



Civil Aviation Department Environmental Report 2022



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1 | Foreword

This Environmental Report covered the environmental performance of the Civil Aviation Department (CAD) in 2022.

In the work of environmental management, the Department strives to minimize the disturbance caused by aircraft operations to the local communities and pursue environmentally friendly operations both in various functional areas and office management.

Our Environmental Goals

CAD is committed to ensuring that all services provided by the Department as well as our operations are conducted in an environmentally responsible manner.

Our Environmental Policy

We support the Hong Kong Special Administrative Region Government's initiatives to improve the environment by:-

- Committing to a safe, efficient and sustainable air transport system in Hong Kong;
- Compliance with relevant environmental protection ordinances;
- Striving to minimize the adverse effect that the development of the aviation industry may cause to our quality of life and environment;
- Promoting waste reduction, recovery and recycling, and reduction in consumption of resources including material, fuel and energy; and
- Providing environmental education and training to staff.

2 | Aircraft Noise Management

CAD is conscious of any possible noise impact that aircraft operations may have on local communities and has implemented a number of aircraft noise mitigating measures based on the guidelines of the International Civil Aviation Organization (ICAO), aiming at mitigating noise impact caused by the aircraft without compromising aviation safety. We have also monitored the implementation of these noise mitigating measures and the aircraft noise situation in various districts with the aid of a computer-based Aircraft Noise and Flight Track Monitoring System.

Quieter Arrivals

Arrivals from Southwest over Water

All arriving aircraft between midnight and 7 am of the following day are required to approach from the southwest of the airport over water, unless limited by safety and weather conditions. This measure aims at reducing the number of aircraft overflying populated areas such as Tseung Kwan O, Sha Tin, Kwai Chung, Tsing Yi, Tsuen Wan and Tuen Mun (Siu Lam / Tai Lam Chung) during the overnight period. In 2022, 88% of arrival aircraft were able to approach from the southwest of the airport between midnight and 7 am of the following day under permissible conditions.



Figure 2-1: Route of arriving aircraft from southwest at night

Continuous Descent Approach Procedure

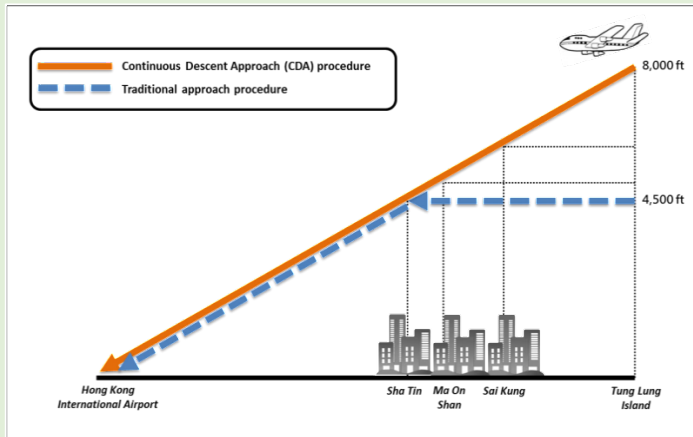


Figure 2-2: Diagram illustrating CDA procedure

All aircraft approaching the airport from the northeast between 11 pm to 7 am on the following day are encouraged to adopt the Continuous Descent Approach (CDA) procedure when safety and weather conditions do not allow night arrivals to approach from the southwest.

The CDA procedure requires the aircraft to fly higher and adopt a lower power setting and drag configuration during the commencement of the approach, thereby reducing aircraft noise impacts to areas such as Sai Kung, Tseung Kwan O and Ma On Shan.

Quieter Departures

Noise Abatement Departure Procedures

All aircraft departing to the northeast are required to adopt the Noise Abatement Departure Procedures stipulated by the ICAO so long as safe flight operations permit.

These procedures require aircraft to reduce power setting upon reaching an altitude of 800 feet or above, thus can alleviate aircraft noise impact during take-offs on communities in the vicinity of the airport.

Departures via West Lamma Channel



Figure 2-3: Route of departure aircraft to northeast at night

All aircraft taking off to the northeast between 11 pm and 7 am of the following day are required to use the southbound route via the West Lamma Channel, unless limited by safety and weather conditions, thereby avoiding flying over populated areas such as Kowloon, North Point, Shau Kei Wan and Chai Wan. In 2022, 99% of aircraft taking off to the northeast between

11 pm and 7 am of the following day were able to take this southbound route over the West Lamma Channel.

Improving Track Adherence

We have introduced a set of noise mitigating departure procedures which make use of satellite-based navigation technology for noise mitigation. Aircraft which are properly equipped to use the technology, when departing to the northeast of the Hong Kong International Airport (HKIA), can make use of the on-board navigation capabilities to adhere closely to the nominal centre line of the flight track during their turn to the West Lamma Channel. With better track-keeping accuracy, the aircraft can be kept at a distance from the populated residential areas. In doing so, the aircraft noise footprint can be confined and the overall aircraft noise effect on these residential areas can be reduced.

Restrictions on Noisy Aircraft

Apart from implementing the aircraft noise abatement procedures mentioned above, the CAD has prohibited aircraft that are not meeting the relevant aircraft noise standards from landing and taking off in Hong Kong.

Since 2002, aircraft that do not comply with the noise standards stipulated in Chapter 3 of Annex 16 Volume I, Part II to the Convention on International Civil Aviation (“Chapter 3 noise standards”) are not allowed to land or take off in Hong Kong. Furthermore, starting from 2014, airlines are not allowed to schedule aircraft whose noise levels only marginally meet the Chapter 3 noise standards¹ to land and take off in HKIA.

Starting from March 2019, CAD has taken an initiative to impose more stringent requirements with additional operating restrictions on aircraft which do not comply with the noise standards stipulated in Chapter 4 of Annex 16 Volume I, Part II to the Convention on International Civil Aviation (“Chapter 4 noise standards”), or equivalent, to operate at the HKIA from 10 pm to 7 am of the following day.

Noise Monitoring

CAD has installed an Aircraft Noise and Flight Track Monitoring System (ANFTMS) to monitor the implementation and effectiveness of various noise mitigating measures, and the noise environment in various districts. The system comprises multiple outdoor noise monitoring terminals (NMTs) which are installed at strategic locations in Hong Kong to monitor and record noise data for aircraft operating into and out of the HKIA, and a computer system which correlates noise data collected with the actual aircraft flight tracks detected by CAD's radar system. In view of the commencement of operation of the North Runway since July 2022, CAD has expanded the ANFTMS through the installation of additional NMTs at strategic locations close to the flight paths of the North Runway.



