

# Shaping our future impacts, today

2023

Sustainability  
Report


# Customers

## Overview

Areas of stakeholder interest	Relevant sustainability agenda
<ul style="list-style-type: none"> <li>• Customer portfolio</li> <li>• Access to reliable energy</li> <li>• Asset management</li> <li>• Energy services and solutions</li> <li>• Customer privacy</li> <li>• Customer satisfaction</li> <li>• Security management</li> <li>• Physical security</li> <li>• Cyber security</li> <li>• Emergency and crisis management</li> </ul>	<p><b>Energy growth opportunities</b></p> <ul style="list-style-type: none"> <li>• Creating new revenue streams as other sectors electrify</li> </ul> <p><b>Energy security and reliability</b></p> <ul style="list-style-type: none"> <li>• Providing customers with reliable and reasonably-priced energy</li> </ul> <p><b>Business resilience</b></p> <ul style="list-style-type: none"> <li>• Reinforcing cyber resilience and data protection</li> </ul>
<b>Outcome for stakeholders</b>	



### Achieve 100% smart meters installation for CLP Power's residential and small-to-medium enterprise (SME) customers by 2025




Implemented Demand Response programmes, saving **410,000 kWh** at the peak time for electric use during summer

Provided customers with a **suite of energy decarbonisation services and solutions**





**Signed new Memorandums of Understanding (MoUs)** with Link Asset Management Limited and Chinachem Group

CLP Power maintained world-class supply reliability of over **99.999%**



Since 2018, connected smart meters for around **80%** of CLP Power's residential and SME customers



## Customer portfolio

CLP operates retail businesses in Hong Kong and Australia, each characterised by distinct market structures, regulatory requirements, electricity demand, customer preferences and cultural norms. In 2023, the number of customer accounts in residential, commercial and infrastructure and public service sectors increased but decreased in the manufacturing sector. However, there was an overall increase in the commercial and industrial (C&I) sectors.

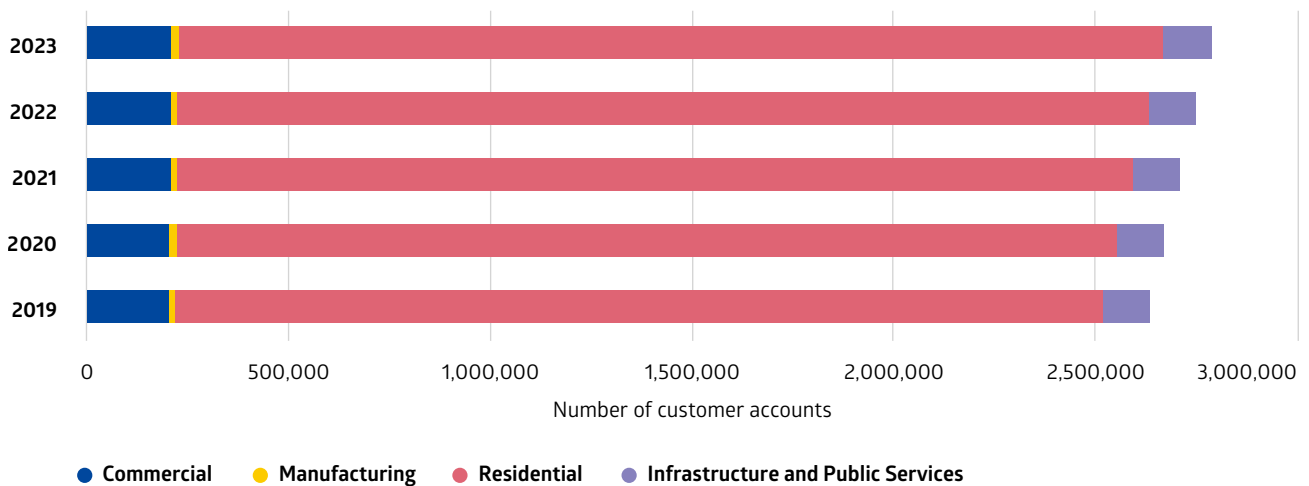
SASB reference: IF-EU-000.A; GRI reference: EU3

CLP Power is the sole electricity provider for Kowloon, the New Territories and most of the outlying islands in Hong Kong. It serves close to 2.8 million customers and approximately 80% of Hong Kong’s households. Total electricity sold in 2023 was 35,392GWh.

Despite its status as a mature market, Hong Kong continues to experience growing demand for electricity. This is largely being driven by territory-wide development and infrastructure projects, as well as new local railway infrastructure projects. Hong Kong is also being targeted as a prime location for energy-intensive data centres, so there is a need to ensure highly reliable power supplies are available to support the development of the data centre industry.

### Hong Kong customer breakdown

**i** The number of customer accounts has continued to grow gradually over the last five years, mainly from the residential sector.



Hong Kong customer breakdown (number of customer accounts)	2023	2022	2021	2020	2019
Commercial	214,616	212,251	210,821	208,150	206,792
Manufacturing	16,923	17,191	17,427	17,540	17,575
Residential	2,439,557	2,407,225	2,369,217	2,333,901	2,301,200
Infrastructure and Public Services	118,548	115,404	113,956	112,245	110,841

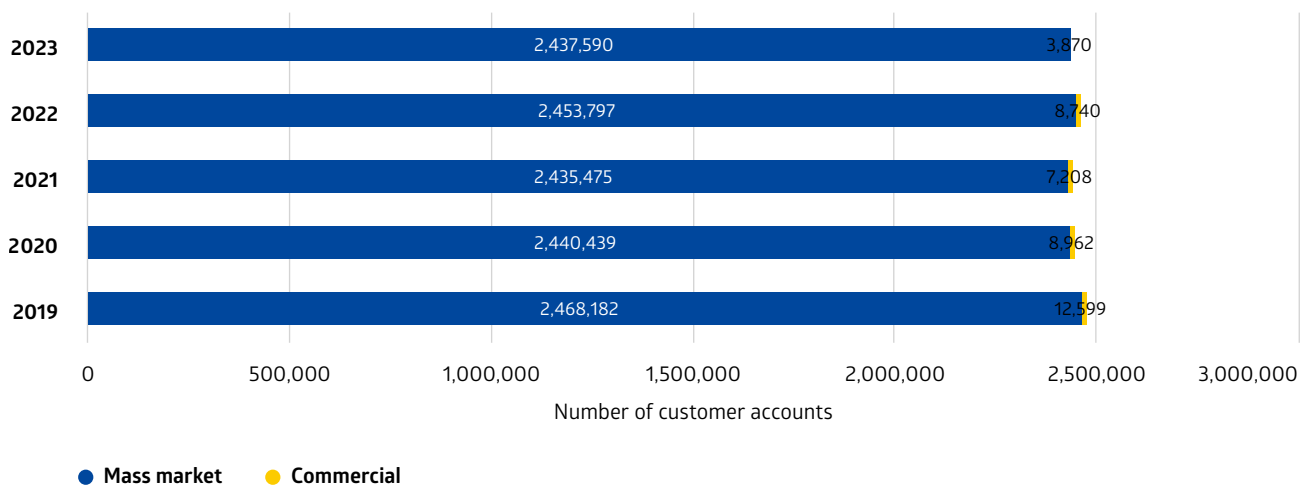
EnergyAustralia operates as a retail energy provider, selling electricity and gas to customers in New South Wales, Victoria, South Australia, the Australian Capital Territory and Queensland (electricity only). It is among approximately 30 retailers active in the key markets of New South

Wales and Victoria. Commercial accounts declined the most, however, this was largely due to a reclassification of several counterparties into mass market figures. This did not affect profitability with the Commercial and Industrial team posting a record contribution.

### Australian customer breakdown



In 2023, total customer accounts declined by 0.8% or around 20,000 accounts. Heavy competitor discounting of Default Market Offers in different NEM states at various points in the year was more prominent compared with previous years. The number of commercial customers in 2022 has been revised due to classification updates.



## Access to reliable energy

### Our approach

High availability and reliability of the electricity supply are critical for the business operations of CLP's corporate customers and the daily lives of the Group's retail customers. Availability and reliability are therefore two key performance metrics that track CLP's ability to meet its commitments to customers.

GRI reference: EU10

### Goals and targets

CLP calculates the availability factor for its generation assets in terms of the amount of time that the asset is able to produce full load equivalent electricity over a period, divided by the amount of time in that period. Typical values range from 70% to 90%. CLP aims to maintain an availability range of 90% and above for its newer assets.

Targets for each asset are set annually and are included in the business plan. Performance is reported on a weekly basis to senior management. Any significant variances in performance are analysed and appropriate corrective action taken.

### Strategies and procedures

While CLP has generation businesses across the Asia-Pacific region, Hong Kong is the only location where its business is vertically integrated, so that it provides generation, transmission and distribution of power as well as retail services. CLP Power is regulated by the Hong Kong SAR Government under the [Scheme of Control \(SoC\) Agreement](#), which requires the Company to provide a sufficient and reliable electricity supply at a reasonable price and in an environmentally responsible manner.

In Hong Kong, CLP Power employs various measures to maintain high supply availability and high reliability. These include:

- Regularly upgrading its generation and network facilities to meet increasing electricity demand;
- Maintaining sufficient generating capacity to meet forecast demand as well as to cope with both planned and unforeseen outages;
- Developing an additional and economically viable gas supply option that strengthens energy security by providing access to competitive gas supplies from global markets using [Floating Storage and Regasification Unit \(FSRU\)](#) technology;

- Adopting advanced technology (such as smart grid technology) and implementing demand-side management measures to reduce growth in demand and optimise the utilisation of existing assets;
- Moving to condition-based maintenance by monitoring and timely assessing the condition of critical power supply equipment in order to formulate effective preventive maintenance plans. At the same time, CLP also makes reference to international standards and industry good practices to continuously enhance its asset performance;
- Expanding the use of instruments for conducting online monitoring of critical power supply equipment so as to analyse the health status of power supply equipment and to customise appropriate maintenance plans;
- Actively exploring various innovative technologies that could assist CLP's routine inspection and maintenance work, such as robots, aerial cameras, and big data to optimise resources and enhance work efficiency;
- Developing a well-trained and competent workforce for operating and maintaining the system.

In addition to recruiting professionals from the market, CLP also trains young engineering talents through systematic training schemes. In particular, CLP has established the CLP Power Academy since 2017 to collaborate with overseas and local tertiary institutions to train electrical and mechanical engineering professionals for building a healthy succession pipeline for the power industry.

