before the commencement of the emission year. An emission year commences on 1 January.

ENVIRONMENTAL AND SUSTAINABILITY IMPLICATIONS

16. As compared with the emission allowances for 2024 and 2025 set under the Eighth TM, the proposed Ninth TM will see a further tightening of about 9% for SO_2, 10% for NO_X as well as 6% for RSP for the entire electricity sector. The reduction will help improve air quality, given that emissions from the electricity sector account for 47%, 28% and 16% respectively of the territory-wide emissions of the pollutants mentioned above in 2018.

17. The progressive tightening of the emission allowances of power plants is one of the major measures considered in the air quality assessment for 2025 under the review of the AQOs, which was completed in end of 2018. The Government introduced the Air Pollution Control (Amendment) Bill 2021 into the LegCo in March 2021 for tightening the AQOs of SO_2 (24-hour) and fine suspended particulate ($PM_{2.5}$) (both annual and 24-hour) as prescribed in Schedule 5 to the APCO. The on-going tightening of the emission caps of power plants will also be considered in the next review of the AQO which is underway and scheduled for completion in 2023.

18. Achieving better air quality for Hong Kong through statutory control on power plants' emissions is in line with the sustainability principles of seeking opportunities to enhance the quality of our living environment that promotes and protects the physical health of the people of Hong Kong.

TARIFF IMPLICATIONS

19. Achieving the proposed emission caps under the Ninth TM involves neither additional new capital investment by power companies nor major changes in the fuel mix for local electricity generation. Nevertheless, the future level of electricity tariff would depend on a host of factors, including the future fuel costs, operating costs, sales volume, as well as future movements in the Tariff Stabilisation Fund and the Fuel Clause Recovery Account. It is premature at this stage to make any meaningful assessment on the implication of the proposed emission allowances for the tariff in 2026 and beyond. The power companies will present their tariff assessment to the Administration annually in accordance with the relevant regulatory mechanism under the SCA.

FINANCIAL AND CIVIL SERVICE IMPLICATIONS

20. The Ninth TM will not incur additional financial implications for the Government. Enforcement of the emission caps for power companies will be carried out by existing staff of EPD.

CONSULTATION

21. We have consulted the two power companies about the proposal to further tighten the emission caps. Both power companies have agreed with the proposed emission caps as set out in the Ninth TM, which have been tightened further despite the challenge posed to their operations without any major change in the fuel mix for local generation. They are supportive of (a) the EE&C initiatives proposed by the Government in the "Energy Saving Plan for Hong Kong's Built Environment 2015~2025+" and the post-2018 SCAs; and (b) the Climate Action Plan 2030+ on increasing the use of natural gas in electricity generation to help achieve the carbon intensity reduction target for 2030. They are committed to working closely with the Government to ensure compliance while maintaining a reliable supply of electricity to the customers. They also agree to another review of TM to be conducted not later than 2023.

22. Both power companies also see the compliance of the emission allowances contingent upon the availability of fuels of the right quality. They have put forward that any forced outages or a drop in the performance of the generating units or emission control equipment due to ageing problem or natural deterioration will jeopardize their compliance with the new emission allowances. Both HEC and CLP have also raised concerns about the difficulty in sourcing adequate low-emission coal with low sulphur and ash contents while the global demand for low-emission coal is escalating. Nevertheless, the power companies will endeavor to source and use low-emission coal in their coal-fired units. Should the operation of the power plants encounter events that are beyond their control and with significant emission implications (e.g. cessation or insufficient supply of low-emission coal, unexpected increase in power demand, increase in sulphur content of the natural gas supplied, less than expected nuclear power made available to CLP for 2026 and beyond, unexpected delay in the upgrading works on the three existing gas-fired units at BPPS and/or commissioning of the new gas-fired units (i.e. Units L11 and L12 for HEC and

Unit D2 for CLP), and/or other related issues outside the control of the two power companies), they may have to resort to the special event provision under Section 26K of the APCO to adjust their emission allowances accordingly. When necessary, we will handle these special events under the existing mechanism stipulated in Section 26K of the APCO.

23. We consulted the Advisory Council on the Environment and the Legislative Council Panel on Environmental Affairs on the proposed Ninth TM on 12 April 2021 and 26 April 2021 respectively. Both of them supported the proposal.

PUBLICITY

24. A press release will be issued on the date of gazette of the Ninth TM. A spokesman will be made available for media enquiries.

ENQUIRY

25. For any enquiry relating to this brief, please contact Mr. Dave HO Tak-yin, Assistant Director of Environmental Protection (Air Policy), at 2594 6309.

Environmental Protection Department
May 2021

Annex A

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

WONG Kam-sing
SECRETARY FOR THE ENVIRONMENT

This Technical Memorandum is published under Section 37B(1) of the Air Pollution Control Ordinance (Cap. 311) and shall commence to have effect in accordance with Section 37C of that Ordinance.

