

SP Group

SUSTAINABILITY REVIEW FY2019/2020



Scope of Review

This is the annual sustainability review published by SP Group for the financial year 1 April 2019 to 31 March 2020. The scope of this review covers SP Group's Singapore-based operations.

Sustainability Strategy

SP Group's mission is to deliver reliable and efficient utilities services to enhance the economy and the quality of life of our consumers. This mission is rooted in our value system of commitment, integrity, passion and teamwork.

Sustainability is central to our mission and guides us to achieve our mission in a responsible and committed manner. As a leading energy utilities company, we anchor our sustainability strategy around the United Nation's Sustainable Development Goal [SDG] 7 – to ensure access to reliable, sustainable and modern energy for all. For more information, please refer to <https://www.un.org/sustainabledevelopment/energy/>



Industry collaboration in energy technology and investment in energy infrastructure are identified as key enablers to meet these targets.

We aspire to be a leading utilities company in a low-carbon future and providing energy that is reliable and sustainable is central to this long-term strategy. We recognise that to enable this clean transition, we need to invest in innovative technologies and infrastructure. We also understand that our actions need to extend beyond our own operations, to those of our customers who can create a large share of the impact through their choices and decisions.

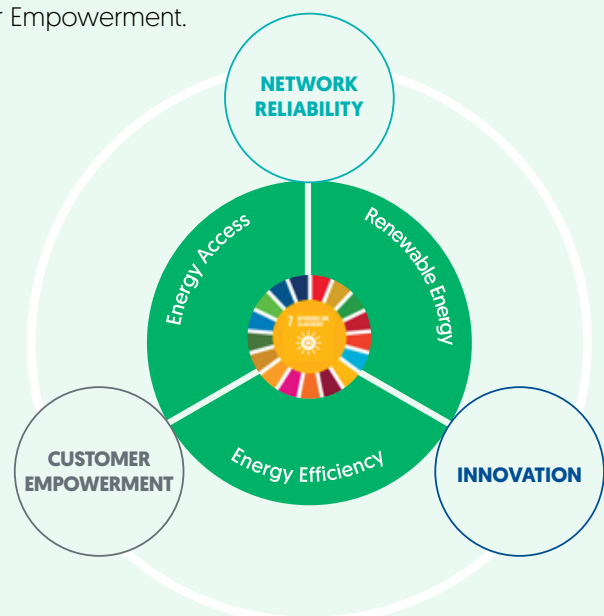
With this in mind, we have identified three strategic areas that support our actions towards the achievement of SDG 7: [1] Network Reliability, [2] Innovation and [3] Customer Empowerment.

Mission:

Deliver reliable and efficient utilities services to enhance the economy and the quality of life

Value System:

Commitment, Integrity, Passion, Teamwork



In addition to helping customers reduce their carbon footprint, SP Group is committed to reducing the environmental impact from our business operations. In 2019, an extensive data collection exercise was completed to calculate the greenhouse gas (GHG) emissions following the principles in the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition)*.

FY2019/2020 emissions	Absolute, tonnesCO ₂ e	Intensity, kgCO ₂ e/MWh sold
Scope 1	25,966	0.54
Scope 2, location based	355,110	7.38

The bulk of SP Group’s GHG emissions in Scope 2 resulted from the dissipated energy emissions from technical losses via the distribution network and the transmission system in Singapore. While these emissions are inherent in the operations of the network, SP Group is committed to identifying opportunities to reduce the emissions from other key business activities that we operate and can influence.

We have set ourselves a “30-30-30” target to add at least 30 per cent value to our customers and reduce our carbon footprint by 30 per cent, by 2030.



With FY2018/2019 as the baseline year where applicable, selected performance indicators will be measured and tracked in relation to our material topics of network reliability, innovation and customer empowerment.



Our SAIDI performance for electricity network improved to **0.56 minute** as compared to **0.87 minute** in the previous year

In FY2019/2020, our System Average Interruption Duration Index (SAIDI) for electricity network improved to 0.56 minute as compared to 0.87 minute in the previous year. Commonly used as a reliability indicator by electricity companies, SAIDI measures the average outage duration experienced by each customer served. Our improvement reflects the continuous efforts we have put in place to ensure our customers are provided with reliable electricity supply.