To guarantee the availability and dependability of its power supply, CLP is working to strengthen its technological capabilities and enhance organisational development across the Group. Departments collaborate to design for an integrated management framework by sharing insights gained from regional experiences. This procedure is lowering the Group's overall operations risk and contributing to improved portfolio management.

A number of innovative projects to promote availability and reliability are currently being pursued in the areas of robotics, asset health, video analytics, energy storage, building information modelling and automation. These projects have been initiated by third parties and CLP's own engineers, who develop innovations based on their own operational experience.

### Transmission network

To keep pace with the territorial development of Hong Kong, CLP conducts an annual review of future transmission network developments. This involves studying the latest system maximum demand forecast, as well as reviewing area load growth, infrastructure development and generation development, and planning accordingly.

Annual maintenance and improvement programmes have been developed for major transmission assets based on an analysis of current conditions along with the performance of the assets, levels of investment, and risk.

The power supply network is highly vulnerable to damage from extreme climate events, which could potentially cause service disruptions. In response, CLP is continuing to introduce a range of measures to improve the reliability of its power supply network.

[Find out more in the CLP's Climate Vision 2050: Powering an orderly transition](#)

In India, Apraava Energy carries out regular predictive and corrective maintenance of its transmission assets. This includes pre-emptive check-ups and assessments on operational clearances, to ensure that its assets are well structured and maintained with proper setup, hardware and security. Frequent site patrols are carried out when conducting assessments for landscape and assets, and the assessment results are used to identify defects and develop plans for shutdowns if needed.

Apraava Energy utilises a mobile application for the real-time tracking of site patrols, which has shortened the response time needed for making rectifications. The site patrol team uses thermographic cameras to help locate defects through heat mapping.

Plans are in place to use drones for site patrols, though ground teams will be retained at strategic locations to ensure a speedy response to any damage to critical assets.

### Initiatives and progress

In Hong Kong, CLP maintained its world-class supply reliability percentage of over 99.999%, surpassing the ratings of other major international cities such as London, New York and Sydney.

SASB reference: IF-EU-240a.3, IF-EU-240a.4, IF-EU-550a.2, IF-EU-000.C; GRI reference: 203-1, EU4, EU12, EU26, EU27, EU28, EU29, EU30

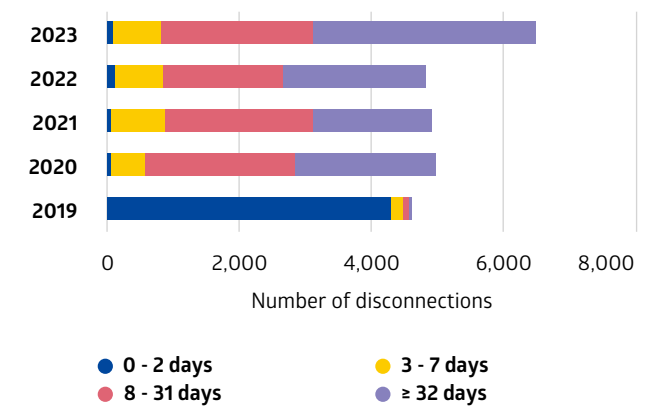
CLP's transmission and distribution network in Hong Kong serves approximately 80% of the city's overall population. At the end of 2023, CLP Power had approximately 16,920 km of circuits at medium or higher voltage. In addition, there were 241 primary and 15,539 secondary substations operating in Hong Kong. As of 2023, the average network loss for the past five years was 3.44%, slightly lower than the five-year average of 3.51% reported in 2022.

CLP uses a set of universally recognised supply reliability performance indicators from the Institute of Electrical and Electronics Engineers standard (IEEE 1366-2012) to monitor its system performance. It reports CLP's performance against these indicators annually to the Hong Kong Government.

In India, Apraava Energy achieved 100% availability for its Satpura Transco Private Limited asset and 99.86% availability for its Kohima-Mariani Transmission Limited asset for transmission of electricity to customers in 2023.

### Disconnections for CLP Power Hong Kong Limited

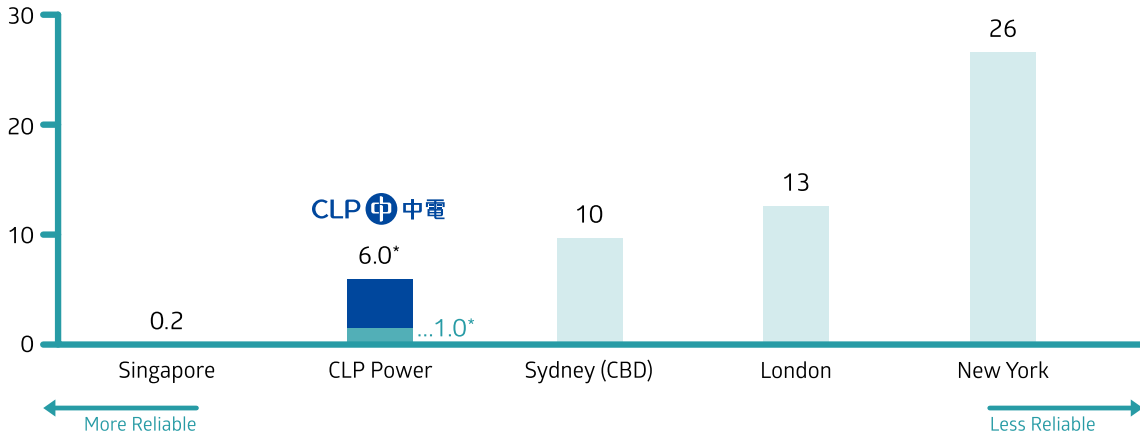
The total number of disconnections<sup>1,2</sup> for Hong Kong customers<sup>3</sup> was 6,520 in 2023, representing an increase of 34% compared to 2022 with 4,859 cases.



- Total number refers to the disconnection orders completed due to heavily overdue payments.
- Days refers to the number of days required from the issuance of the disconnection orders to the completion of the disconnection orders.
- Customers include residential and commercial & industrial customers in Hong Kong.

### Comparison of reliability levels between cities

#### Unplanned customer minutes lost per year



Remarks:

- \*2021-2023 average for CLP Power was 6.0 minutes; Taking out the impact due to Major Event Day (such as cable bridge fire incident in Yuen Long in 2022 and Super Typhoon Saola in 2023), the three-year average was 1.0 minute.
- 2020-2022 average for all other cities.
- There are no overhead lines in Singapore.

#### Supply reliability performance indicators and results for CLP Power

Indicator	Result
<b>System Average Interruption Frequency Index (SAIFI)</b>	
The average number of supply interruptions for each customer served. Both planned and unplanned interruptions are included.	<ul style="list-style-type: none"> <li>• The three-year average SAIFI (2021–2023) was 0.27, meaning customers experienced a power interruption approximately once in four years during this period. This remained the same as last year's three-year rolling average.</li> </ul>
<b>System Average Interruption Duration Index (SAIDI)</b>	
The average duration of interruptions each customer may encounter in a given year.	<ul style="list-style-type: none"> <li>• The three-year average SAIDI (2021–2023) was 0.29 hours, including both planned and unplanned interruptions. This was slightly lower than last year's three-year rolling average of 0.30.</li> </ul>
<b>Unplanned Customer Minutes Lost (Unplanned CML)</b>	
The average duration of unplanned power interruptions per customer in a given year. These outages occur without prior notice, and happen as a result of various factors such as weather events, third-party damage to the network and equipment faults.	<ul style="list-style-type: none"> <li>• The three-year rolling average (2021–2023) of unplanned CML was about 6.0 minutes, which was slightly higher than the 5.7 minutes recorded last year. CLP Power maintains a world-class supply reliability of over 99.999% in Hong Kong, which is higher than other major international cities as shown in the diagram above.</li> </ul>

## Asset management

### Our approach

Asset management refers to how CLP manages and utilises its assets to provide reliable, reasonably priced and low-carbon electricity services to customers and communities. Careful planning during the project development stage plays a crucial role in determining the operational efficiency or capacity factor range of an asset over its entire lifespan. Projects involving a major asset overhaul must undergo stringent technical and financial scrutiny before commencement.

### Monitoring and follow-up

CLP's customised Group Operations Information System (GOIS) is used to compile operational data on adherence to the Generator Operational Performance Data Standard. It features built-in data collection, a data compilation and approval sequence, and a dashboard and reporting functions. Relevant staff at the asset, regional and Group levels are responsible for upholding the standard.

### Continuous improvement

CLP is constantly looking for ways to improve the operational efficiency of its assets so that they remain compliant with the increasingly stringent regulations on emissions and fuel efficiency in certain jurisdictions. In addition, improvement opportunities continue to arise from innovation and optimisation, particularly through the leveraging of data analytics.

### Initiatives and progress

In 2023, the consumption of coal and gas for power generation decreased by 16.9% and 3.3% respectively compared with 2022. Accordingly, electricity sent out from coal and gas assets decreased by 16.9% and 1.6% respectively (on an equity plus long-term capacity and energy purchase basis).