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

1. PRELIMINARY

1.1 *Citation and Commencement*

This Technical Memorandum is the ninth technical memorandum issued pursuant to Section 26G of the Ordinance and may be cited as the "Ninth 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 quantity of emission allowances for each type of specified pollutant allocated in respect of each specified licence and the allocation principles and determination method of the quantity of emission allowances to be allocated for each and every emission year from 1 January 2026. The allocation of emission allowances set out or determined under the Eighth Technical Memorandum for each and every emission year from 1 January 2026 is superseded by this Technical Memorandum.

1.3 *Interpretation*

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

"Authority"（監督） has the same meaning as in the Ordinance.

"Electricity generation for local consumption"（供本港使用電力） means the gross electricity generation of the Electricity Works concerned minus the 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.

"Electricity Works"（電力工程） means the process of Electricity Works

specified in item 7 of Schedule 1 to the Ordinance.

"emission allowance"（排放限額） has the same meaning as in the Ordinance.

"emission year"（排放年度） has the same meaning as in the Ordinance.

"Existing Electricity Works"（現有電力工程） 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) Lamma Power Station and Lamma Power Station Extension at Lot 1934 and Lot 2200, DD 3, Po Lo Tsui, Lamma Island;
(b) Black Point Power Station at Yung Long Road, Lung Kwu Tan, Tuen Mun, New Territories;
(c) Castle Peak Power Station at Lung Yiu Street, Tuen Mun, New Territories; and
(d) Penny's Bay Gas Turbine Power Station at Lot 23, DD 256, Penny's Bay, Lantau Island, New Territories.

"Eighth Technical Memorandum"（第八份技術備忘錄）means the "Eighth Technical Memorandum for Allocation of Emission Allowances in Respect of Specified Licences" published in the Gazette under Section 37B(1) of the Ordinance on 25 October 2019 which came into operation in accordance with Section 37C of the Ordinance.

"New Electricity Works"（新電力工程） means any Electricity Works, other than the Existing Electricity Works, which comes into existence after the commencement of this Technical Memorandum.

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

"Renewable Energy System"（可再生能源系統） means an electricity generation system employing solar, wind, biomass, hydro, tidal, wave, geothermal or energy from waste (including landfill gas or sewage gas) that provides electricity to the grid.

"Secretary"（局長） has the same meaning as in the Ordinance.

"specified licence"（指明牌照） has the same meaning as in the

Ordinance.

"specified licence holder"（指明牌照持有人） has the same meaning as in the Ordinance.

"specified pollutant"（指明污染物） has the same meaning as in the Ordinance.

2. ALLOCATION OF EMISSION ALLOWANCES

2.1 The quantity of emission allowances for each type of specified pollutant allocated to each specified licence of Existing Electricity Works for each and every emission year from 1 January 2026 shall be determined by the formulae in the respective tables as follows –

(a) Lamma Power Station and Lamma Power Station Extension

	2026 and thereafter
Sulphur dioxide	1 564 + (7 – A) × 0.151
Nitrogen oxides [(i)]	2 906 + (7 – A) × 0.282
Respirable suspended particulates	113 + (7 – A) × 0.011

(b) Black Point Power Station

	2026 and thereafter
Sulphur dioxide	133 + (603 – B) × 0.008
Nitrogen oxides [(i)]	2 050 + (603 – B) × 0.118
Respirable suspended particulates	115 + (603 – B) × 0.007

(c) Castle Peak Power Station

	2026 and thereafter
Sulphur dioxide	1 153 + (191 – C) × 0.203
Nitrogen oxides [(i)]	6 186 + (191 – C) × 1.087
Respirable suspended particulates	138 + (191 – C) × 0.024

(d) Penny's Bay Gas Turbine Power Station

	2026 and thereafter
Sulphur dioxide	2
Nitrogen oxides [(i)]	2
Respirable suspended particulates	1

[(i)] Expressed as nitrogen dioxide

where –

A is the aggregate of total net sent-out electricity output (in GWh) from the Renewable Energy Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to Lamma Power Station and Lamma Power Station Extension in the emission year;

B is the aggregate of total net sent-out electricity output (in GWh) from the Renewable Energy Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to Black Point Power Station in the emission year; and

C is the aggregate of total net sent-out electricity output (in GWh) from the Renewable Energy Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid connected to Castle Peak Power Station in the emission year.