We have also facilitated the switch for 46 per cent of residential customers and 43 per cent of small business customers in the Open Electricity Market, enabling them to enjoy savings of 20 per cent to 30 per cent off the regulated tariff. Customers also have the option of a non-standard price plan to buy electricity from the wholesale electricity market.



More than **29,000 tonnesCO₂e** avoided from our various low carbon solutions offered to our customers

The various initiatives that have resulted from our focus on innovation have helped to reduce the carbon footprint of our customers through avoided emissions. In FY2019/2020, the carbon dioxide (CO₂) emissions avoided amounted to more than 29,000 tonnes carbon dioxide equivalent [tonnesCO₂e], which was 19 per cent more than the baseline year of FY2018/2019.

Contributing to SDG 7 Targets

SDG targets by 2030	Material topic	Our key contributions
 <p>7.1 Energy Access Ensure universal access to affordable, reliable and modern energy services.</p>	Network reliability	<ul style="list-style-type: none"> Investing in network infrastructure upgrades Deploying smart grid technologies to improve and maintain network reliability
	Innovation	<ul style="list-style-type: none"> Increasing electric vehicle charging stations
	Customer empowerment	<ul style="list-style-type: none"> Enabling access to the Open Electricity Market by empowering customers to choose electricity packages and enjoy savings Deploying digital solutions for energy consumers
 <p>7.2 Renewable Energy Increase substantially the share of renewable energy in the global energy mix.</p>	Innovation	<ul style="list-style-type: none"> Deploying solar PV projects Testing green hydrogen Testing waste-to-energy solutions Issuing and trading of Renewable Energy Certificates
 <p>7.3 Energy Efficiency Double the global rate of improvement in energy efficiency.</p>	Innovation	<ul style="list-style-type: none"> Developing smart building and smart district level solutions Deploying district cooling and energy saving solutions
	Customer empowerment	<ul style="list-style-type: none"> Deploying smart technology through advanced electricity meters and SP Utilities mobile app Spreading environmental awareness through GreenWall, GreenUP, Energy Challenge and <i>My Carbon Footprint</i> <p>Refer to page 17 for more details on these initiatives</p>

Network Reliability

Why This is Material

SP Group serves a large customer base who expects uninterrupted power and a high-quality maintenance framework. We understand that people and businesses rely on us to provide consistent and reliable power.

SP Group aims to deliver a high reliability rate with near-zero downtime. Network reliability will continue to be a key topic to SP Group as we strive to deliver excellence in our service provision and operations.

Management Approach

Network Maintenance

Singapore has one of the best electricity and gas network systems in the world. Despite all our efforts, supply interruption is inevitable. They occur due to various reasons including network failure, damage by third parties, faulty equipment at customer sites or issues with the source of the supply.

Electricity Network

To minimise occurrence of power failure, SP Group carries out regular maintenance measures. One of the measures is online condition monitoring which checks the network around the clock. Any anomalies detected will trigger a response for the team to carry out rectification works to ensure the continued well-being of the equipment.

In 2019, to enhance speed and accuracy in predicting anomalies, we have implemented online condition monitoring for newly installed 230kV and 400kV cable joints, and for all 230kV, 400kV and new 66kV switchgears. We are in the process of doing the same for all 22kV source station's switchgears, to be completed by 2022. We also carry out physical monitoring every six to nine months. This measures the voltage and equipment condition when the checks are being conducted. If a power failure occurs, we take remediation actions to minimise the impact and downtime.



Implemented online condition monitoring for newly installed 230kV and 400kV cable joints, and for all 230kV, 400kV and new 66kV switchgears to enhance speed and accuracy



Employees work 24/7 at SP Group's distribution control centre, the nerve centre of Singapore's power grid, to ensure supply reliability.



SP Group's mobile generator crew is on standby 24/7.

1. Remote switching

When a power fault is detected, this first course of action disconnects the affected equipment from the network and reconnects it to an alternative supply source. In 2019, we implemented remote switching capabilities for all 6.6kV distribution networks substations, enabling quicker restoration should a supply interruption occur.