SASB Reference: IF-EU-000.D; GRI reference: 301-1, 302-1, 302-3, 302-4, 302-5, 303-5, 305-1, 305-2, EU11

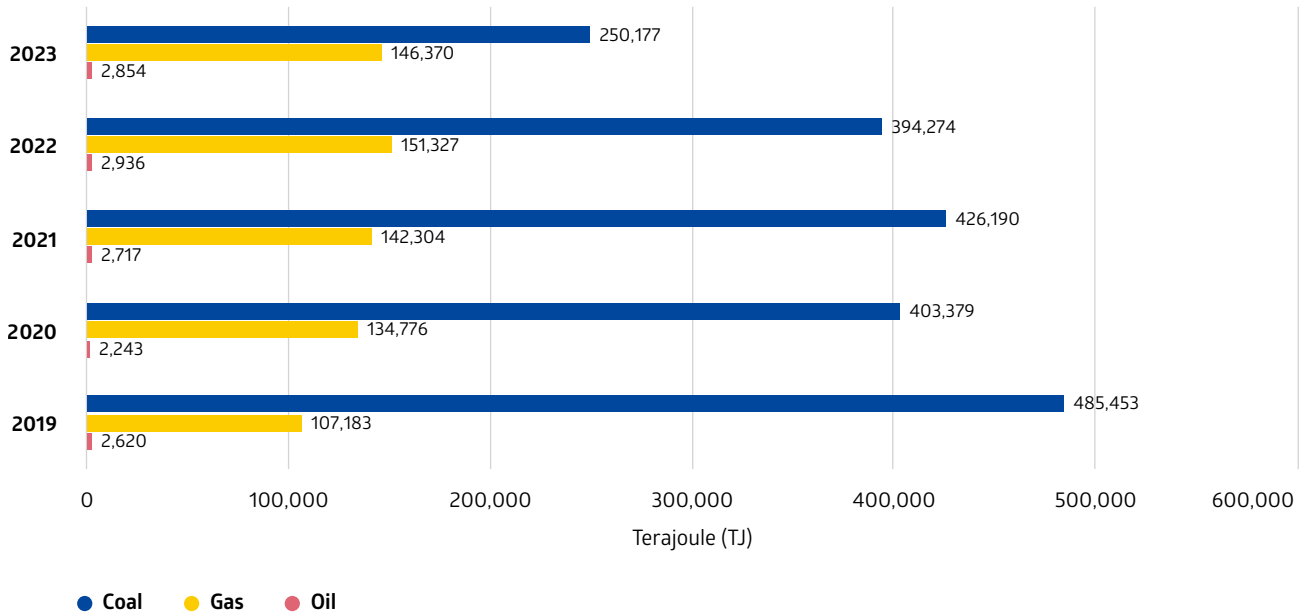
CLP reports the annual operating performance of those of its generation assets that fall within the [reporting scope](#). The asset performance metrics include availability, generation sent out, thermal efficiency, and energy intensity.

[Download CLP's asset performance statistics](#) 



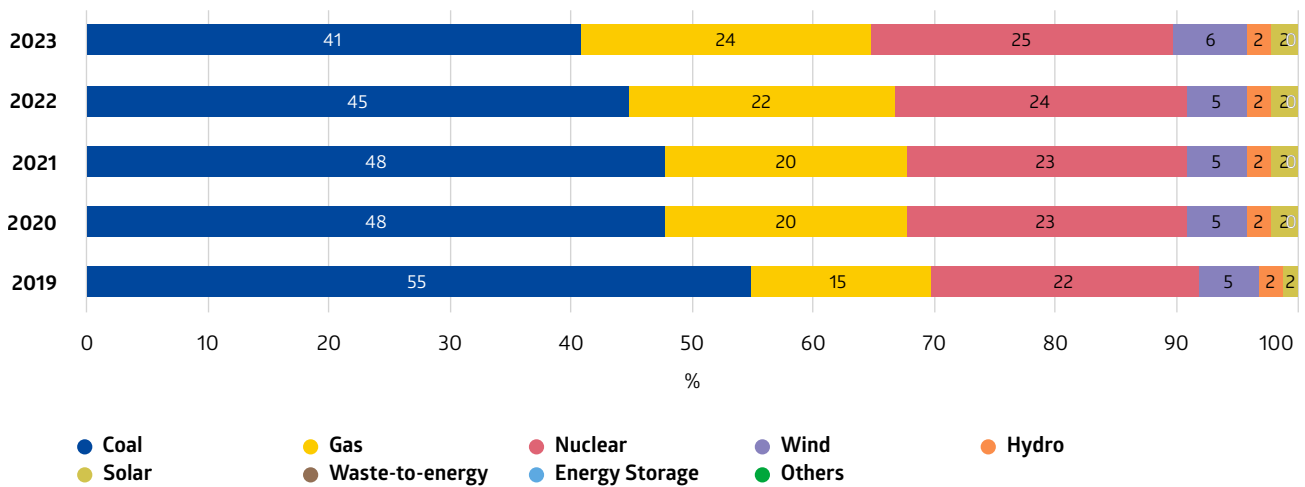
### Annual Fuel Consumed for Power Generation

**i** Compared to 2022, there was an overall decrease in fossil fuel consumption for power generation in 2023, with significant reduction in coal consumption due to divestment in Fangchenggang (FCG) Power station and also due to the exclusion of India assets, including coal-fired Jhajjar power, from operational control.



### Energy Sent Out by Asset Type<sup>1</sup> (on an equity plus long-term capacity and energy purchase basis)

**i** CLP's energy sent out (on an equity plus long-term capacity and energy purchase basis) from all asset types decreased to 79,512 GWh in 2023 compared to 87,360 GWh in 2022. This decrease in sent out was primarily due to divestment of Fangchenggang and 10% of equity from Apraava Energy, as well as lower utilisation of Tallawarra and a planned outage at Daya Bay. This resulted in a reduction of energy sent out from coal assets down to 41% (vs. 45% in 2022), while energy sent out from gas increased to 24% and sent out from CLP's non-carbon energy portfolio increased to 35%.



<sup>1</sup> Numbers have been subject to rounding. Any discrepancies between the total shown and the sum of the amounts listed are due to rounding.

## Energy services and solutions

### Our approach

CLP actively engages with its customers by reaching out with a suite of energy services and solutions designed to meet their evolving needs in the changing market landscape. CLP is also leveraging its digital capabilities to apply new technologies that are driving behavioural changes in customers' habits of energy consumption.

### Strategy and procedures

Drawing on its long expertise in the power industry, CLP is implementing various initiatives to encourage residential and business customers and the community at large to use energy more efficiently and contribute to environmental protection. CLP is actively promoting energy conservation:

- Equipping customers with cutting-edge tools and technical assistance;
- Facilitating customers to unlock greater energy efficiency potential;
- Offering customers valuable energy insights and practical tips for energy conservation ; and
- Educating the public through awareness campaigns and informative programmes

### Goals and targets

The CLP Power Customer Service Quality Policy includes a commitment to support customers in using CLP products and services more efficiently and effectively.

In Hong Kong, CLP Power has worked closely with the Hong Kong SAR Government on the Development Plan, which covers the second five-year period under the current [Scheme of Control \(SoC\) Agreement](#). The Plan includes:

1. **Performance targets:** Under the current SoC Agreement, targets have been set (e.g. energy saved annually, number of buildings or customers supported, etc.) in order to drive the performance of the CLP Eco Building Fund, the CLP Electrical Equipment Upgrade Scheme and energy audits.
2. **Peak Demand Management:** This enables commercial and industrial customers to help lower the overall system demand, reducing the need for investment in new generation units in the long term. The programme leverages artificial intelligence (AI), developed in partnership with Autogrid, to help lower demand. The target is to achieve a reduction of up to 60MW from the demand peak.
3. **A new five-year energy-saving target:** CLP Power must achieve energy savings of at least 4% on the basis of average annual sales within a five-year period in order to earn incentives under the SoC Agreement. Further incentives will be earned if energy savings reach 5%.

[Read more on CLP Power's SoC Agreement performance](#) 



## Initiatives and progress

CLP Power has conducted the Interim Review of the 15-year SoC Agreement with the Hong Kong SAR Government.

A greater number of CLP Power customers have enrolled in the Feed-in Tariff (FiT) Scheme, which encourages the development of renewable energy in Hong Kong. By the end of 2023, 376MW of renewable energy capacity was approved under the Scheme, amounting to the annual electricity usage of 89,700 residential customers.

In addition to its SoC Agreement obligations, CLP has harnessed its innovation abilities and digital capability to develop a range of customer-facing solutions and energy services.

GRI reference: 2-6, 302-5

CLP's Group Ventures & Research functions integrate the venture investing, ecosystem activities as well as research capabilities into a single team. This enables a more systematic and synergistic process of formulating strategic focus and long-term vision, extracting strategic knowledge and value, and facilitating the cross-pollination of strategic insights across the CLP Group.

For its venture investing activities, CLP seeks opportunities that will enhance its core business and offer long term growth possibilities.

CLP has a global open innovation platform that sources solutions to relieve pain points, achieve operational excellence, build new capabilities, and develop business potential. CLP actively participates in accelerator programmes such as Free Electrons and the Phoenix scouting programme, working with start-ups in China and around the world to explore new business models and pilot and deliver cutting-edge technologies and solutions. These efforts have also helped CLP develop a suite of end-to-end products and services along the electric utilities value chain, summarised in the tables below. The Group has over 354 full time innovation positions and has spent over HK\$ 170 million in innovation projects this year.

CLP's research work starts with identifying emerging ideas and technologies that could critically impact the business in the long term. Its research activities leverage partnerships with international associations, research institutes and universities.



Case Study 

## AutoGrid enables CLP's Demand Response programme to set a global industry standard

CLP's Group Ventures & Research team continues to play a unique role and make key strategic venture investments to derive tangible strategic value for CLP. CLP's venture investments have helped CLP to achieve different milestones.

CLP's venture investments are bringing direct value to CLP's operations. One example is CLP's implementation of AutoGrid for Peak Demand Response, one of the world's largest Demand Response programmes. Since 2020, CLP Power has invited residential customers with smart meters to make slight adjustments to their consumption behaviour and reduce their energy use during peak demand periods on hot summer days. In 2023, 950,000 households were invited to join the programme, and around 70% of these households saved a total of 410,000 kilowatt hours (kWh) of electricity over a four-hour peak time, which is equivalent to a reduction of 160 tonnes of carbon emissions.

CLP's venture investments are also unlocking new lines of business. In 2023, CLP sponsored a technology pilot with Hydro X, an Israeli hydrogen transportation and storage technology company, to successfully demonstrate that the Hydro X solution can safely store and extract hydrogen at high quality as an initial step to scale up its technology platform. In 2021, Hydro X received an investment from CLP-OSEG, CLP's joint venture with the Other Sources Energy Group in Israel. CLP is committed to supporting its ecosystem partners in developing decarbonisation technology such as hydrogen technology.

The CLP Digital team has a wide competence in digital services and solutions and data services. The Digital team is tasked with approaching issues and rethinking operations digitally, particularly in the areas of generation, grid, backend operations, sustainability, customer engagement, and achieving a decarbonised customer base.

## Improving energy efficiency

### Products and services

### Updates in 2023



#### Cooling-as-a-Service (CaaS)

Cooling systems are usually a building's largest source of power consumption. CLP provides targeted solutions such as chiller retrofitting and replacement services, CaaS and district cooling solutions to enhance energy efficiency and reduce carbon emissions of building complexes. Under the Build-Own-Operate-model, CLPe will fund, design, construct, operate and maintain the new cooling system to enhance energy efficiency and reduce carbon emissions of building complexes.