Figure 2-4: Outdoor noise monitoring terminal

¹ Marginally Compliant Chapter 3 (MCC3) aircraft are defined as subsonic jet aircraft which comply with the noise standards stipulated in Volume I, Part II, Chapter 3 of the Annex 16 to the Convention on International Civil Aviation by a cumulative margin of not more than 5 EPNdB.

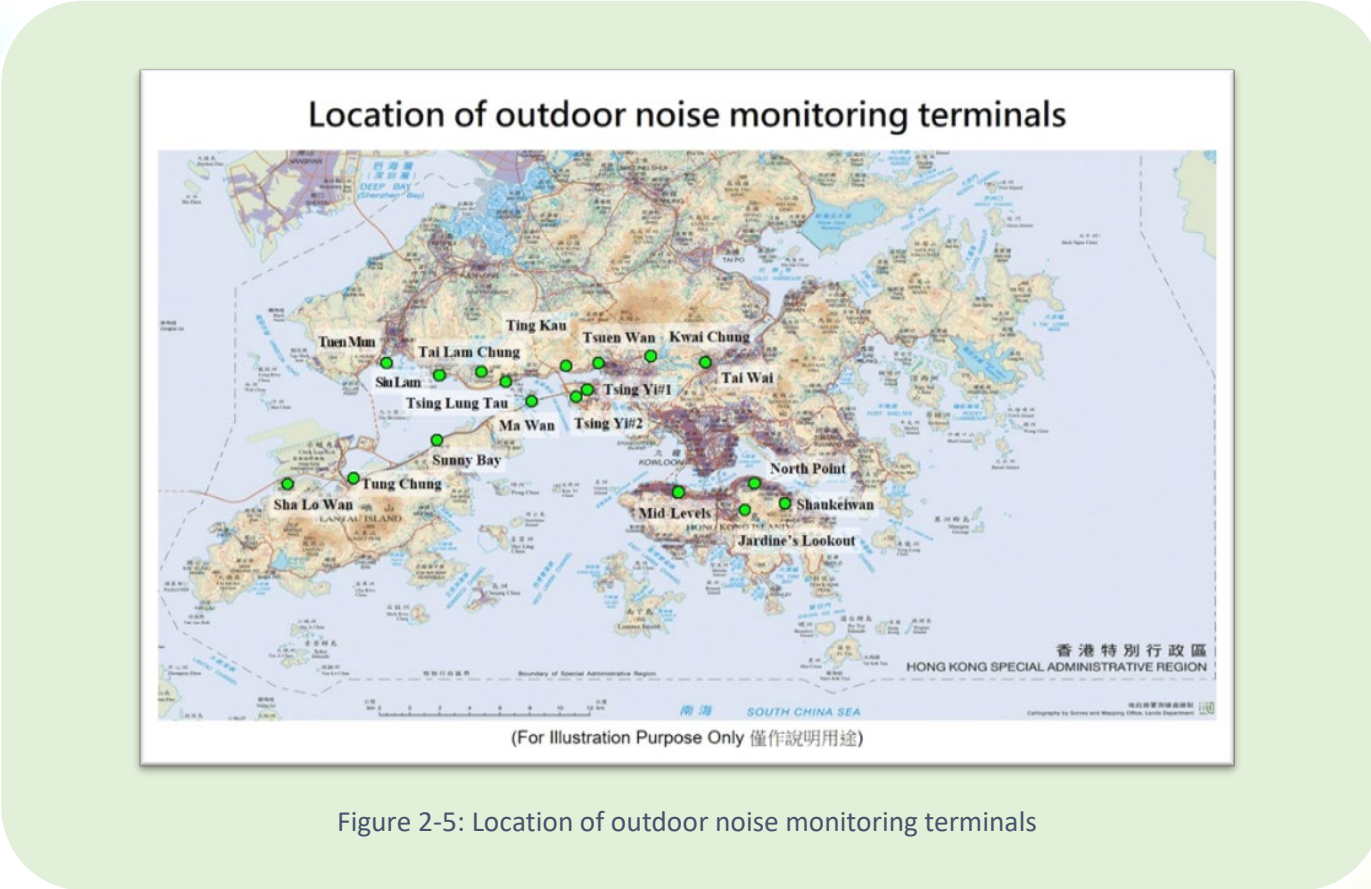


Figure 2-5: Location of outdoor noise monitoring terminals



3 | Aircraft Emission

Most aircraft operating at the HKIA comply with the engine emission standards as stipulated in Annex 16, Volume II to the Convention on International Civil Aviation. With the growing attention to the climate change caused by the greenhouse gas (i.e. carbon dioxide), CAD has been closely monitoring the development of guidelines from ICAO on the reduction of carbon dioxide emission from aircraft operations and conveyed the guidelines to the industry.

Measures Taken by CAD

Being the air navigation services provider, CAD has from time to time reviewed air routes and air traffic management arrangements by making reference to the latest ICAO guidelines. Taking advantage of the latest development in satellite-based navigation technologies, CAD has conducted enhancements of the air route system which enabled shortened travelling distances and allowed more aircraft to fly at optimum and fuel efficient altitudes, thereby achieving fuel savings and a reduction of carbon dioxide emission.

CAD would continue to keep in view the development of the latest ICAO flight procedure criteria, progressively apply more advanced aviation technologies as appropriate and closely work with other air traffic control authorities and airline operators for further enhancing the air route system in the Hong Kong Flight Information Region.

Measures Taken by Airlines

To achieve the goal of reducing emissions, airlines have been taking the initiative to introduce newer generation of aircraft types which are more fuel efficient, quiet and advanced in navigation technology in general. In 2022, 20 old generation of legacy aircraft were retired and airlines have been progressively replacing these aircraft by a similar number of more modernized aircraft. Furthermore, some airlines have started to use sustainable aviation fuel in conjunction with traditional fuel. Although the use of sustainable aviation fuel

was limited due to its availability at suitable airports as at the end of 2022, this initiative would assist the reduction of carbon emissions, and the scale of its benefits would gradually increase in the longer term.

Carbon Emission Certification

A new requirement relating to Standards and Recommended Practices on certification of carbon emissions of aircraft was published by ICAO in July 2017, which aimed at reducing the impact of aviation greenhouse gas emissions on the global climate. New aircraft models which have their application for type certificates submitted to the State of Design on or after 1 January 2020 would have to comply with the new requirement. That means new aircraft models will produce less carbon emission.

Carbon Offsetting and Reduction

ICAO decided in October 2016 to implement a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) as one of the measures to contribute to carbon neutral growth from 2020 onwards. The scheme is expected to complement a broader package of measures to be implemented by the aviation sector including the technological advancement on fuel efficient aircraft, improvement on operational procedures to reduce fuel consumption and promotion of the use of sustainable alternative fuels. As part of the scheme, aeroplane operators in Hong Kong have already started monitoring their CO₂ emissions from international flights and reported the relevant statistics since 2019.