2. Manual switching

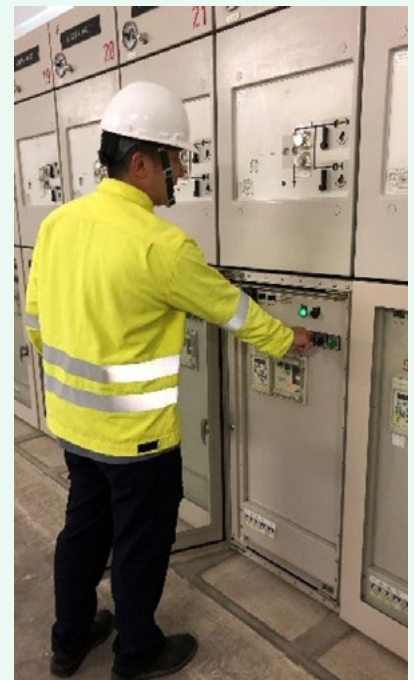
This is conducted when remote switching is unable to restore power supply. Power faults in low-voltage networks, such as damage to overground boxes that are used to transmit electricity to customers, are usually resolved through manual switching.

3. Mobile generators

These generators are deployed when power faults are reported and are used to provide temporary electricity supply while network issues are being resolved.

4. Cable jointing

This is conducted when switching is unable to resolve the power fault and the mobile generators cannot access the substation where the fault has occurred.



Manual switching

Gas Network

SP Group owns and operates the gas network to supply gas to industrial, commercial and residential customers. The high pressure gas transmission system transports the main fuel source for Singapore's power generation plants.

A whole-of-life approach to asset management is adopted to manage risk and ensure that the gas network is developed, maintained and operated in a safe manner. The gas network is monitored round the clock in a system control centre. A Supervisory Control and Data Acquisition (SCADA) system is deployed on the transmission system to avail remote monitoring and operations capability, which enables immediate response to incidents. When incidents occur, response is centrally managed to ensure that performance recovery is quick and directed, and disruption to customers is minimised.



SP Group checks the gas regulators regularly to ensure optimal gas supply pressure for customers.

Regular inspections and maintenance are conducted on our assets to maintain reliability. An asset renewal programme tracks asset performance and replaces deteriorating assets efficiently. Patrol and leak survey of the pipelines are conducted to detect third party activities and gas leaks respectively.

Dedicated planning of assets, selection of materials, project management and strict testing requirements are in place to maintain the integrity of the gas network. This enables continual good performance to existing consumers and supply to new consumers.

International Collaboration



Participants at the 2019 HAPUA Council meeting.

In ensuring a more secure, accessible and sustainable energy future, SP Group is an active member of several international and regional working groups which benchmark and share best practices on grid operations.

In the International Utility Working Group that was formed in 2003, SP Group is one of the utilities companies in the 10-member countries that meet annually to address grid reliability and security, integrating clean energy sources and meeting the digital needs of customers.

In Southeast Asia, SP Group represents Singapore in the Heads of ASEAN Power Utilities Authorities (HAPUA). HAPUA's key objectives include strengthening regional energy security through interconnection development and enhancing the quality and reliability of the electricity supply system. SP Group is the Chair of the Working Group #3 to focus on the areas of Distribution, Power Reliability and Quality.



SP Group represents Singapore
in the Heads of ASEAN Power Utilities
Authorities (HAPUA)



SP Group continues to invest in infrastructure to uphold network reliability.

Initiatives

Energy Access – SDG 7.1

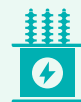
Investing in Network Infrastructure Upgrades

Planning and investing in network infrastructure upgrades is key to ensuring consumers have reliable and safe access to electricity. As part of our accelerated gas mains renewal programme, we have replaced more than 70km of aging ductile iron pipelines with more durable polyethylene pipes. This significantly reduces the risk of gas leaks and improves gas safety.

We have embarked on the upgrading of two key operational systems, for gas network monitoring and control, and to support all gas market activities in Singapore. The final connection of our transmission network in the north of Singapore was also completed, enhancing the security and reliability of supply serving Liquefied Natural Gas (LNG) customers in the area.