- In January 2023, CLPe signed an agreement with **Shui On Group** to install a new cooling system at Shui On Centre in Hong Kong to enhance the energy efficiency of this Grade A office building. The new system is expected to reduce electricity consumption by more than 30% annually.
- In February 2023, CLPe collaborated with **Chinachem Group** to build a new water-cooled air conditioning system at Nina Tower. The chiller plants together with the PlantPro system will reduce the electricity consumption by over 50%, equivalent to a reduction of 7,000 tonnes of carbon emissions a year.
- In December 2023, CLPe secured a Cooling-as-a-Service agreement with **Henderson Land** for the enhancement of the existing chiller plant at Flora Plaza. The upgraded chiller plant is anticipated to reduce electricity consumption by over 50% compared to the existing condenserless chiller system, resulting in an annual reduction of 200 tonnes of carbon emissions.



#### Solar-as-a-Service (SaaS)

Solar photovoltaic (PV) systems convert solar energy into electricity to support energy demand, and allow customers to feed electricity back into the grid.

- On 31 August 2023, a ceremony to celebrate the connection of the distributed solar PV project to the grid was held at **MTR Shenzhen**, which marked the readiness of the 1.66MWp solar PV system for power generation. It is estimated that the system, which is installed on the aluminium alloy roof of the car compartment inspection and washing depot, will generate 1,800MWh of clean energy and eliminate 948 tonnes of carbon emissions annually.
- CLPe completed the solar systems for **LINK Properties Limited** in 14 locations and will further explore opportunities for solar projects in other LINK properties to support the company's sustainability target.
- In support of the government's sustainable development plan, CLPe completed two floating solar projects for government premises at Ha Mei San Tsuen and Chau Tau.



#### Battery Energy Storage System (BESS) as a Service

Tailor-made BESS solutions can greatly improve business performance by providing safe, efficient and secure energy storage. CLPe provides a one-stop design, build and implementation service, technical support and maintenance work, collaborating with its customers to develop fully integrated energy storage solutions that meet their specific needs.

- In 2023, CLPe deployed over 30 Battery Energy Storage Systems across construction sites operated by prominent construction companies in Hong Kong. The replacement of conventional diesel generators resulted in a reduction of over 2,500 tonnes or a 75% reduction in carbon emissions compared to those created by diesel generators. These BESS installations, powered by advanced lithium-ion batteries, minimise the risk of system instability during maintenance while operating at significantly lower noise levels. They exemplify CLP's commitment to sustainability and safer construction practices.

## Improving energy efficiency

Products and services	Updates in 2023
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### Energy efficiency improvements for buildings

Buildings contribute significantly to Hong Kong's energy demand. CLP offers various subsidies to support customers undertaking energy-saving retrofitting works.

- CLP **Eco Building Fund**: The fund provides subsidies for energy efficiency improvement works for residential, commercial and industrial buildings.
- **CLP Electrical Equipment Upgrade Scheme**: This scheme for business customers provides subsidies to customers, especially SMEs, to replace or upgrade their lighting and air-conditioners to more energy-efficient models.

- The CLP Eco Building Fund provides HK\$100 million a year to subsidise improvement works for a target number of 400 residential blocks and C&I buildings that will enhance the energy efficiency of their communal areas. The initiative aims to save 48GWh of energy annually.
- In 2023, customers saved around 50GWh of electricity from over 700 buildings with the support of the Eco Building Fund.
- Since the launch of the Electrical Equipment Upgrade Scheme in 2019, over HK\$110 million in subsidies has been offered to C&I customers for replacing or upgrading their electrical equipment to more energy-efficient models.



### Energy efficiency improvements for businesses

CLP Power works in partnership with institutions to offer flexible and innovative financing solutions to businesses.

- Building on previous collaboration, CLP Power and DBS Bank (Hong Kong) Limited introduced a new "**SME Low-carbon Rewards**" programme in 2023. It offers subsidies to eligible CLP Power business customers for purchasing CLP Renewable Energy Certificates, along with a series of privilege banking offers.
- In 2023, **ESR Group Limited (ESR)** closed the first sustainability-linked loan in Hong Kong for a brown field data centre project with support from CLP Power.
- **Far East Consortium International Limited (FEC)** obtained its first five-year sustainability-linked loan from a bank with the support of CLP Power. The loan will help FEC improve its energy conservation performance and further reduce its carbon emissions, thereby contributing to the sustainable development of its hotel business in Hong Kong.



### Peak demand management

To facilitate a more sustainable electricity supply, CLP works with customers to manage electricity demand and incentivise reduced consumption during periods of peak demand. Initiatives include:

- Demand Response programmes are offered to commercial, industrial and selected residential customers with smart meters in Hong Kong to lower overall system demand, reducing the need to invest in new generation units.
- EnergyAustralia's **PowerResponse** includes a residential demand response programme and a contracted demand response programme for commercial customers.

- In Hong Kong, peak power demand was reduced by more than 180MW following the activation of CLP Power's demand response programmes on 26 July 2023, when electricity demand had reached a new peak of 7,452MW. The programme incentivised over 750,000 commercial, industrial and residential customers of CLP Power to reduce consumption.
- EnergyAustralia's PowerResponse has a current contracted capacity of 250MW, involving over 300,000 customers.

## Improving energy efficiency

### Products and services

### Updates in 2023



#### Energy management technology

Innovations in technology are continuing to drive improvements in energy management and efficiency. CLP connects customers with a host of solutions and products designed to monitor, optimise and automate their energy usage and consumption patterns:

- Launched in 2019, CLP's **Smart Energy Connect (SEC)**'s solutions cover the entire value chain from energy supply to energy consumption, and include innovations for carbon-free energy, grid modernisation, power storage, EVs, building energy management and carbon offsetting.
- A **mass rollout of smart meters** to all CLP Power customers, from 2018 to 2025, is supporting Hong Kong's Smart City transformation.

- CLPe has introduced **PlantPRO**, an AI-based chiller plant optimisation solution, to 15 sites across Hong Kong. In 2023, PlantPRO achieved an estimated reduction in carbon emissions of over 500 tonnes. Additionally, the first PlantPRO data centre project was successfully completed in 2023. Given the escalating energy consumption within the data centre sector in Hong Kong, the deployment of PlantPRO promises to deliver substantial energy savings as well as enhanced reliability.

CLPe has partnered with **Hong Kong Air Cargo Terminals Limited (HACTL)** to elevate that company's energy monitoring capabilities, installing over 500 energy sensors in HACTL's offices on Lantau Island. The CLP Smart Sensor Automation product has also been implemented to provide this client with comprehensive visibility into its energy consumption, since visibility is the first step towards energy conservation and carbon reduction.

The CLP Digital team is collaborating with **Neuron** to conduct a trial of their digital twin and energy optimisation product at the current CLP Headquarters in Hung Hom. This initiative serves as the blueprint for future CLP buildings, revolutionising the way CLP operates. By seamlessly integrating digital technologies into buildings, it is unlocking advances in areas such as thermal comfort and energy efficiency.

- Since 2018, CLP Power has connected 2.23 million smart meters for around 80% of its residential and SME customers in an effort to promote low-carbon living and further improve the safety and dependability of the power supply. CLP Power expects to replace all its residential and SME customers' conventional electricity meters with smart meters by 2025.




#### Energy audits

CLP Power provides free energy audits and various consulting services to C&I customers to help them understand their energy needs and identify opportunities to reduce their energy use and hence their operating costs.

- In 2023, CLP Power exceeded the annual total electricity saved target of 48GWh and helped C&I customers save around 50GWh of electricity with more than 600 energy audits completed.

## Improving energy efficiency

Products and services	Updates in 2023
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**Energy data and analytics**

CLP provides a variety of energy consumption analysis tools and products to help customers make smarter energy management decisions.

- At EnergyAustralia, [PurchasePro](#) is a self-service web portal which allows business customers to purchase an agreed load progressively rather than commit to a price at a single point in time.
- [Smart Energy Online](#) is an online assessment and management tool for C&I customers in Hong Kong. Similarly, EnergyAustralia's InsightsPro allows its C&I customers to access real-time consumption and cost data to optimise their business's energy usage.


- Approximately one third of EnergyAustralia's C&I customer load is managed by PurchasePro, and over 1,000 EnergyAustralia customers have access to InsightsPro.
- Over 2,500 C&I customers in Hong Kong use Smart Energy Online to manage their energy consumption and improve their energy efficiency.



**Energy label for electrical appliances**

The CP Label provides useful information enabling consumers to identify products that are energy efficient and cost effective.

- CP Label is Hong Kong's first label for electrical appliances to rate energy consumption and selling price. The initiative helps customers choose energy-efficient and cost-effective home appliances, and is raising public awareness of the importance of energy saving and switching to a low-carbon lifestyle.




**Advanced Retro-Commissioning (RCx) Training**

CLP Power offers an advanced RCx training course comprising classroom training and field visits for energy management employees and engineers who already have a basic understanding of RCx.

The RCx training covers advanced topics and techniques such as data analysis, system diagnosis, measurement and verification.

- CLP Power allocated a further HK\$2 million from the CLP Community Energy Saving Fund in 2022 and 2023 to fund a new series of advanced training. Besides offering training to customers, the programme also assisted them in carrying out the energy-saving improvement works required to reduce carbon emissions from their buildings and support Hong Kong's journey towards carbon neutrality. RCx is a systematic and cost-effective energy management solution that allows customers to improve the energy efficiency of their premises by optimising building equipment performance instead of simply replacing equipment.



**24/7 Carbon-free energy (CFE) solutions for corporate customers**

- CFE impact visualisation platform


- To stay abreast of interest from corporates in decarbonising their operations on a 24/7 basis, CLP has developed specialised tools for designing and optimising CFE infrastructure (such as solar and wind power installations) and energy storage to match specific corporate load profiles. CLP has also partnered with Granular Energy, winner of the 2023 Free Electrons programme, to provide customers with an easy-to-use tracking and visualisation platform.

CLP has launched a website dedicated to educating the public about CFE, and commenced a series of blog posts to champion this area.