4 | Green Measures in Other Aviation Related Operations

CAD recognizes the importance of environmental protection. We have implemented various green measures in aviation related operations. We would continue to explore means to infuse green measures into our operations to maintain sustainability of civil aviation.

Electronic Tools and Standardized Forms for Various Tariff and Flight Applications

Use of electronic tools and standardized forms for various types of applications has reduced the consumption of paper and processing time in the Air Services Office. As a result of the liberalization and change of approval mechanism of the Passenger and Cargo Fuel Surcharges respectively, consumption of paper has been greatly reduced. The use of e-filing as a platform for submission of flight applications and relevant information continues to contribute to reduction of paper consumption, which also greatly enhances readability and accuracy of the information provided. Applications pertaining to scheduled or non-scheduled air services permits and schedule changes via e-filing account for over 97% of these applications.




Figure 4-1: Layout of e-filing system

Electronics Submission / Approval

Use of Electronic Flight Bags and Electronic Submission of Flight Standards & Airworthiness Related Applications

Airlines are required to carry on board aircraft a substantial number of documents, including but not limited to, operations manuals, emergency procedures, checklists, navigation charts, etc. for flight crew’s reference during operation of aircraft. Subject to CAD’s approval, airlines may use Electronic Flight Bags to carry electronic copies of the required documents, thus significantly reducing the number of paper documents carried on board aircraft or in flight crew’s carry-on flight bag. Through Electronic Flight Bags, latest weather or air traffic information and other operational updates can be promptly dispatched to flight crew. The Electronic Flight Bags also enable flight crew to review different documents such as maintenance manuals, air navigation charts and electronic flight plans without using paper printouts, hence tasks could be performed and managed more efficiently and effectively during flight operations.

The application form for Operational Approval of Electronic Flight Bag is available on the CAD website. As at the end of 2022, six local airlines have been approved by CAD to use Electronic Flight Bags.


 香港特別行政區政府
 民航處
 Civil Aviation Department
 The Government of the Hong Kong Special Administrative Region

APPLICATION FOR ELECTRONIC FLIGHT BAG OPERATIONAL APPROVAL

Please complete the form in BLOCK CAPITALS using black or dark blue ink after reading the attached guidance.

This form is designed to elicit all the required information from those operators requiring the Electronic Flight Bag (EFB) operational approval. Completed form should be submitted to the Flight Standards and Airworthiness Division (FSAD), Civil Aviation Department Headquarters, 1 Tung Fui Road, Hong Kong International Airport, Lantau, Hong Kong.

The assessment to the application of EFB Operational Approval is based on CAD 562.

1. SCOPE & GENERAL INFORMATION

1.1	EFB	EFB Type: <input type="checkbox"/> Portable <input type="checkbox"/> Installed
		Software application(s) type: <input type="checkbox"/> A <input type="checkbox"/> B
2	Operator Name	
	Flight OPS Manager	Tel: _____
	EFB Administrator	Tel: _____
	EFB Administrator e-mail contact	
1.3	Aircraft Registration(s)	
	Manufacturer	
	Type-Model(s)	
	Serial No(s)	

*See Paragraph 2



Figure 4-2: Application Form for Electronic Flight Bag and Electronic Flight Bag

Application for Guided Tours of the Education Path

Since 2021, arrangement had been made for the provision of E-form on the CAD website, to facilitate electronic application for visit to the Aviation Education Path by interested individual and groups with real time display of available guided tour sessions.



Figure 4-3: Education Path

Online Promulgation of Divisional Documents

The “ATMD Information Dissemination Website”, a website with secured access limited to divisional staff, was launched in September 2014 for online promulgation of divisional documents of the Air Traffic Management Division (ATMD). It was at first used to disseminate roster information to colleagues through the internet. Since December 2014, the function of the website was extended to house and disseminate training materials, airport circulars, divisional information circulars and materials of professional interest aiming to replace the traditional means of distributing hard copies.

In order to reap further environmental benefits, since 2015, the use of the website has been extended to provide online access to divisional reference documents and their updates which used to be disseminated by CD-ROMs. It is estimated that about 2,000 CD-ROMs have been saved each year since the

implementation of this initiative. “ATMD Information Dissemination Website” has recorded over 15,300 visits in 2022.

Since August 2017, the distribution of internal Administrative Memorandum has been digitized to enhance the operational efficiency while being more environmentally friendly. To further reduce the need for hard copies, all course plans have been digitized in 2021. With the significant reduction of hard copies to be distributed, it is estimated that about 13,000 sheets of A4 size paper have been saved in 2022.

Technical

- [Briefing Materials and Technical Document](#)
- [Future Initiatives](#)
- 3RS**
- [3RS Conversion Training](#)
- [I-2RS Conversion Training](#)
- [Reference Materials](#)

Description	Remark
PPT on 2023 Returning to Normal Traffic	PPT attached to Admin Memo 123/22 regarding 2023 Returning to Normal Traffic
Admin Memo 123/22 (TRAINING)	2023 Returning to Normal Traffic
EPM Ch16 -16-C3 N-TWR Equip - IAT Contingency Ops	N-TWR Activation Exercise 24 Oct 2022
EPM Ch.16 - 16-I N-TWR CWPs Arrangement	N-TWR Activation Exercise 24 Oct 2022
EPM Ch.16 - 16-H S-TWR to assume IAT Roles	N-TWR Activation Exercise 24 Oct 2022

Figure 4-4: ATMD Information Dissemination Website

Paperless ATMD Operational Manuals

In line with the departmental green measures, the Aeronautical Information Management Centre (AIMC) under the ATMD has been working on the reduction of hard copy publications.

The change of distribution of Aeronautical Publications (including Aeronautical Information Publication (AIP), AIP Supplement (AIP SUP) and Aeronautical Information Circular (AIC)) of Hong Kong from paper-based to electronic form was proven to be a successful initiative as a grand total of over 13,500 sheets of A4 size paper were saved in 2022.

In addition, electronic copy of three ATMD operational manuals, namely Manual of Air Traffic Control (MATC), Manual of Aeronautical Information Services

(MAIS) and Aeronautical Information Management Centre Quality Manual (AIMCQM) were produced which can be accessed via the ATMD Information Dissemination Website. To enhance the accessibility of these operational manuals, Operational Information Database System (OIDS) and CAD intranet were introduced in 2016 and 2021 respectively for accessing these documents in operational areas. With the discontinuation of paper copies of the three operational manuals, it is estimated that over 16,900 sheets of A4 size paper were saved in the year.