We have a long-term asset renewal strategy – based on the performance, condition and age of our equipment – to ensure that our electricity network remains resilient. We commissioned a new 400kV substation to support more industrial capacity and renewed one of two 230kV interconnections between Singapore and Malaysia. We have also replaced 606 switchgear panels, 158 transformers and 253km of cables in the distribution network.

In 2012, we commenced an underground transmission cable tunnel project to support SP Group's long-term plan of securing reliable and efficient electricity supply for Singapore. The project will allow us to install, repair and replace aging assets, and upgrade our network efficiently, with minimal inconvenience to the public. We have since installed and commissioned seven transmission cable circuits in our cross-island underground cable tunnels that were completed in 2019. These circuits, spanning close to 138km, are part of our long-term plan to replace aging assets and meet Singapore's future electricity needs.

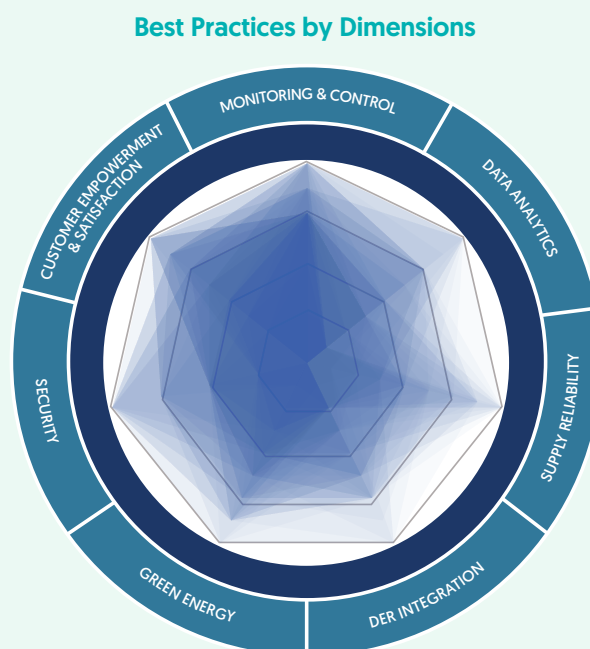


Commissioned
a new
400kV
substation
to support
more industrial
capacity

Smart Grid Index

In 2018, we launched the world's first Smart Grid Index (SGI) to help utilities measure and advance in key dimensions of grid development. The SGI received strong endorsement from industry experts and stakeholders. Covering seven key aspects of an electricity grid – 1) supply reliability; 2) monitoring and control; 3) data analytics; 4) integration of Distributed Energy Resources (DER); 5) green energy; 6) security, and 7) customer empowerment and satisfaction – the SGI allows utilities to understand their strengths and areas they can improve in.

Today, the SGI measures and benchmarks grid smartness across 75 utilities from 35 countries. In 2019, utilities in Asia Pacific nations made significant improvements in the rankings with an overall improvement of 10 percentage points from 2018. Improvements were most notable in areas of integration of DER, security, and customer empowerment and satisfaction. For further details on the benchmarking scores, please refer to <https://www.spgroup.com.sg/what-we-do/smart-grid-index>.



Performance

Network reliability is an important contributor to the economy and SP Group aims to ensure minimum disruption to electricity and gas supply for all businesses and households. There are two key indicators that our industry measures when assessing performance on network reliability: i) SAIDI, a system index of average duration of interruption in the power supply indicated in minutes per customers, and ii) System Average Interruption Frequency Index (SAIFI), a system index of average frequency of interruptions in the power supply.

In FY2019/2020, our SAIDI for the electricity network improved by over 35 per cent.

		FY2018/2019	FY2019/2020
Electricity	SAIDI [min]	0.87	0.56
	SAIFI	0.0307	0.0366
Gas	SAIDI [min]	0.0932	0.2637
	SAIFI	0.0014	0.0019

To ensure minimal service disruption to our gas network, we have been actively replacing aging ductile iron pipelines with more durable polyethylene pipes to improve our gas SAIFI and SAIDI performance.

Future Outlook

To meet the 30-30-30 targets and minimise customer supply interruption, we actively invest in infrastructure, technology and engineering capabilities to uphold high performance standards. We continually look for innovative and cost-effective ways to deliver faster and better services and empower our staff with the knowledge they need to increase productivity and bring value to our customers and stakeholders.