2.2 The quantity of emission allowances for each type of specified pollutant allocated to each specified licence of New Electricity Works for each and every emission year from 1 January 2026 shall be determined by the formulae as follows –

	2026 and thereafter
Sulphur dioxide	$16 \times (D/300) \times (E/12) - F \times 0.008$
Nitrogen oxides[(ii)]	$55 \times (D/300) \times (E/12) - F \times 0.028$
Respirable suspended particulates	$14 \times (D/300) \times (E/12) - F \times 0.007$

[(ii)] Expressed as nitrogen dioxide

where –

D is the total installed capacity (in MW) of the New Electricity Works; or 300, whichever is smaller;

E is the total number of months in the emission year after the

commencement of operation of the New Electricity Works and part of a month is taken as a full month in the determination; and

F is the aggregate of total net sent-out electricity output (in GWh) from the Renewable Energy Systems and other clean energy systems regarded as relevant by the Secretary to the electricity grid of the New Electricity Works in the emission year.

2.3 The Authority shall make the allocation of emission allowances for each type of specified pollutant in relation to each specified licence in respect of electricity generation for local consumption.

2.4 For the purposes of determination of the quantity of emission allowances referred in Sections 2.1 and 2.2, the aggregate of the total net sent-out electricity output from the Renewable Energy Systems and other clean energy systems regarded as relevant by the Secretary in the emission year is to be rounded up to the next whole number.

2.5 The quantity of emission allowances determined in this Technical Memorandum for allocation to a specified licence shall be rounded up to the next whole number.

2.6 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 allowances set out or determined in accordance with this Technical Memorandum for each and every emission year from 1 January 2026.

2.7 The Secretary shall review the quantity of emission allowances for each type of specified pollutant for each specified licence set out or determined in accordance with this Technical Memorandum not less than once every two years after the commencement of this Technical Memorandum.

Annex B

The Government's Measures and Efforts in Promoting RE

Local electricity generation is one of the major emission sources of carbon and air pollutants. To improve air quality and reduce carbon emissions, the Government has seen to it that the two power companies use cleaner fuel for electricity generation. Coal only accounts for about one quarter of the fuel mix for electricity generation in 2020, substantially lower than its share in 2015 which was about 50%. The two power companies will continue to replace coal-fired generating units with gas-fired ones. Nevertheless, if we are to strive to achieve carbon neutrality before 2050, we must substantially increase the proportion of zero-carbon energy, including RE in the overall fuel mix for electricity generation.

2. The Government is committed to promoting the local development of RE and taking the lead in enhancing RE at government premises. Since 2017-18, the Government has earmarked a total of $2 billion to install small-scale RE systems at government premises. More than $1.5 billion has been approved so far for more than 130 projects. The 2021-22 Budget has proposed to earmark an additional $1 billion for this purpose. The Government is also actively developing larger-scale solar energy generation systems at suitable reservoirs and landfills. Besides, the Government is making great efforts to developing waste-to-energy (WTE) plants and has pushed forward a number of WTE projects, such as T·PARK, Integrated Waste Management Facility, Organic Resources Recovery Centres and West New Territories (WENT) Landfill Gas Generation Project.

3. Beyond the Government, the power companies and the Government have introduced Feed-in Tariff (FiT) to encourage the private sector and the community to invest in distributed RE as the power generated could be sold to the power companies at a rate higher than the normal electricity tariff rate to help recoup the cost of their investments. We have also implemented different facilitation measures, including suitably relaxing the restrictions on installation of solar energy generation systems on the rooftops of New Territories Exempted Houses (i.e. "village houses"), launching Solar Harvest to install solar energy generation systems for eligible schools and welfare non-governmental organisations

for free, introducing legislative amendments so that individuals who have installed RE systems on their residential premises need not apply for business registration or file profits tax returns for the FiT payments they receive, etc. As at end 2020, the two power companies have received over 13 000 FiT applications, of which about 11 000 have been approved. It is estimated that the approved systems can generate RE to meet the electricity demand of some 50 000 households.

4. For HEC, a total of about 7 GWh electricity intake from RE per year is estimated to be obtained in 2026 and 2027. For CLP, a total of about 793 GWh and 794 GWh electricity intake from RE per year are estimated to be obtained in 2026 and 2027 respectively. The projected total electricity intake from RE sources in 2026 and 2027 will be around 1.8% of the electricity demand. Breakdown of electricity intake from RE sources in 2026 and 2027 are presented in the table below.

Breakdown of electricity intake from RE in 2026 and 2027 (GWh)

RE Facilities		**Electricity intake from RE considered in the 8th TM**	**2026**	**2027**
HEC	Lamma Winds and photovoltaic systems	2	3	3
	Distributed RE systems	5	4	4
	Total of HEC's RE	**7**	**7**	**7**
CLP	T·PARK	3	7	8
	Organic Resources Recovery Centre in Siu Ho Wan, (O·PARK1)	14	14	14
	Organic Resources Recovery Centre in Sha Ling, (O·PARK2)	24	24	24
	WENT Landfill Gas Generation	68	68	68
	Integrated Waste Management Facility	480	480	480
	Distributed RE systems	25	200	200
	Total of CLP's RE	**614**	**793**	**794**
Electricity sector		**621**	**800**	**801**