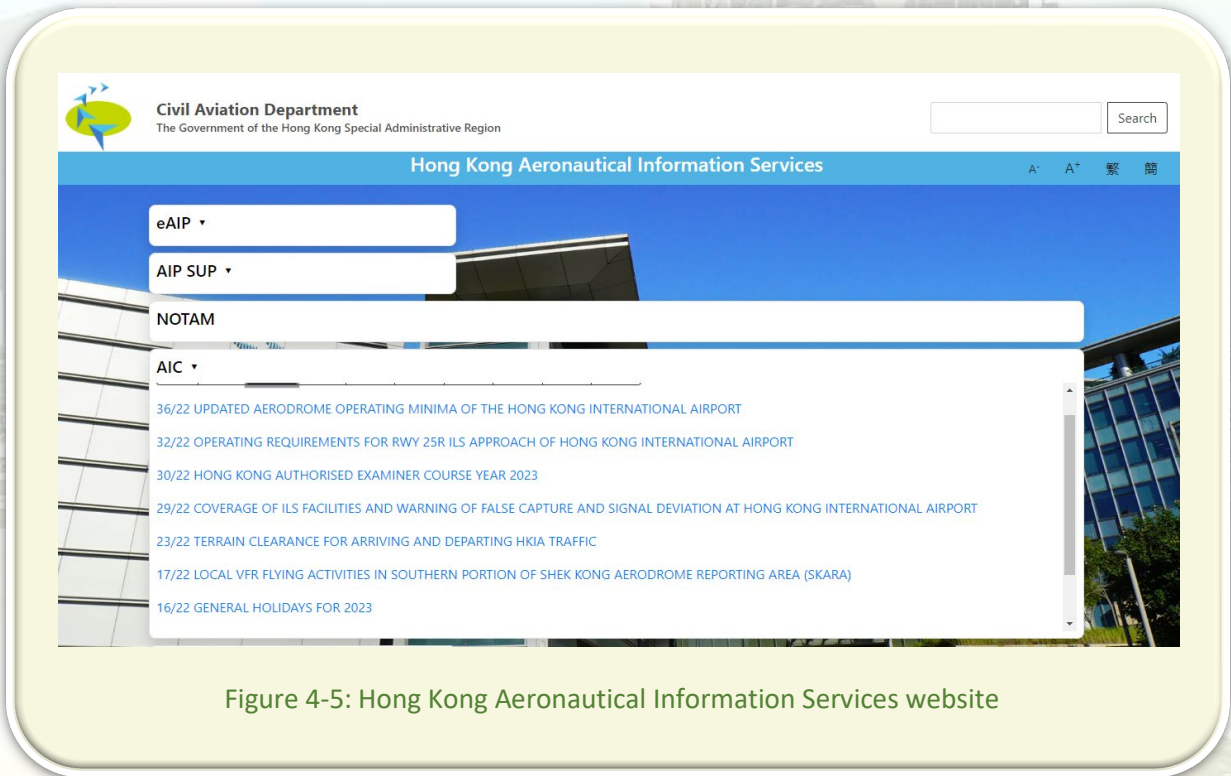


Figure 4-5: Hong Kong Aeronautical Information Services website

5 | Green Housekeeping

CAD has been implementing a number of housekeeping measures in daily office operations to encourage energy conservation, paper conservation, waste collection and recycling, proper disposal of environmentally hazardous waste, green procurement and environmental awareness among all staff.

Energy Conservation

Daily Energy Saving Measures in Housekeeping

To reduce energy consumption in our daily office operations, the following environmentally friendly measures have been implemented in CAD buildings:

- Adhering to the Government recommended summer air conditioning setting of 25.5°C and use electric fans to improve air circulation and provide greater staff comfort when necessary;
- Turning off any air conditioning, lights, lifts, escalators, digital signage systems, and video walls, etc. when they are not in use;
- Periodically adjusting the operation period of essential external lighting to optimize energy usage in accordance with seasonal changes in daylight hours;
- Optimizing the energy saving mode of non-essential lighting at lift lobbies from 50% to 100% off;
- Switching off lights in pantries from midnight to early morning;
- Regularly reviewing the operating hours of Air Handling Units according to the latest occupancy patterns to avoid energy wastage;

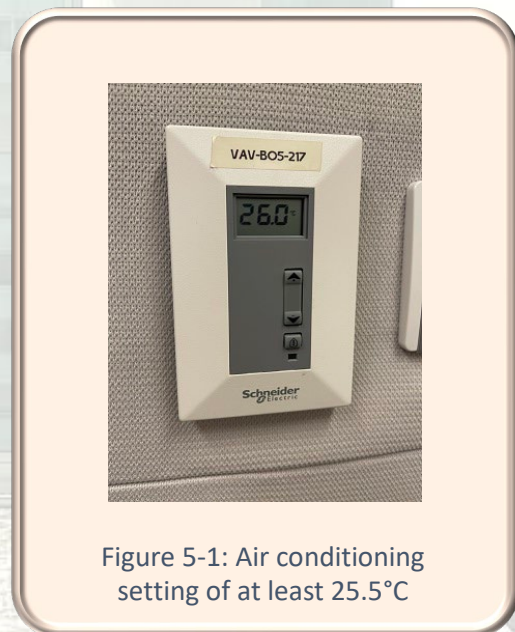


Figure 5-1: Air conditioning setting of at least 25.5°C

- De-lamping excess lights in corridors and common areas;
- Turning off some lifts in Air Traffic Control Building, Office Building, and Facilities Building of CAD Headquarters and Backup Air Traffic Control Complex (BATCX) during non-peak office hours;
- Operating limited lifts outside normal office hours and using night mode lighting, suspending escalator service in the Office Building of CAD Headquarters;
- Encouraging colleagues to take the staircases instead of using lifts;
- Installing energy-saving timer devices in most share-used printers and photocopiers to cut down the consumption of electricity in standby mode during non-office hours;



Figure 5-2: Poster to encourage staff to use staircases



Figure 5-3: Reminders for switching off lights and electrical appliances before leaving

- Checking lights and electrical appliances during security patrol outside office hours to ensure that they are switched off when not in use;
- Displaying reminders in all meeting/training rooms to draw users' attention to switching off lights and electrical appliances before leaving;

- Adopting solar films in strategic locations to cut down indoor heat and sunlight;
- Adopting motorized blinds in the atrium of CAD Headquarters to protect against sunlight and heat during sunny days;
- Incorporating environmentally-friendly installation during building construction, such as installing photovoltaic panels on the rooftop of CAD Headquarters. In 2022, the panels generated 15,389 kWh of electricity;
- Maintaining a green roof to reduce the temperature on the top floor;
- Reviewing occupancy patterns in CAD Headquarters before the summer season to optimize air conditioning supply schedules for different zones so as to reduce the overall cooling demands as well as the air conditioning operating hours; and
- Reviewing the video wall operation schedule at CAD Headquarters to optimize energy savings.