Innovation

Why This is Material

Singapore has pledged to reduce its Emissions Intensity by 36 per cent from 2005 levels by 2030. It has recently committed to enhance its nationally determined contribution to the absolute peak emissions level of 65 million tonnes of CO₂ equivalent around 2030. By 2050, Singapore aims to halve the amount of emissions it produces from its 2030 peak, with the view to achieve net-zero emissions as soon as viable in the second half of the century.

Innovation and new technologies are central to facilitating this transition. SP Group can be a key facilitator and enabler for this change. Our investments in climate-friendly innovations will not only power a greener tomorrow for our business, they benefit the entire ecosystem, including organisations and individuals trying to reduce their own footprint.

Management Approach

SP Group takes an active approach to keep at the forefront of new technologies. Our approach has been to tap the global innovation ecosystem for exposure, test new solutions and build new capabilities to enable us to deliver value-added solutions to customers.

SP has been actively engaging the global innovation ecosystem through programmes such as the Free Electrons Global Accelerator. In partnership with nine other global utilities, SP Group invites promising energy-related start-ups to apply for the accelerator programme which runs annually. Into its fourth edition in 2020, Free Electrons received a total of more than 850 start-up applications from 86 countries. Since 2017, Free Electrons has received more than 2,300 applications and investments were made in more than 100 pilot programmes while more than S\$30 million has been invested in start-ups.

SP Group invests in venture capital funds globally to access the innovation ecosystems and keeps abreast of market and technology developments. Our venture capital funds provide SP Group with deal flow access to start-ups globally including Asia, US and Europe.

Through this innovation ecosystem, SP Group has been identifying relevant and promising technologies to run pilots. This approach allows us to validate the technologies and performance in our local environment, and build new capabilities as we partner start-ups and organisations to develop new solutions.



Free Electrons utilities and start-up participants in Berlin, Germany.



By 2050, Singapore aims to **halve the amount of emissions it produces** from its 2030 peak, with the view to achieve net-zero emissions as soon as viable in the second half of the century



Since 2017, Free Electrons has received more than **2,300** applications from innovative energy startups. More than **100** pilot programmes were initiated between the utilities and start-ups. More than **S\$30 million** has been invested in the start-ups.

Initiatives

Energy Access – SDG 7.1

Electric Vehicle Charging

The switch to low-carbon electric vehicles (EVs) is seen as an increasingly viable route for the decarbonisation of the transportation sector globally. With our geographic size, economic landscape and existing infrastructure, Singapore is well-placed to adopt green mobility, and SP Group aims to drive this change.

Over the past two years, SP Group has been partnering organisations to set up EV charging stations across the island, in line with the government's longer-term plan to build 28,000 electric vehicle charging points by 2030. In 2019, the high-speed EV charging network was increased to 200 points across Singapore, including 52 direct current fast chargers.

Locating the charging points can be done via the SP Utilities app. Through the app, users can start and stop charging, and pay for the electricity used. This allows for greater convenience to users to access the largest fleet of EV charging points in Singapore.

Renewable Energy – SDG 7.2

Solar Panels

SP Group has installed solar photovoltaic (PV) panels at our headquarters and district offices and developed storage systems to harness and deploy energy efficiently. This experience enables us to work with partners in the community and industrial customers to achieve similar sustainable outcomes. The Integrated Energy Solutions system includes features like the energy storage capabilities, energy sensors and a real-time digital platform to monitor, analyse and optimise energy usage. Machine learning models were also deployed to better monitor the panels' condition to reduce the need for regular inspections.

One such digital system was developed at the local SembCorp Marine Tuas Boulevard Yard that optimises energy consumption and harnesses solar energy for significant savings. The system is paired with 4.5 MegaWattpeak (MWp) solar panels, the largest single solar rooftop at a shipyard in Southeast Asia. It will provide up to 30 per cent of electricity consumed by the yard's steel structure fabrication workshop during peak load.



SP Group's direct current fast charging points offer our customers a convenient and quick way to charge their electric vehicles.