Using electricity more widely for transport and industry

Products and services	Updates in 2023
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 **Electric-Vehicle-as-a-Service (EVaaS)**

- Electric-Vehicle-as-a-Service (EVaaS) is a value-added service that enables corporate fleet customers to save upfront capital investment and enjoy flexibility in their fleet electrification journey. CLPe will invest, build, operate and maintain EVaaS charging solutions over a period of time at an agreed rate.
- In May 2023, CLPe and **AVIS Hong Kong (AVIS)** launched Hong Kong's first Electric Vehicle as a Service. Fleet operators and businesses in industries ranging from logistics to construction can select EVs from AVIS's wide range of vans and vehicles according to their needs, and CLPe will then customise their charging solutions by funding, procuring, and installing the EV charging facilities they require.
- During the contract period, customers will pay a monthly fee to CLPe which covers AVIS's rental fees and the EV charging service fees, thus, minimising the investment costs, company assets and manpower needed for electrification. Other benefits include 24-hour support services, insurance coverage, car licence fees, and repairs and maintenance of charging facilities and vehicles. A cloud management system and mobile app designed by CLPe enables customers to easily manage their fleets and make adjustments according to their operational needs. This system monitors the real-time use of charging facilities and the charging status of EVs and provides electricity consumption data.

 **Electric vehicle infrastructure**

- CLP Power continues to support green motoring and the electrification of vehicles in Hong Kong – a long-term government policy objective set out in the *Hong Kong Roadmap on Popularisation of Electric Vehicles*. CLP Power extended the free charging service for its EV charging stations until further notice.
- CLP Power's Eco Charge 2.0 EV Power Supply Support service.** In 2016, CLP formed **Smart Charge (HK) Limited**, a joint venture with HKT to provide a one-stop service for EV charging.
- The CLP Charge Point Operator platform and EV driver app were successfully launched in 2023, both of which are instrumental to the electrification of the CLP fleet and the creation of a future business model that includes charging-as-a-service.
- In Australia, EnergyAustralia has outlined plans to support the transport industry with vehicle electrification by working with EV manufacturers, fleet operators and their customers to plan and build the charging infrastructure they need.
- CLP Power continued its efforts to promote green motoring in Hong Kong by providing free EV charging services. In 2023, CLP continued to enhance its charging infrastructure within CLP premises to support greater EV adoption in its fleet.
- From the launch of the Eco Charge 2.0 service in November 2020 up to the end of 2023, CLP Power had completed preliminary power supply capacity assessments for more than 577 applications from owners of private buildings and estate managers, covering over 136,000 parking bays. Professional advice was also provided to the applicants.
- To date, Smart Charge has designed, installed and is currently managing EV charging infrastructure in residential car parks in Hong Kong covering a combined total of almost 10,000 parking bays.
- In 2023, EnergyAustralia reinforced its role as a leader in the electrification of Australia's transport sector. Its unique Green Transport Energy solution, which integrates EV chargers with onsite solar and battery storage, is not only supporting efficient EV charging but is also enhancing sustainability by harnessing renewable energy sources.

Throughout the year, EnergyAustralia actively engaged with EV manufacturers, fleet operators, and customers with a focus on developing and implementing customised infrastructure solutions. A highlight of 2023 was a collaboration with Tropic Wings, North Queensland's largest tours and charter bus operator, involving the replacement of 12 diesel buses with electric ones, each supported by a customised charging solution. EnergyAustralia is responsible for delivering and overseeing the electrification infrastructure in Cairns, with completion expected by mid-2024. The project, valued at A\$10.2 million, includes a A\$4.75 million contribution from the Australian Renewable Energy Agency (ARENA), underscoring its importance for promoting sustainable transport.

## Enabling low-carbon electricity supply

Products and services	Updates in 2023
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### Decentralised renewable energy / rooftop solar

CLP offers feed-in tariffs and rooftop solar for its customers to support the decentralisation of energy and the growth of renewable energy.

- The **Feed-in Tariff (FiT) Scheme** in Hong Kong enables customers to install a solar and/or wind power renewable energy system on their premises and connect the system to the CLP grid to earn FiT payments.
- The Solar Home Bundle is now available to eligible households in NSW in Australia with annual electricity usage of above 6,000 kWh. EnergyAustralia will be launching the Solar Home Bundle in Victoria in early 2024 and are looking at ways to bring this offer to customers in other states.
- Since the commencement of the **FiT Scheme** in mid-2018 to the end of 2023, CLP Power had received over 24,800 applications. Around 96% of the applications, representing a total capacity of around 376MW, have been approved. About 21,100 applications have been completed and connected to the grid to enjoy FiT.
- The FiT Scheme continues to attract customers from various sectors, including business and industry, schools, urban households and village houses.
- The **Solar Home Bundle** was launched as a scale product in September 2021 following the successful trial of the Solar Plus Plan in 2020. EnergyAustralia aims to have more than 1,000 customers on the Solar Plus plan and Solar Home Bundle by the end of 2024 with ambitions for numbers to grow significantly as it is rolled out in other states.



### Corporate Power Purchasing Agreements (PPAs)

Businesses wishing to increase the direct renewable energy available to them may elect to enter Power Purchasing Agreements with CLP. PPAs provide customers with the most credible and efficient clean energy available.

- With increasing market demand, CLP proactively engages with customers in the property sector to support their renewable energy conversion journey. There was continued interest in the direct purchase of renewables whether as annual purchasing or as 24/7 granular matching. This is evidence of positive momentum in the market. CLP leverages expertise in renewable energy assets, battery storage and energy management indicator to support its corporate customers.



### Carbon Credit Website and Carbon calculator

CLP revamped the Carbon Credit websites to promote public education and awareness about carbon offsets.

The user-friendly layout now includes updated and comprehensive information about the carbon market and CLP's carbon credit program.

- CLP refreshed its carbon credit website to educate the market about the appropriate use of carbon credits. The Group is currently working on further enhancements to provide broader education on certificates and their role in decarbonisation journeys.

**Offsetting emission that cannot be otherwise avoided**

Products and services	Updates in 2023
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**Energy attribute certificates (EACs)**

CLP offers a range of EACs to support customers' decarbonisation objectives. In Hong Kong, [Renewable Energy Certificates \(RECs\)](#) offer an alternative for customers wanting to support local renewable energy generation. Each unit of an REC represents the environmental attributes of electricity produced by local renewable energy sources, generated or purchased by CLP Power.

In Mainland China, CLP China's renewable assets issue Green Electricity Certificates (GECs), which are the only officially recognised renewable energy certificates in Mainland China that can be used to meet obligations or to support voluntary green power trading.

In Australia, EACs serve as an option to reduce customers' Scope 2 emissions when decentralised renewables are not a viable option. For example, [PureEnergy](#) from EnergyAustralia helps customers support the production of green energy from government accredited renewable sources.

- In 2023, close to 173GWh units of RECs were sold, a significant increase from the 100GWh units sold in the past year.
- CLP China's wind and solar projects are eligible to apply for and issue GECs that can be traded through the market. For example, Yangzhou Gongdao Solar Power Station in Jiangsu province transfers the renewable electricity bundled with GECs to the zero-carbon energy customers in the region.
- Around 12,000 EnergyAustralia customers have chosen a GreenPower government accredited PureEnergy option for their electricity supply.



**Carbon Credits**

Carbon credits represent carbon emissions avoided as a result of emissions reduction projects. CLP encourages its customers and corporates to purchase these carbon credits to offset their unavoidable emissions.

In addition to selling carbon credits, CLP also collaborates with many industries to deliver carbon offset initiatives. EnergyAustralia has various programmes that provide carbon neutral electricity, such as:

- [Go Neutral](#), under which residential customers can opt to purchase corresponding carbon offsets to cancel out the emissions associated with their home gas and electricity usage, at no added cost to themselves.
- [Business Carbon Neutral](#), which helps business customers offset emissions associated with their electricity usage.

- CLP continues to promote carbon offsetting and support customers' decarbonisation journey. Customers can offset their unavoidable emissions with [CLP Carbon Credits](#) after taking actions to cut down their emissions. CLP had a HKD\$ 1.8 million offset of 79,000 tCO<sub>2</sub>e in 2023.
- EnergyAustralia offers Climate Active-certified electricity and gas products for customers of all sizes that have opted in to the Go Neutral programme. This means that the Company purchases vetted carbon offset certificates to offset the emissions associated with the energy usage of these customers in their homes and businesses. EnergyAustralia exclusively purchases accredited international offset certificates derived from projects reviewed by external assessors, and smaller volumes of Australian Carbon Credit Units, in line with the Climate Active programme, its internal trading policy documents, and the advice of external assessors engaged by EnergyAustralia to ensure thorough vetting and quality assessment.

Currently, around a quarter of EnergyAustralia's residential customers receive carbon offset energy as part of the Go Neutral programme. By the end of 2023, EnergyAustralia had selected and purchased offsets equal to over 6 million tonnes of greenhouse gas emissions for its residential and business customers. This represents the largest Climate Active certified offset offering in the Australian energy sector, and the second largest in all sectors in Australia.

Case Study 

## Helping Link Asset Management Limited (Link) achieve its 2035 Net Zero Pathway goals

CLP Power and CLPe have signed a Memorandum of Understanding (MoU) with Link Asset Management Limited to improve the energy efficiency of Link's premises and raise ESG awareness among its tenants.

To assist Link in achieving its 2035 Net Zero Pathway goals, CLP carries out regular energy audits on Link's properties, which include shopping arcades, fresh markets and car parks, and provides recommendations for improving their energy efficiency. CLP is also supporting Link's energy-saving initiatives through subsidy schemes such as the CLP Eco Building Fund. One of these funded projects has involved the installation of energy-efficient cooling systems in 21 shopping arcades, resulting in savings of

more than 20 GWh of electricity over the past five years. This is equivalent to the annual electricity consumption of over 5,000 households, and represents a reduction of 8,800 tonnes of carbon emissions.

CLP and Link will continue to explore collaboration opportunities, including the implementation of energy management solutions at Link premises and the potential acquisition of sustainability-linked loans from financial institutions. Additionally, CLP Power will provide technical support for EV charging installations to encourage low-carbon transportation. The two companies will also explore the feasibility of shifting from diesel generators to battery energy storage systems at Link's construction sites.

Case Study 

## Teaming up with Chinachem Group to push towards carbon neutrality

CLP Power signed a new MoU with Chinachem Group (Chinachem) in November 2023 to support Chinachem's pursuit of carbon neutrality.

This collaboration will introduce new sustainability initiatives to further enhance Chinachem's efforts in energy efficiency, decarbonisation and electrification. Under the new MoU, CLP Power will continue offering Chinachem technical assistance to replace conventional diesel generators with Battery Energy Storage Systems at two of its project construction sites. CLP Power will also support Chinachem's hotel division, Nina Hospitality, in implementing smart laundries and electric kitchens to enhance its operational and energy efficiency.