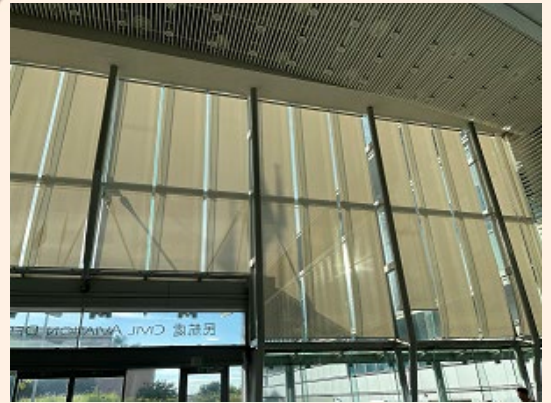


Figure 5-4: Motorized blinds in atrium



Figure 5-5: Photovoltaic panels installed at rooftop

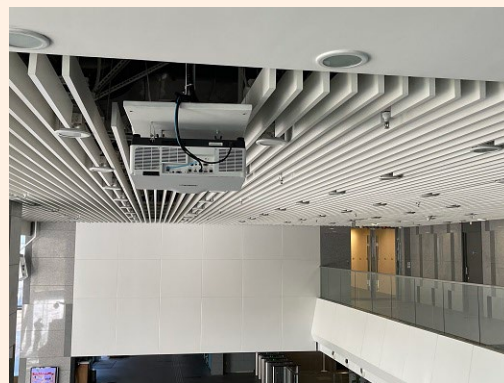


Figure 5-6: Review of operation schedule of video wall to optimize energy savings

Energy Consumption

The Government has promulgated a 6% "Green Energy Target" for the period from FY 2020-21 to FY 2024-25. The energy consumption in FY 2018-19 was set as the baseline for comparison. The range of reporting has been expanded to incorporate non-electricity energy usage such as town gas and liquefied petroleum gas. In addition, the enlarged scope included energy use at infrastructure facilities. Apart from energy consumption, the target also considered the generation of renewable energy such as electricity generated by photovoltaic panels. In FY 2022-23, the Department's energy performance improved by 5.1%.

	Energy consumption (Billed & RE)	Energy consumption under comparable operating conditions ¹	Renewable energy (RE) generation
<i>FY 2018-19 (baseline) (kWh)</i>	26,204,431 (a)		17,233
<i>FY 2020-21 (kWh)</i>	26,837,569	25,802,835	19,917
<i>FY 2021-22 (kWh)</i>	27,937,669	25,152,615	19,273
<i>FY 2022-23 (kWh)</i>	28,379,477	24,865,933	16,931
<i>Net change compared with the previous year (kWh)</i>	441,808	-286,682	-2,342
<i>Change compared with (a), (%)²</i>		+5.1% (b)	+0.0% (c)
<i>Energy Performance (b)+(c), (%)²</i>		+5.1%	

Remarks: (1) Activities of bureaux/departments evolve over time in meeting the public service demands, which lead to changes of operating conditions and significant impacts on energy consumption such as operating hours, usage rate number of equipment, the floor area of venues, volume of water/sewage flow, etc. Such changes also bring significant impacts on energy consumption and adjustments (or normalization processes) are therefore conducted to generate a more likely actual energy consumption under comparable operating conditions with baseline.

(2) The change in operating conditions is mainly the change in accommodation occupied by CAD in the past years.

Carbon Audit and Energy Audit

In 2015, a consultant was appointed to conduct energy audits for major CAD premises, including CAD Headquarters, Air Traffic Control Complex (ATCX), and BATCX. The Energy Utilization Indices (EUIs) of CAD Headquarters, ATCX, and BATCX in FY 2013-14 were 1,393, 2,906, and 8,306 MJ/m²/annum respectively. The energy audit reports issued in 2016 recommended that CAD should continue to adopt its green measures and implement/maintain the following energy saving initiatives based on site conditions: -

- Keeping the air conditioning temperature setting at 25.5°C;
- Turning off lights near windows whenever possible;
- Labelling zone control plans alongside the switches;
- Lowering or closing blinds to block the sunlight; and
- Switching off the electrical appliances when the facility is unoccupied.

Since the initial internal carbon audit in 2017, CAD has performed annual carbon audits. The table below reports the outcomes over the last three years: -

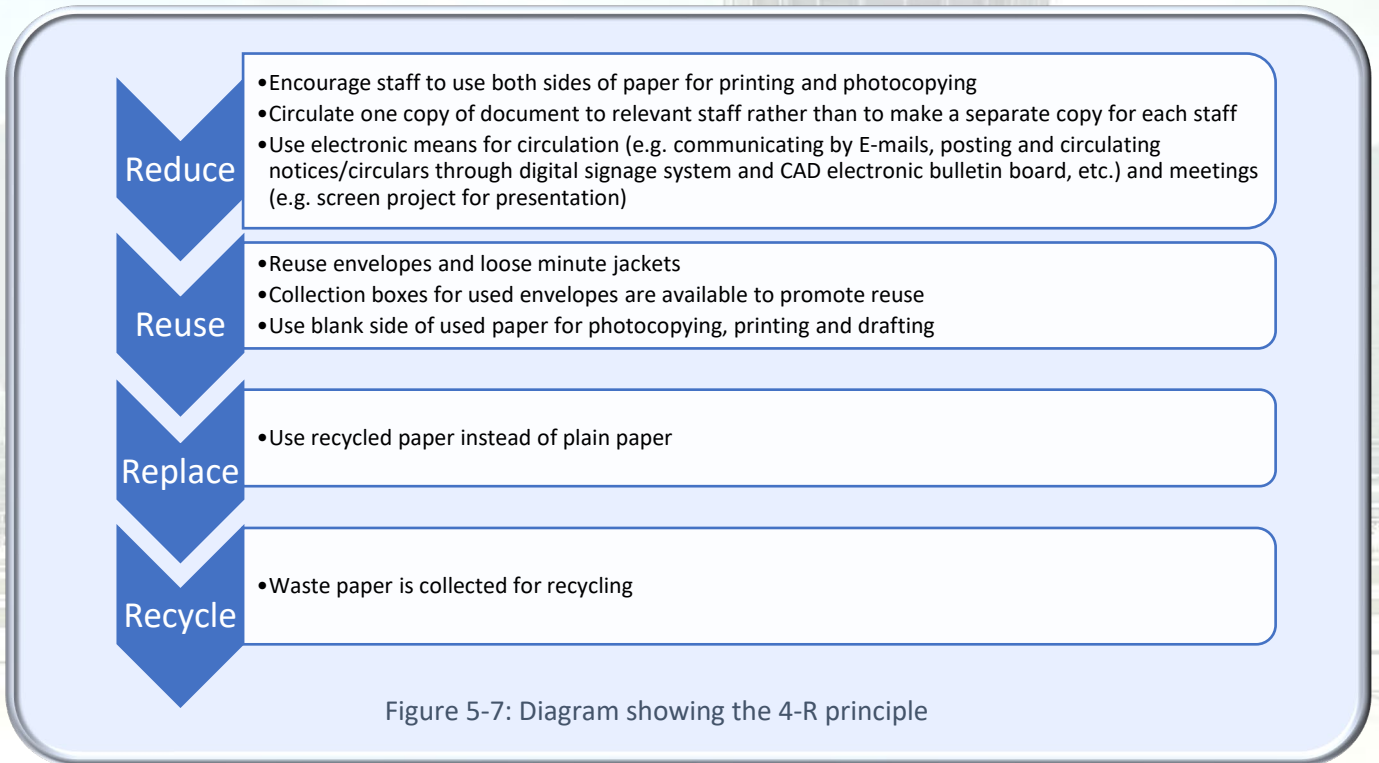
Year	<u>Greenhouse Gas Emission per employee (tonnes of CO₂)</u>		
	CAD Headquarters	ATCX	BATCX
2020	6.71	32.25	28.66
2021	5.49	26.62	15.26
2022	5.59	35.56	34.18