“We are very pleased to work with SP Group on the enabling infrastructure for EVs at Paya Lebar Quarter. We see EVs as representing a better environmental solution for cars in Singapore and are already seeing demand from our Paya Lebar Quarter office tenants for EV charging stations.”

- Mr Richard Paine, Managing Director of Paya Lebar Quarter

Green Hydrogen

While renewable energy such as solar and wind has been at the forefront of clean energy solutions, alternative clean fuels such as hydrogen gas has the potential to offer consumers a viable option for accessing clean energy. With water and energy as the bi-products, hydrogen gas as a fuel offers plenty of potential, more so for Singapore, which has limited renewable options.



SP Group harnesses renewable energy to create clean energy solutions for customers.

In 2019, SP Group installed a hydrogen energy system at our training centre at Woodleigh Park in partnership with Marubeni Corporation and Tohoku University. The system generates green hydrogen through electrolysis powered by solar energy. This has helped us convert the training centre into the first zero-emission building in Southeast Asia that is powered by green hydrogen. Since October last year, the building, which consumes about 2,000 kilowatt hours of electricity a month – equivalent to the monthly usage of five four-room Housing Board flats – has been able to operate independently from the national grid.


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University

Waste to Energy

Waste generation in Singapore has increased seven fold over the past 40 years, putting immense pressure on Singapore's only landfill at Pulau Semakau which will be full by 2035. With land being a scarce resource, there is urgent need to explore alternatives for waste disposal.

SP Group and Gardens by the Bay announced plans to pilot a zero-waste solution at the Gardens. This solution offers an effective alternative to incineration using compact gasification technology to convert waste into thermal energy and biochar. As a result, waste is reduced to only five per cent of its original volume and emissions are reduced by up to 20 per cent.

The smart-waste management system could enable sustainable zero-waste districts to be viable in Singapore, bringing the country closer towards a circular economy. In addition to tackling the waste issue, this technology will also allow us to explore efficient alternative solutions to generating energy and reducing our reliance on fossil fuels.



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The smart-waste management system is deployed at Gardens by the Bay.

Renewable Energy Certificates Platform

In 2018, SP Group launched the world's first blockchain-powered Renewable Energy Certificate (REC) marketplace. The marketplace enables the trading of RECs – for renewable energy producers to sell, and for consumers wishing to use green energy to purchase.

In 2019, an agreement was signed with the International REC Standard Foundation for SP Group to be the first authorised local issuer of I-RECs in the Asia Pacific. This international accreditation means consumers can be assured of the integrity of each REC transaction.

With the one-stop digital REC platform, SP Group is removing barriers so that big and small consumers can achieve their green targets seamlessly and securely.



A sample of an REC that is issued to consumers.



In 2018,
SP Group launched the **world's first** blockchain-powered
Renewable Energy Certificate
marketplace