Chinachem has been implementing an ambitious carbon reduction roadmap CCG 3050+, aiming at the reduction of at least 51.8% of 2020 Scope 1 and 2 carbon intensity by 2030. In 2019, Chinachem and CLP Power signed a

five-year Collaborative Agreement on Smart and Green Initiatives to support the implementation of smart and low-carbon technology in Chinachem's iconic Nina Tower. Approximately 14 gigawatt hours (GWh) of electricity have been saved to date. The Agreement has established a solid foundation for the two companies to expand their collaboration in electrification, decarbonisation and energy efficiency.

CLP Power will also help Chinachem with the decarbonisation of its facilities. This involves utilising a pilot Energy Management System at Nina Mall that is driven by big data analytics and 5G technology to accurately forecast the cooling load. To identify further opportunities for decarbonisation, CLP Power will also conduct energy audits on Chinachem's new development projects. These include a premier cold storage and logistics facility in Kwai Chung, and the new Tung Chung business hub, which will house a green data centre.

## Customer privacy

### Our approach

Under the CLP Code of Conduct, every employee must safeguard the Company’s assets and the resources entrusted to the Company’s care, including customer information, against loss, theft or misuse.

GRI reference: 418-1

In Hong Kong, the Personal Data (Privacy) Ordinance (PDPO) governs the protection of the personal data of individuals. The Data Protection Principles in the PDPO outline CLP Power’s obligations as a data user. They relate to the collection, accuracy, retention, use and security of personal data, as well as individuals’ rights to access and correct their personal customer data.

Under the *Privacy Act 1988* (Privacy Act), EnergyAustralia has obligations to ensure the appropriate collection, use, disclosure and security as well as access to individual’s own personal information. There are also mandatory data breach reporting obligations in relation to Notifiable Data Breaches. EnergyAustralia is required to report data breaches if there is unauthorised access to, unauthorised disclosure of, or loss of personal information that EnergyAustralia holds, and if this is likely to result in serious harm to one or more individuals, and if EnergyAustralia has been unable to prevent the likely risk of serious harm with remedial action. Notifications must be made to the Office of the Australian Information Commissioner (OAIC) and to the affected customers with a description of the data breach, the kinds of information involved and recommendations for customers in response to the data breach.

On September 2023, the Australian Government expressed support for significant reforms to the Privacy Act, which are likely to include: Mandatory Privacy impact assessments for high risk activities, a Statutory Tort / direct right of action for serious invasions of privacy under the Privacy Act, establishment of litigation funds for the OAIC, maximum reporting timeframes for data breaches being reduced to 72 hours, and requirements for privacy policies to include references to where automatic decision-making has been used to decline/approve access to essential services such as utilities. A draft Bill is expected in 2024 which will likely contain additional detail, such as the compliance timeframes expected from entities such as EnergyAustralia.

In May 2018, the Australian Government announced that energy data would be included in the Consumer Data Right

(CDR). The sharing of product data in the energy sector commenced on 1 October 2022 and consumer data sharing commenced on 15 November 2022. It gives customers the right to share certain transaction, usage and product data relating to their electricity accounts with EnergyAustralia with authorised parties under the CDR regime who are then able to compare what other electricity offers may better suit the customer’s needs. EnergyAustralia was granted an exemption by the Australian Competition and Consumer Commission (ACCC) from the original commencement date in November 2022, requiring EnergyAustralia to commence CDR data sharing by 15 May 2023.

By 15 May 2023, EnergyAustralia successfully went live as a CDR ‘data holder’, meaning EnergyAustralia is now able to share information required under the CDR regime for most of its eligible residential, small business, and large business customers. EnergyAustralia continues to refine its CDR data sharing platform as it receives feedback and enquiries from customers or other CDR participants.

### Strategy and procedures

The [CLP Privacy Principles](#) set out the Company’s commitment and approach to protecting personal data. CLP has a designated Corporate Data Protection Officer who oversees the governance of personal data management of business operations in Hong Kong. Their contact details can be found on CLP’s [CLP Privacy Policy Statement](#).

The Group preserves the confidentiality of the personal data provided to it in accordance with the [CLP Privacy Policy Statement](#), which was updated with effect from 1 November 2018. The CLP Privacy Policy Statement demonstrates the Company’s approach to protecting personal data and is applicable to everyone across its entire Hong Kong operations who handles personal data. All employees who have to handle or process personal data of any individual for business operations in Hong Kong must follow CLP procedures, practices and local regulations in relation to personal data privacy.

These procedures are outlined in the CLP Personal Data Protection Compliance Manual which sets out CLP’s data protection compliance framework, including its governance structure and the roles and responsibilities of different functions and personnel within the governance structure. All business units with operations in Hong Kong must implement and abide by this manual which also provides guidance on the protection and use of personal data. Adherence to policies and procedures regarding privacy and data protection are further embedded in [CLP’s Code of Conduct](#) and the compliance management procedures of the Code.

Under the Code of Conduct CLP commits to compliance with all laws and regulations and to abiding by the Company's policies and procedures which includes data privacy laws and the CLP Data Protection Compliance Manual. The Code of Conduct stipulates that anyone found violating the Code will be subject to disciplinary action. CLP's internal audit function appraises compliance with policies and procedures and evaluation of the effectiveness of the overall controls in accordance with their audit cycles and assessment scope. In addition, suppliers are informed of and expected to comply with data privacy laws as outlined in [CLP's Supplier Code of Conduct](#).

### Monitoring and follow-up

CLP monitors and documents any complaints related to breaches of customer privacy and the loss of customer data. In addition to the CLP Personal Data Protection Compliance Manual, there is a written guideline used by the Customer Success and Experience Business Unit for handling customer data incidents. The guideline includes information about the classification and assessment of the scope and severity of data incidents, reporting roles and responsibilities, and an incident response strategy and checklist. The Corporate Data Protection Officer also retains a record of data incidents and follow-up actions.

EnergyAustralia has developed and maintains a Data Breach Response Plan which is implemented by a Data Breach Response Team. The plan outlines the strategy for assessing, managing, containing and reporting data breaches within required timeframes, and outlines relevant roles and responsibilities. The plan is activated whenever a potential data breach is identified.

[Learn how CLP responds to cyber security incidents](#) →

### Initiatives and progress

In 2023, CLP Power reported no cases of customer data loss in Hong Kong. In Australia, EnergyAustralia reported one case involving the compromise of customer data in the year.

### Training and awareness

CLP further protects customer information through a focus on preventing unauthorised disclosures to malicious attackers or impersonators. This involves carrying out specific awareness activities in the year such as communications and quality assurance assessment, and providing coaching and additional training for frontline staff. Company-wide communications, employee training and briefing sessions with leadership are also conducted to ensure all staff understand current privacy and data management obligations. A Data Breach Response Plan has been formulated and a Data Breach Response Team established to ensure the business has the capability and the procedures in place to respond swiftly to any such incidents.

A compulsory e-learning programme on data protection is given to all new employees and is periodically mandated to be given to all employees to refresh their knowledge. CLP also runs frequent tailored data protection awareness programmes, which include regular briefings, case sharing, quizzes and refresher activities, for employees who have regular interaction with protected data (such as members of the Legal Review Committee). Industry threats are continuously reviewed with a view to strengthening controls over the management and monitoring of networks, systems and mobile devices, data loss, and suspicious cyber activities. CLP also regularly emphasises the need for potential privacy incidents to be reported in a timely manner.

At EnergyAustralia, briefing sessions on customer privacy include leadership, enterprise-wide communications and employee training to ensure all staff are up to date with current privacy and data management policies and practices. Privacy training is a compulsory requirement for all new employees, and subsequent refresher training is provided to all employees annually.

GRI reference: 418-1

CLP Power was awarded the Privacy-Friendly Awards 2023 Outstanding Gold Certificate by the Office of the Privacy Commissioner for Personal Data (PCPD) in Hong Kong, in recognition of its commitment to and efforts in protecting the personal data privacy of its customers and stakeholders.

## Customer satisfaction

### Our approach

CLP is committed to providing high quality service and good value to customers, including by meeting its regulatory requirements and delivering on its customer service pledges.

GRI reference: 417-1

#### Strategy and procedures

CLP customers can access information about its products and services quickly and efficiently through communication channels such as an email welcome pack sent to new customers, the CLP Power websites and the CLP Mobile App, as well as the EnergyAustralia websites and Mobile Apps. CLP also engages with its residential, commercial and industrial customers through satisfaction surveys, online service portals, site visits to its assets, account manager support, and through its Customer Service Centres and Customer Interaction Centre.

CLP strives to respond effectively to customer needs and preferences. All escalated cases will be studied thoroughly to ensure issues raised by customers are appropriately resolved.

EnergyAustralia averages one to two million conversations with customers every year, either over the phone or via digital service channels. In 2023, EnergyAustralia handled more than 1.5 millions calls. It also engages with more than 100,000 individuals, businesses and stakeholders annually through formal research to help shape its business decisions, products and services.

#### Monitoring and follow-up

In Hong Kong, an external market research consultant conducts an annual telephone survey to measure customer satisfaction. The customer satisfaction score considers overall satisfaction towards CLP, and includes a relative rating comparing CLP to an ideal utility in Hong Kong. The score is benchmarked against the public utilities in the energy sector and other public service organisations.

EnergyAustralia counts the number of calls and complaints it receives, and measures customer satisfaction through its Strategic Net Promoter Score (SNPS). Customer satisfaction is measured monthly via an online NPS survey sent to a representative group of customers. The Transactional Net Promoter Score (TNPS) is also used to track customer satisfaction in relation to specific customer interactions, providing more direct feedback to frontline staff.

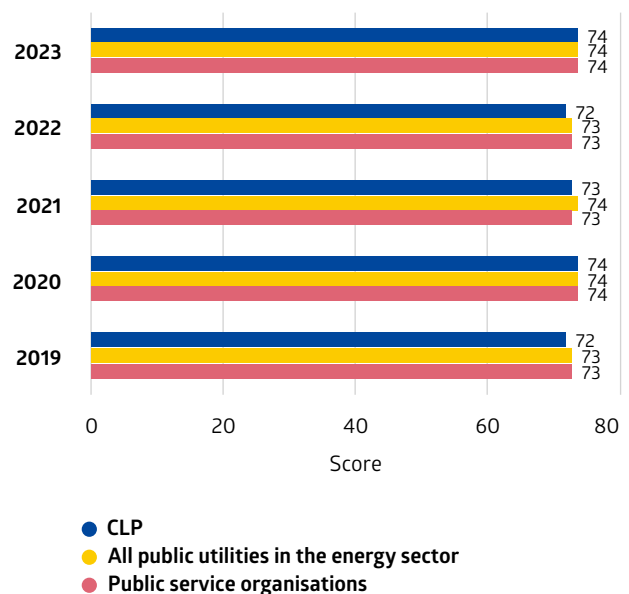
### Initiatives and progress

CLP is committed to providing safe and reliable energy for its customers to support their business operations and daily lives. Its frontline teams have continued to maintain essential support and customer services, and to ensure the reliability of the power supply.