Remarks: For consistency and easy comparison, Greenhouse Gas Emission per employee is adopted in the Environmental Report since 2019 to give a fair comparison of Greenhouse Gas generated in the course of operation.

Paper Conservation

Daily Paper Saving Measures in Housekeeping

We advocate for the "4-R principle" in paper conservation, which is summed up in the diagram below.



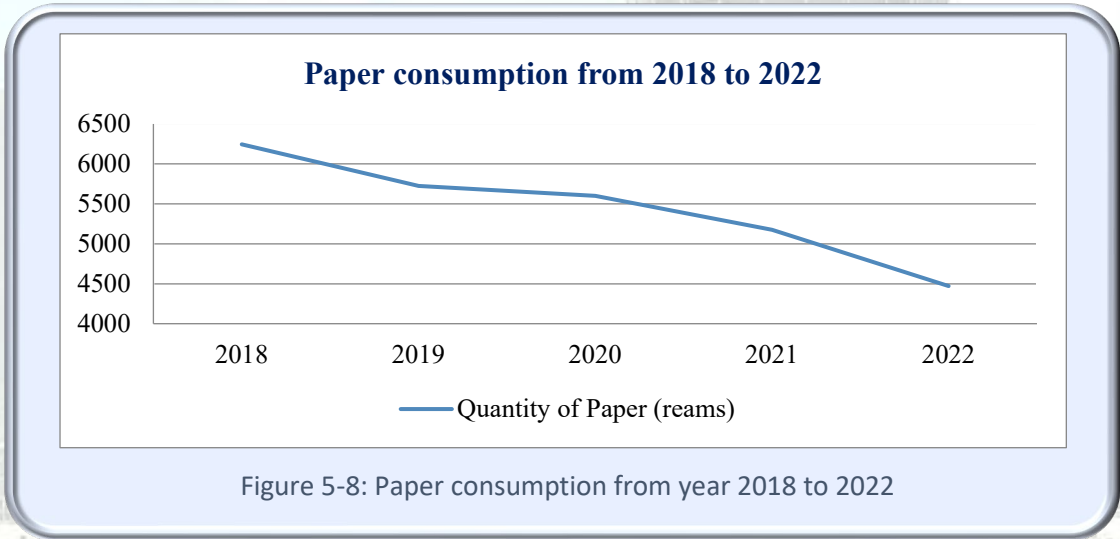
Measures on Paper Conservation

In addition to the routine housekeeping, we make the following arrangements to use less paper:

- Since 2017, we have stopped printing copies of the CAD Annual Report. In 2021, same arrangement was adopted to the CAD Link. This arrangement has saved 55,000 sheets of A4 size paper annually;
- Encourage staff to use fewer paper towels by posting notices at paper towel dispensers; and
- Distribute newspaper clippings electronically instead of in hardcopy. In 2022, an estimated 44,000 sheets of A4 sized paper were saved.

Paper Consumption

In 2022, we used 4,471 reams of paper, which represented a drop of 13.6% when compared to the level in 2021. This proved that the collective efforts made by each employee to conserve paper each day had been successful. Staff members are encouraged to continue the decreasing trend.



Waste Reduction, Collection and Recycling

Recycling Bins to Collect Waste Paper, Plastic Bottle, Metal Can and Glass Bottle



For recycling, we collect old rechargeable batteries, used metal cans, plastic bottles, glass bottles, and waste paper. Recycling bins are positioned in common spaces to make disposal for staff members and guests easier. Regular deliveries of the gathered items are made to recycler. The amount of recyclables collected in 2022 are shown in the table below.

Recyclables	Amount Collected
Waste Paper	629 kg
Plastic	8 kg
Metal	0.5 kg
Glass Bottle	16 pcs
Rechargeable Battery	38 pcs

Food Waste Collection and Decomposition System

One of the main solid wastes in Hong Kong is food waste. Therefore, reducing food waste helps reduce the volume of garbage sent to landfills. A food waste decomposition system had been installed in CAD Headquarters in order to achieve this objective.

The CAD Staff Canteen at CAD Headquarters collects food wastes, which are then disposed of in the food waste decomposition system. Food wastes are transformed into liquid during the decomposition process by an enzyme, and some of the liquid is applied to the vegetation at CAD Headquarters as a natural fertilizer. The remainder is released as effluent. We collected around 1.78 tonnes of food waste in 2022.