Energy Efficiency – SDG 7.3

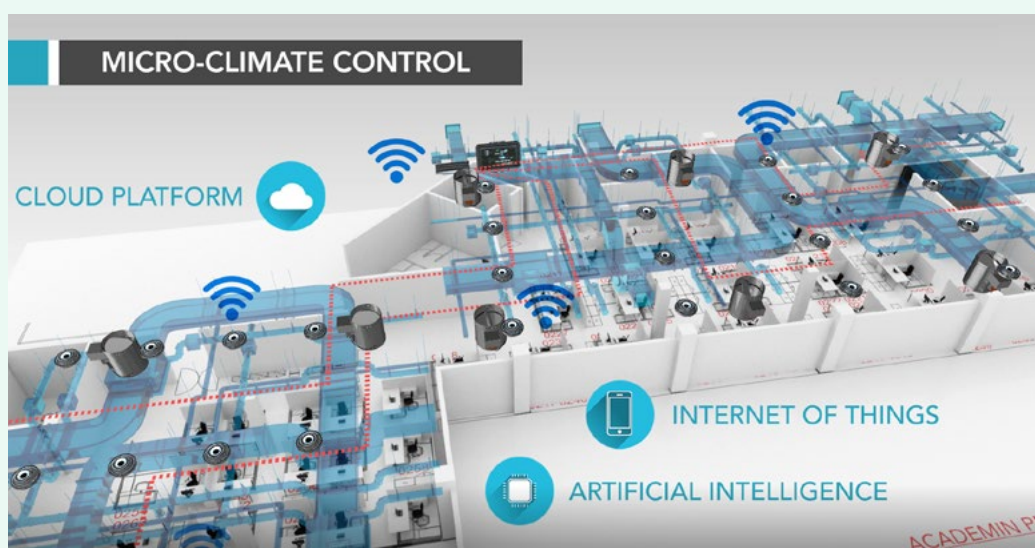
Smart Building Solutions

SP Group actively explores new technologies to support the energy needs of buildings and districts. With 75F, a building intelligence provider harnessing Internet of Things and machine learning, we are offering a micro-climate control solution that can save up to 30 per cent in energy consumption while improving occupant comfort. This solution has been deployed at DBS Asia Hub at Changi Business Park since February 2020.

Tenacity was launched in 2019 to provide offices, malls and campuses with an energy-efficient solution in both tenant and common spaces. As part of this product, the consumption insights were also offered for the landlord and tenants to know about unusual deviations from benchmarks, anomalies in usage, and water leakage detection. This allows customers to take concrete steps to save energy and water.

The first project was in Changi Airport where smart electricity and water meters were deployed for all tenants in Terminal 3. Data was aggregated through a wireless mesh network, becoming one of the first to integrate smart electricity and water meters in a wireless network within a building. Through the implementation of an energy-efficient solution, coupled with advanced meters and operational analytics within the tenant premises, we are able to improve operational efficiency in Changi Airport Group's utilities billing processes.

Since then, similar projects have been undertaken at HDB Connection One and Nanyang Technological University. SP Group is also working with the newly set up Singapore Eco Office from the Ministry of the Environment and Water Resources and Temasek Holdings to transform Tampines into an Eco Town. This is part of the Singapore Government's plans to rejuvenate and transform mature towns and make them more sustainable.



SP Group's micro-climate control solution allows customers to save up to 30 per cent in energy consumption while improving occupant comfort.

District Cooling and Energy Saving Solutions

At Marina Bay Sands, SP Group operates the world's largest underground district cooling system. Here, chillers centrally produce chilled water during off-peak periods, store the chilled water using a thermal energy storage system, and supply the chilled water for air conditioning use at the buildings in the Marina Bay area. If renewable energy that is used to power the chillers suddenly fluctuates, the lithium ion battery will immediately discharge energy to balance the supply, hence overcoming the challenge of inconsistent renewable energy in a cost-effective way.

For the innovative efforts, SP Group was presented with the 2019 Minister for National Development's R&D Merit Award at the Urban Sustainability R&D Congress 2019.

Performance

SP Group's low-carbon initiatives have enabled our customers to avoid more than 29,000 tonnesCO₂ in FY2019/2020, equivalent to planting more than 1.4 million rain trees¹ or taking more than 6,300 cars off the road for a year². Measuring this progress against the target of helping our customers reduce their carbon footprint, these initiatives have achieved 19 per cent increase in the CO₂ avoided since 2018.

Future Outlook

SP Group recognises that Singapore lacks land to scale up renewable energy systems. However, we plan to work with our neighbouring countries on cross-border power supply. Building transmission lines to connect the countries and using renewable energy credits to facilitate power trading can allow Singapore to use clean power even if it cannot produce it. Furthermore, we will continue to work on our strategic areas for innovation to provide our customers with low-carbon solutions.



SP Group's low carbon initiatives have enabled customers to avoid more than **29,000 tonnesCO₂** in FY19/20, equivalent to planting more than **1.4 million rain trees** or taking **more than 6,300 cars** off the road for a year



SP Group operates the world's largest underground district cooling system that supplies chilled water for air conditioning to buildings in the Marina Bay area.

1 One mature rain tree absorbs 0.0201 tonnesCO₂ a year - data from *My Carbon Footprint* study by South Pole
2 From US EPA Greenhouse Gas Equivalencies Calculator

Customer Empowerment

Why This is Material

The transition towards a clean energy economy will largely be driven by end-user consumption. Given that SP Group provides electricity and gas transmission and distribution services to consumers in Singapore, customer education and empowerment will support Singapore's target to transition to a low-carbon future. Beyond this, empowerment of customers can result in energy and cost savings for the customers of SP Group, increasing value to them.