GRI reference: 417-3, 418-1

#### CLP Power Hong Kong Limited customer satisfaction score

**i** CLP Power's customer satisfaction score improved in 2023 to the levels recorded in 2020 and is on a par with other public service organisations.



## Australia

### Complaints received by EnergyAustralia

The total complaint volumes received in 2023 increased by 25% from the 2022 figure. Following the challenges experienced during the second half of 2022 across the industry, this year continued to experience the impacts of increased cost of living pressures driven by the market uncertainties arising from the energy crisis and market sustainability that resulted in unprecedented call volumes impacting EnergyAustralia's service levels. This resulted in customers reaching out to the Ombudsman directly and bypassing EnergyAustralia's opportunity to resolve the complaints internally.

The mid-year market-wide price increase activity coupled with heavy media coverage of increases across the industry at large further triggered complaints to both the Ombudsman and internally to EnergyAustralia. The nature of the complaints highlights the cost-of-living crisis, with energy affordability as a key driver.

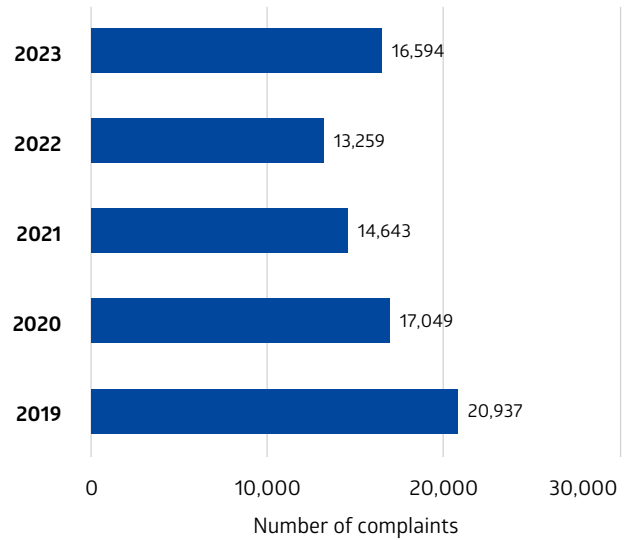
EnergyAustralia noted a year-on-year increase in total complaint volumes. Actions are underway to restore stability in complaints performance, and the fourth quarter of 2023 showed a declining trend in complaint volumes. This was the result of bolstering EnergyAustralia's resources to resolve complaints and to meet growing demand from customers seeking hardship assistance, coupled with initiatives already in place to reduce the incoming volume of complaints.

Despite these challenges, EnergyAustralia continued to go above and beyond to successfully address and resolve customer concerns through timely engagement and effective conversations with its customers preventing further escalations.

This has been reflected in EnergyAustralia's TNPS which is at a 5 year high of 30.

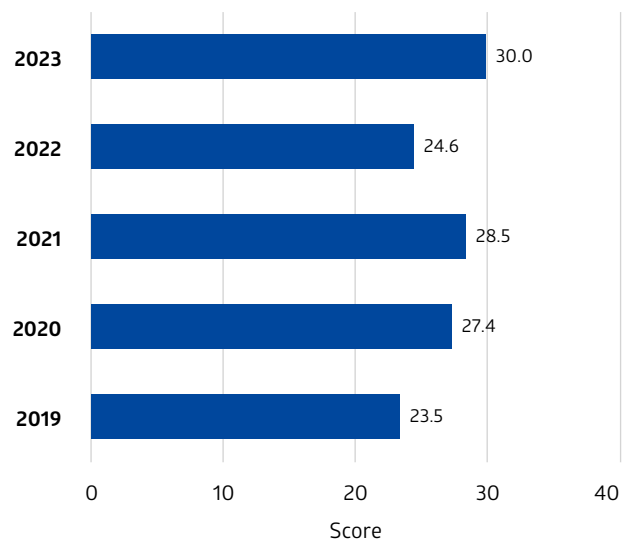
### Complaints received by EnergyAustralia

**i** The total complaint volumes received in 2023 increased by 25% from the 2022 figure.



### EnergyAustralia's Transactional Net Promoter Score (TNPS)

**i** This year's TNPS increased significantly as EnergyAustralia has addressed and resolved customer concerns through timely engagement and effective conversations with its customers.





# Security management

## Our approach

CLP Group Digital's Group Security protects CLP's people, property, information and reputation against security risks.

### Strategies and procedures

CLP's security strategy is guided by the CLP Risk Management Framework, with oversight from the Board. The Group Security Policy, last updated in 2021, lays out the overall approach taken to minimise risk to people, including employees, contractors, customers and the public, and to manage other business risks to acceptable levels. In 2023, all cyber security-related standards have been updated to take into account technological advances, changing legislation and emerging standards of good practice.

The policy addresses the following areas:

- **Integrated and centralised organisation and governance:** Security is an integrated department within CLP Digital. It covers all relevant lines of security activity within the Company, and operates independently of the IT and operational technology governing organisations.
- **Policies, standards and guidelines:** Provides a suite of documents guiding the management and monitoring of risks in line with recognised industry standards.
- **Understanding the threats:** Ensures decisions related to the application of security measures are appropriately informed and, wherever possible, intelligence driven.
- **Communications and awareness:** Aims to continuously enhance the security awareness and knowledge of employees and contractors to encourage security-positive behaviour.
- **Technical domain:** Ensures that robust operational detection and response tools are developed, applied and maintained.
- **Liaison:** Aims to maintain constructive and trusted relationships with external stakeholders (such as national cyber security agencies and industry bodies) to ensure speedy and effective cooperation if the need arises.

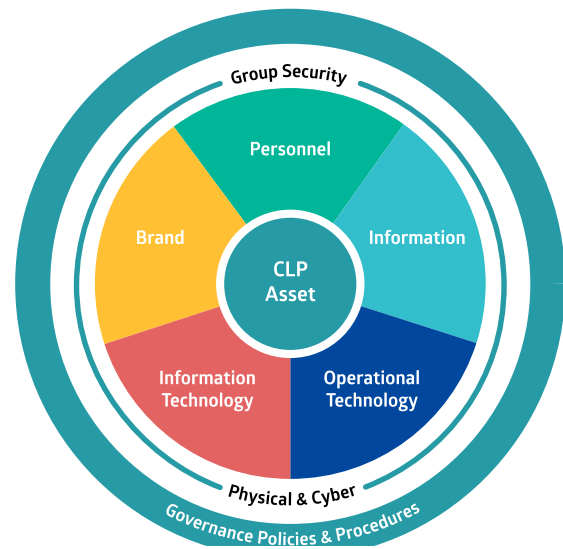
The strategy includes cyber security and physical security measures to protect five separate but co-dependent lines of activity:

- **Information:** The confidentiality, integrity and availability of data stored in both hard and electronic formats;

- **Operational Technology (OT):** Hardware and software that detects, monitors or controls physical devices (such as turbines) at CLP assets;
- **Information Technology (IT):** The IT used to store, retrieve, transmit and manipulate data or information;
- **Personnel:** Staff employed by CLP, both at the workplace and travelling for business; and
- **Brand:** CLP's image, identity and associated reputation.

CLP security measures are robust and scalable. They provide comprehensive, layered and flexible protection.

### CLP's approach to security



### Operational responsibilities

The Group Security team was established in 2020 to ensure that CLP's cyber and physical security capabilities and efforts complement each other. The team gives CLP in-house capabilities across the full range of security skillsets. Following internal restructuring in 2022, the Group Security team was integrated into Group Digital in a strategic move to support CLP's transition. Group Security is now separate from Group Operations but maintains close working relations with its various departments in particular HSE and the Project Management Office. Regular reports are provided by Group Digital to the Board's Audit & Risk Committee (ARC), providing assurance that adequate risk management is in place and being followed and that appropriate remedial action is being taken where needed.

[Read more from the Audit & Risk Committee Report in 2023 Annual Report](#)

## Physical security

### Our approach

Physical security is applied appropriately to all of CLP's assets. Enhanced measures are in place to protect sensitive locations such as data centres, control rooms, and transmission and distribution sites.

GRI reference: 410-1

### Strategies and procedures

Physical security encompasses physical measures to safeguard people, prevent unauthorised access to equipment, facilities, material and documents, and safeguard these items against security incidents. It covers physical barriers (e.g. fences), security lighting, physical access controls and surveillance systems.

A comprehensive body of documents has been developed to assist all regions and regional assets in establishing or revising their security management documentation. These documents are aligned with international standards for security, and lay out best practices from across the Group.

- The CLP Physical Security Standard lays down the minimum standard of physical security measures expected at every asset owned or operated by CLP, regardless of location or role.
- The CLP Physical Security Guideline provides practical guidance on the security requirements expected of all business units, in line with the Group Security Policy and Physical Security Standard. For instance, it includes guidelines on how to identify potential areas of weakness, develop appropriate security countermeasures, and prepare a security response plan.
- The CLP Security Vulnerability Assessment Guideline is the flagship document that lays down the process for evaluating the security status of any CLP site. Applied in close collaboration with the operator, it provides a comprehensive security "health check" using a risk-based approach that covers threats and areas of weakness, and offers solutions.
- CLP's Security Due Diligence for Project Design and Construction or Site Acquisition has been developed to support projects in the early stages of acquisition or construction. All projects and acquisitions undergo this process, regardless of size.

- The CLP Business Travel Risk Management Plan minimises the security, medical and health risks faced by employees engaged in business travel. On behalf of the Group, the Security team in CLP Digital leads on business travel security in close cooperation with Group HR and Group Finance.

### Training and awareness

CLP security staff must always comply with CLP's Code of Conduct. They receive related training on an annual basis. In addition to training on national regulations and site-specific requirements, contract security staff receive induction training on CLP policies relating to a harassment-free workplace, minimum wage guidelines and measures preventing discrimination in the workplace. They must complete this induction training before being granted access to their assigned workplace sites.