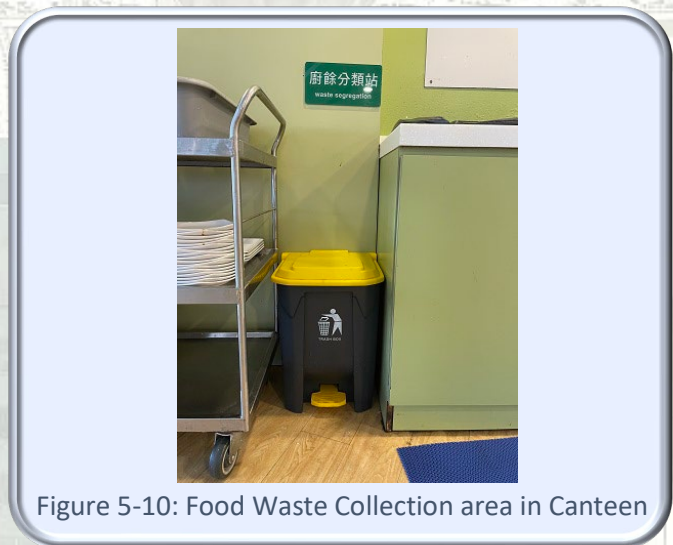


Figure 5-10: Food Waste Collection area in Canteen

Reduction of Waste in Staff Canteen

The Staff Canteen has taken the following steps to reduce other solid wastes in addition to treating the food waste collected through the food waste decomposition system:

- Promotion of No Straw Campaign;

- Prohibit the use of poly-foam food container;
- Encourage customers to bring their own food container and avoid using disposable utensils;
- Encourage customers to request a smaller portion of rice, so as to reduce the likelihood of food waste; and
- Post publicity materials in the Staff Canteen to remind customers to reduce the amount of leftover food and avoid using disposable plastic food container and utensils.



Figures 5-11: Poster to promote “plastic-free culture” displayed in Staff Canteen

Food Wise Charter

Since 2016, we have signed the Environmental Protection Department's Food Wise Charter. After participating in the Charter, regular evaluations of waste reduction measures are conducted. The management, staff, and Staff Canteen operator keep close communication with one another through the Canteen Sub-committee.



Figures 5-12: “Don’t be a Big Waster” Poster displayed in Staff Canteen

Collection of Rain Water Recycling for Irrigation

The watering system at CAD Headquarters uses collected rainwater and air conditioning condensate water. The following table displays the irrigation water saved in 2022: -

Buildings of CAD Headquarters	Facilities Building	Office Building	Air Traffic Control Building
Annual Irrigation Consumption (L)	5,068,425	1,523,890	2,066,656
Annual Recycled Water Collected for Irrigation (L)*	675,000	210,000	570,000
Percentage of Saving	13.3%	13.8%	27.6%

*Including the water recycled from the cooling tower.



Figure 5-13: Rainwater storage tank

Water Saving Measures

Fresh water is a priceless natural resource. We encourage our staff to cut back on their water consumption by doing the following:

- Water dispensers are set up in the meeting spaces for people attending seminars and conferences to refill their cups. When practicable, bottled water is not provided;



Figure 5-14: Water dispenser set up in meeting space

- Signs are hung in the pantries to encourage colleagues to save water; and
- For better control of water flow, a new type of faucet with higher water-saving efficiency has been adopted to replace malfunctioning ones.

Bring Your Own Cup

- We encourage staff members to bring their own cups to meetings to reduce the trash produced by disposable paper/plastic cups.
- Meeting rooms are equipped with water dispensers for visitors.
- The caterer of departmental events is asked to provide reusable food utensils rather than providing disposable tableware to encourage waste reduction.

Reduction in Procurement of Newspapers

- Circulation of newspaper cuttings via electronic methods is adopted to reduce paper consumption. The Library has decreased the amount of hard copy newspapers purchased by 3.1% in 2022.

Green Procurement

CAD follows the guidelines as set out in the Government’s green procurement policy (e.g. Environment Bureau Circular Memorandum No. 1/2021 on “Green Procurement in the Government”) and avoids procuring single-use disposable items. We purchase items that are durable, energy-efficient and recyclable. Below are some examples of green procurement measures implemented in our Department: -

- Procuring operation equipment, office equipment and other electrical appliances having an energy label;

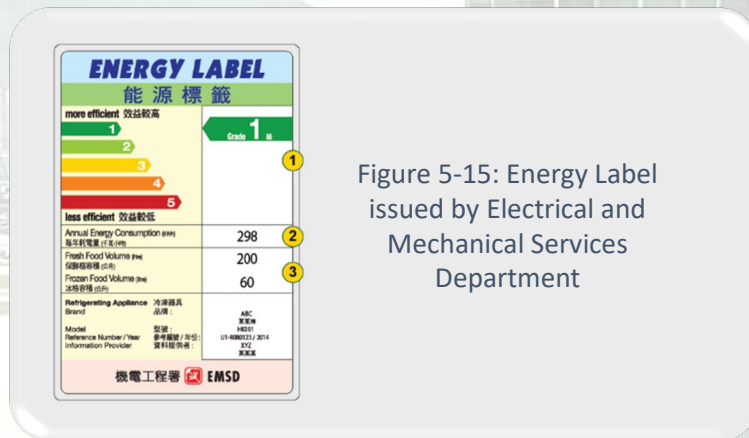


Figure 5-15: Energy Label issued by Electrical and Mechanical Services Department

- Choosing green products such as refillable ball pens, mechanical pencils and recyclable laser printer cartridges;
- Reviewing the operational need against monthly supply items regularly, particularly for those items with expiry dates;
- Avoid using items that are environmentally unfriendly, for example, correction fluid and batteries containing mercury;
- Incorporating terms requesting Contractor to follow green guidelines in new cleansing contract; and
- Following the general guidelines on matters relating to purchase and disposal of regulated electrical equipment (REE), e.g. air conditioner, refrigerator, computer and printer, etc.

During procurement, we recommend the following green measures to the suppliers for their preparation of tenders and performing the contract:-

- All documents printing on both sides and on recycled paper, avoiding paper that exceeds 80 gsm;
- Avoiding use of plastic laminates, glossy covers or double covers as far as possible;
- Using single line spacing and avoiding excessive space in the margins and in between paragraphs;
- Minimizing the use of packaging material; and
- For those carton boxes used for packing, made from 100% recovered fibre is preferred, given that it is strong enough for storage, stacking and transit.

Electric Vehicles

Electric vehicles are being used more frequently in Hong Kong to reduce the city's air pollution. Since 2013, CAD has started replacing its fuel-propelled saloon vehicles with electric ones. Currently, out of our current fleet of six saloon vehicles, five of them are electric vehicles. In order to encourage on-site service contractors to use electric vehicles when delivering service to the Department, CAD has set up enough charging facilities in CAD Headquarters and outstations. The contractors have also been encouraged to replace their fleet with electric vehicles.



Figure 5-16: Electric vehicles in CAD

Training and Communication

Environmental Management Committee

The Departmental Green Manager served as the Chairman of the Environmental Management Committee (EMC), which was comprised of representatives from each division to encourage environmentally conscious management within the Department and to recommend environmental goals, policy, objectives, and targets. The Committee is convened to discuss green ideas, raise staff awareness, observe and report on the implementation of green measures in order to accomplish the environmental protection targets.