2023 has seen the removal of all COVID-19 related control measures and the reestablishment of business travel across CLP's operational footprint. This has meant considerable effort has been made to ensure that all staff either supporting or engaged in business travel were properly briefed about the support they can obtain from the company.

## Cyber security

### Strategies and procedures

Cyber security incidents occur in a virtual space. Some, such as data leaks, may not cause immediate disruption and therefore be difficult to detect or trace. As CLP's workplace and operations become increasingly digitalised, electronic devices could become vulnerable to cyberattacks. CLP therefore strives to protect its OT and IT systems, defined as follows:

- **Operational Technology** is the hardware and software that detects, monitors or controls physical devices (such as turbines) belonging to CLP.
- **Information Technology** is the technology used to store, retrieve, transmit and manipulate data or information.

CLP's management of cyber security is documented in 20 standards which align with the NIST Cyber Security Framework and provide guidelines for selecting and specifying security controls for information systems and processes to reduce the risk of cyber threats and attacks. These all sit under a unified Group Security policy document. Due to differing regulatory requirements mandated in other jurisdictions, some Regions/ Businesses Units have developed their own documents which align with their local jurisdiction but respect the baseline laid down by Group Security's 20 standards.

### Training and awareness

Employee and associates of the Group represent important cyber defence assets. They need relevant knowledge to raise their awareness and maintain their vigilance.

Continual efforts are made through training and education to raise cyber security awareness among employees and encourage them to practise good "cyber hygiene". Security awareness activities at the employee level include simulated phishing emails, internal broadcast campaigns, briefings, videos and the introduction of 'Cyber Champions', a communication campaign, all designed to promote good cyber practice across departments and functions.

### Monitoring and follow-up

CLP continually monitors its IT systems and networks and stays alert to potential threats to its OT systems. Advances in cyber security technologies have helped improve the Group's ability to detect cyber security breaches. If suspicious activity is discovered in the IT or OT network environments, immediate action is taken to investigate it and, if necessary, isolate the threat and initiate recovery action. Employees are reminded regularly to report suspicious cyber activity directly to CLP Group Security via several channels. Suspicious emails can be automatically reported with the click of a button.

### Initiatives and progress

In 2023 a new Security Operations Centre was established in CLP Hong Kong. Deloitte was engaged to support this service, which provides 24/7 security monitoring, reporting and response. As a result, CLP's ability to manage incidents round the clock has been significantly enhanced. Other similar initiatives have been launched by CLP China, EnergyAustralia and Apraava Energy.

As one of CLP's top-tier risks, cyber security is regularly assessed and reports made to senior management through the risk management process. Further regulatory changes are anticipated. Although recruiting individuals with the relevant cyber security skillsets can be difficult, CLP is looking to further enhance its capacity in the areas of process, people and technology and to recruit the expertise required to spearhead these efforts.

[Read more from the Audit & Risk Committee Report in 2023 Annual Report](#)


## Emergency and crisis management

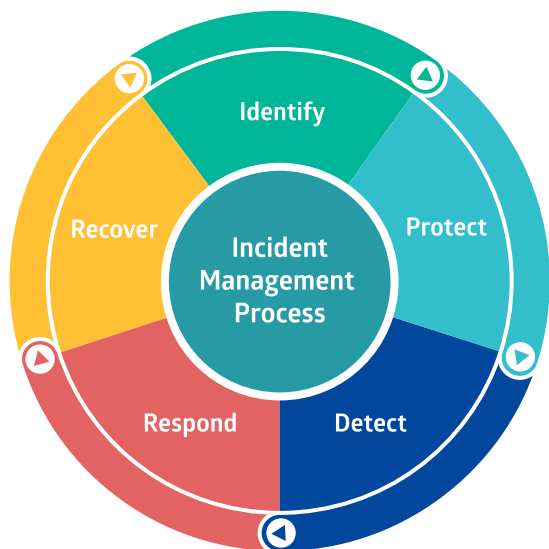
### Our approach

Attacks on CLP’s operation systems or physical assets could have dire consequences. CLP must be able to detect any incursion in real time, every time, and remediate the incident before harm results.

### Strategies and procedures

CLP maintains robust and regularly tested emergency response and crisis management procedures. As the first line of defence, when an incident arises the Incident Management Process (shown below) is activated.

### CLP Incident Management Process



### Crisis Management Plan

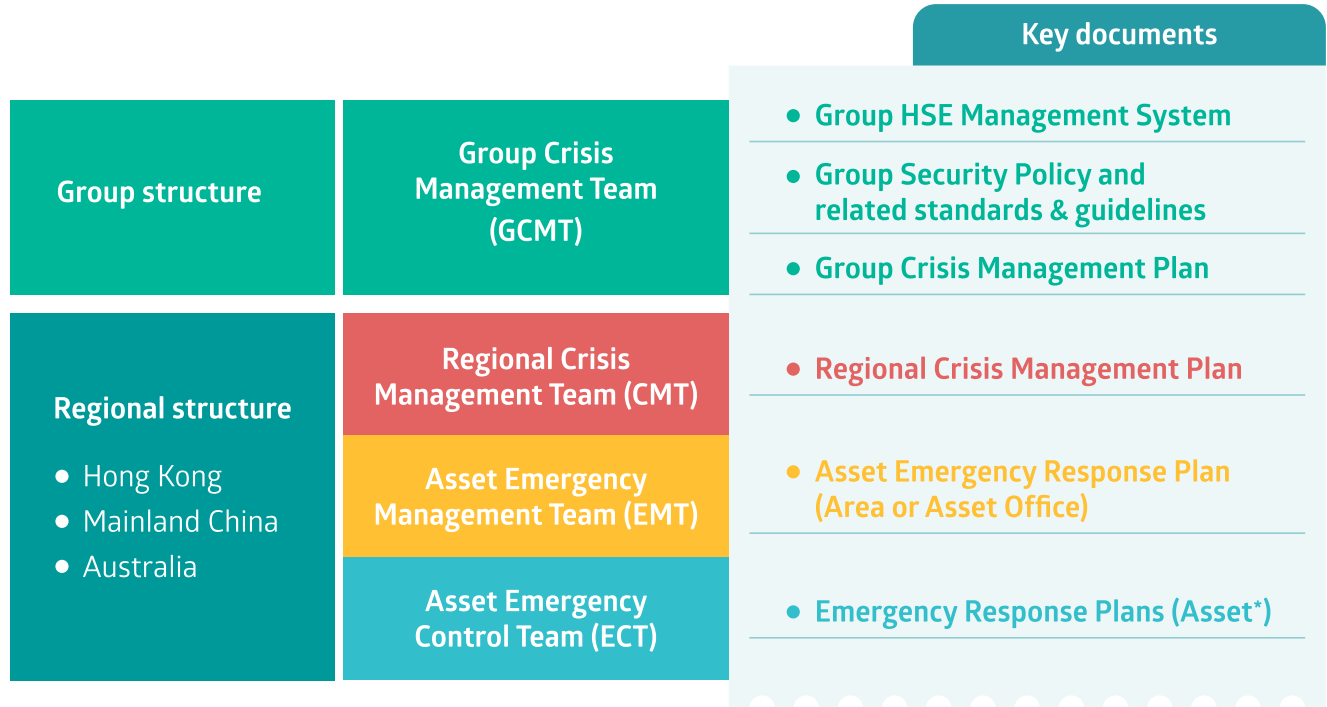
CLP’s Group Crisis Management Plan ensures high levels of preparedness in responding to and recovering from emergency situations, and helps minimise disruption to customers. The Plan is continually reviewed and enhanced to ensure it remains in line with operational changes and the broader operating context. It provides a strong platform for the effective handling of a crisis at the Group level. The plan:

- Outlines crisis management organisation, roles, responsibilities, procedures and processes;
- Specifies the tools needed to ensure the collective response is well planned, well executed and fully integrated across the organisation;
- Describes the relationship and interface between the handling of regional- and Group-level crises; and
- Details the processes that govern internal and external communications during emergencies and crises, ensuring that those responsible for managing a crisis have the necessary information to carry out their responsibilities and that key stakeholders are informed.

The Group-level plan is supported at regional level by Regional Crisis Management Plans which mirror the Group document but are tailored for each region. In addition, detailed emergency response plans have been developed for each asset. These plans are designed to be used by first responders and asset managers.

CLP’s Crisis Management & Emergency Response Structure is outlined in the diagram below.

## CLP Crisis Management & Emergency Response Structure



\*An asset is anything owned and operated by CLP, covering power stations, depots, offices, transmission lines, customer service centres, etc.

### Training and awareness

As specified in both Group and regional publications, emergency response drills are conducted at least annually at all Group sites, with smaller scale drills taking place more often.

Group and Regional Crisis Management Plans are reviewed at least every three years. Regional crisis management exercises are conducted annually as part of the internal peer review process.

### Initiatives and progress

CLP has continued to enhance its crisis management capability to ensure the organisation can respond promptly and effectively if an incident occurs.

From a crisis management perspective, the emphasis of the Company has been on maintaining and enhancing capability. Initiatives continued in the year include:

- Considerable work has been conducted to develop a replacement to the now aged Crisis Communications Billboard (CCB). An interim solution has been developed and is being rolled out in the first and second quarter of 2024 to ensure that there is a seamless transition from one platform to another;

- Reviewing and improving notification and communication tools; and
- At Group level, conducting crisis management communication drills and administrative drills to ensure that the equipment and procedures are functional and fully understood by the operators.



Case Study 

## Crisis management in action during extreme weather events

**In early September 2023, CLP implemented multiple measures to maintain a reliable power supply and mitigate the impact of Super Typhoon Saola, when typhoon signals of No.8 and above were hoisted for 38 hours.**

To ensure a stable power supply, CLP enhanced inspections of its power supply equipment prior to the typhoon, installed flood gates at substations vulnerable to flooding, and pruned trees that could pose a potential risk to overhead lines.

Given the severe damage caused by Super Typhoon Mangkhut to the power supply facilities of remote villages

in 2018, CLP prioritised the replacement of smart meters at remote villages in 2019. With smart meters in place, the result was improved supply failure detection and a reduction in repair time. Moreover, CLP maintained close communication with power supply companies in Guangdong Province to ensure mutual assistance when necessary.

Additionally, CLP released a short video that offered advice on how to prepare for approaching typhoons and covered some important reminders on dealing with power outages during typhoons.