Appointment of Green Managers and Energy Wardens

To oversee and coordinate divisional green management issues, each division has designated an officer as the Green Manager. Additionally, Energy Wardens were appointed to encourage and remind personnel to follow daily energy-saving and green housekeeping practices in the workplace. There were 37 Energy Wardens in total for CAD Headquarters, ATCX, and BATCX in 2022 and they received regular briefings in order to let them acquire relevant knowledge.

Green Tips to all CAD Staff

CAD has established a Green Corner in the CAD Information Sharing Portal. It acts as a platform for dissemination of environmental management guidelines and green advice among CAD staff, including circulars and pamphlets on waste prevention techniques in the workplace and energy-saving measures. The relevant information would also be re-circulated to staff by electric means regularly. Divisions were encouraged to display the green advice and housekeeping measures at prominent locations of the office.

Training for New Recruits

Since 2017, CAD has incorporated an introduction to green management into the orientation programme for new recruits when they joined the Department. This would ensure their grasp of and adherence to departmental green policies and practices.

Application of Technology in Enhancing Energy Efficiency

Application of Artificial Intelligence (AI) in Energy Optimization System (EOS)

CAD has been exploring ways to enhance the most energy-consuming component of electricity resources – the air conditioning system. Energy Optimisation System (EOS) was adopted to optimize the control of the central air conditioning system. After some years of implementation, AI features were added to upgrade the EOS into AI-EOS to drive further energy efficiency.

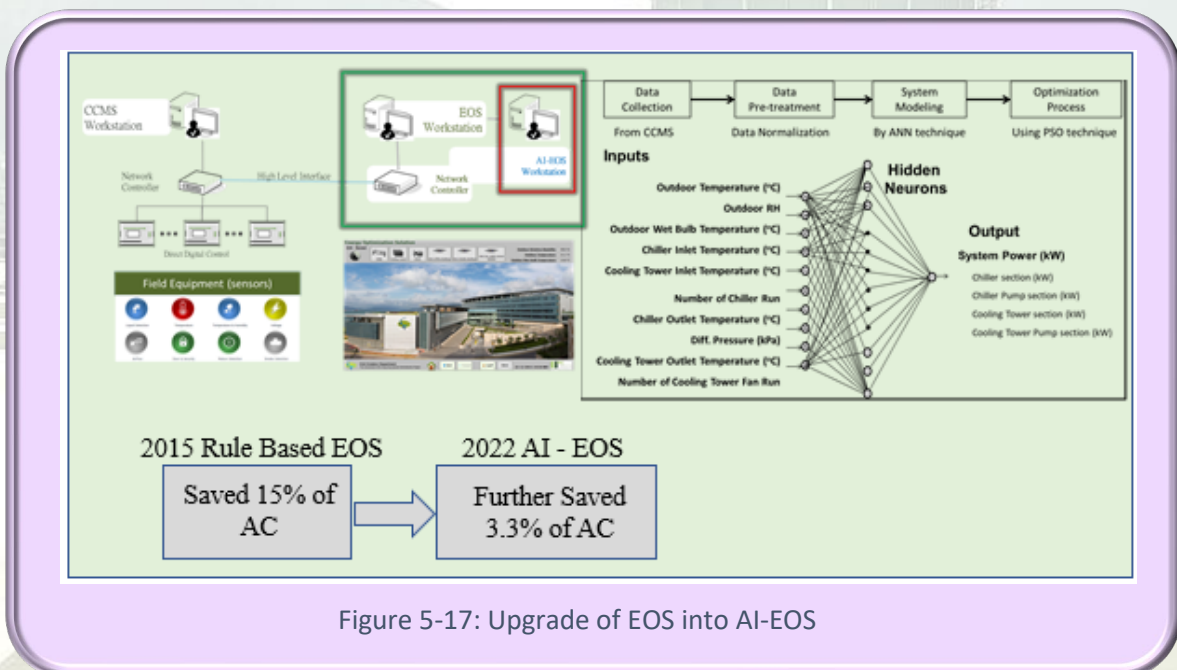


Figure 5-17: Upgrade of EOS into AI-EOS

Unlike EOS with rule-based algorithm, this technology adopts neural network, with different input operation parameters to continuously learn and optimize chiller operation efficiency for energy saving.

The application of AI-EOS has provided an effective means to enhance energy efficiency and at the same time to reduce carbon emission for central air conditioning systems which are widely used in headquarters and commercial buildings. As a result, an extra 3.3 % reduction in the annual energy consumption from chiller plant operation was achieved in 2022.

Recognition

Indoor Air Quality

We support the commitments under the Clean Air Charter. As mentioned in the earlier chapters, we have been implementing measures to lessen emissions from our daily operations.

In order to keep track of the indoor air quality condition, the Indoor Air Quality (IAQ) of CAD facilities has continued to be evaluated yearly. The CAD Headquarters, the ATCX and the BATCX received the "Excellent Class" IAQ Certificate in 2022.



Figure 5-18: The IAQ Certificates obtained in 2022

Hong Kong Awards for Environmental Excellence

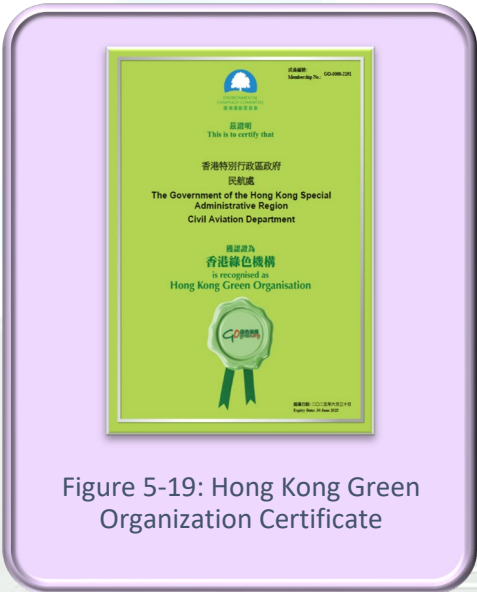


Figure 5-19: Hong Kong Green Organization Certificate

The goal of the Hong Kong Awards for Environmental Excellence (HKAEE) is to inspire organizations to implement environmental management, measure their adherence to best practices within their sectors; and recognize and applaud the achievements of organizations with excellent performance.

CAD took part in the 2022 HKAEE under the Public and Community Services Sector, demonstrated our commitment to green leadership, environmental

communication and training, continual improvement management, and promotion and implementation of a range of environmental initiatives. As a result of our efforts, CAD has been recognized as a Hong Kong Green Organization.

6 | Views and Suggestions

CAD Environmental Report in the previous years can be found in the CAD website (https://www.cad.gov.hk/english/environmental_reports.html). We welcome comments and feedback from readers so that we can identify ways for improvements. You can provide your views and suggestions to us by the following means: -

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