Management Approach

SP Group's customers are at the core of our business strategies. Our initiatives for the community and our customers are aligned with our mission – to deliver reliable and efficient utilities services to enhance the economy and the quality of life.

Public education is an important aspect of our management approach. SP Heart Workers, the staff volunteers of SP Group, organise interactive workshops and training for members of the community on issues of energy efficiency and safety. In 2019, we engaged students from the Nanyang Polytechnic School of Interactive and Digital Media to develop a series of gas safety awareness videos. These videos were part of a gas safety campaign that we rolled out in September last year.

Empowerment Through Technology

To provide greater convenience to our customer base, we have embarked on a digital transformation journey. This has resulted in digital products that power internal business units and energy technology products that are available to customers.

With energy technology as a tool to drive sustainability, the primary goals are to: 1) inform, 2) enable and 3) add value.



Inform

Timely data, information and recommendations on your energy use.



Enable

Take actions through direct control and automation with AI recommendations.



Add Value

Providing economic value while contributing to sustainability.

Initiatives

Energy Access – SDG 7.1

Open Electricity Market

In 2018, the electricity market in Singapore opened up, allowing residential consumers to choose their utilities package from new retailers in the market. Regardless of their choice of whether to remain with SP Group at the regulated tariff, or switch to another electricity retailer, SP Group is committed to helping consumers make the right decisions which enable them to save energy and cost. Typical savings are between 20 per cent to 30 per cent off the regulated tariff.

To demonstrate our commitment, we have rolled out a price comparison feature on the SP Utilities app, whereby customers can see various price plans at a glance. This makes it easier for consumers to select price plans that best suit their consumption needs.

Energy Efficiency – SDG 7.3

Smart Technology

SP Group is increasingly shifting its focus to use data science and artificial intelligence (AI) to deliver efficient energy solutions to our customers. We refer to this as an “Energy Brain”. This “Energy Brain” uses intelligence gathered from a large volume of consumption data from both residential homes and businesses to provide customers with data-driven solutions.

Beyond this, we are increasing customer empowerment by installing advanced electricity meters for all households, allowing residents to access their half-hourly electricity usage through our SP Utilities app. These advanced meters allow residents to gain a better picture of their consumption patterns, enabling them to implement reduction and efficiency measures in a meaningful manner.



SP Group has facilitated the switch for many of our customers to enable them to save **20 per cent to 30 per cent** off the regulated tariff



SP Group uses data science and artificial intelligence to deliver efficient energy solutions to customers.

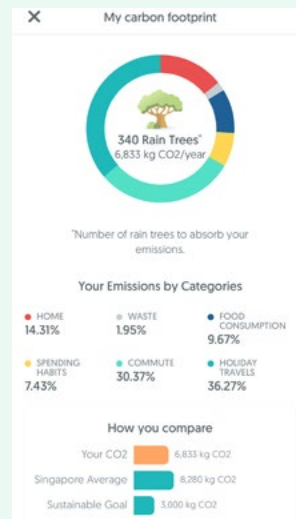
Energy Efficiency – SDG 7.3

Environmental Awareness

In March 2020, SP Group launched the enhanced Carbon Footprint calculator, called *My Carbon Footprint*. It enables everyone in Singapore to be more aware of the environmental impact of their daily actions. First launched in December 2019, the initial version allows users to view the carbon emissions resulting from their electricity consumption. The calculator that is available on the SP Utilities app allows everyone in Singapore to measure their environmental impact from their daily lifestyle choices according to their household profile, mode and duration of commute, frequency of holiday travel, spending habits and food consumption.

In addition, SP Group has launched initiatives that allow consumers to adopt a more sustainable lifestyle through their daily actions. GreenUP, also available on the SP Utilities app, aims to educate and empower customers to go green in a fun and interactive way. As of 31 March 2020, approximately 13 per cent of SP Utilities app users have participated in GreenUP and completed over 1.3 million activities cumulatively since its launch in September 2019.

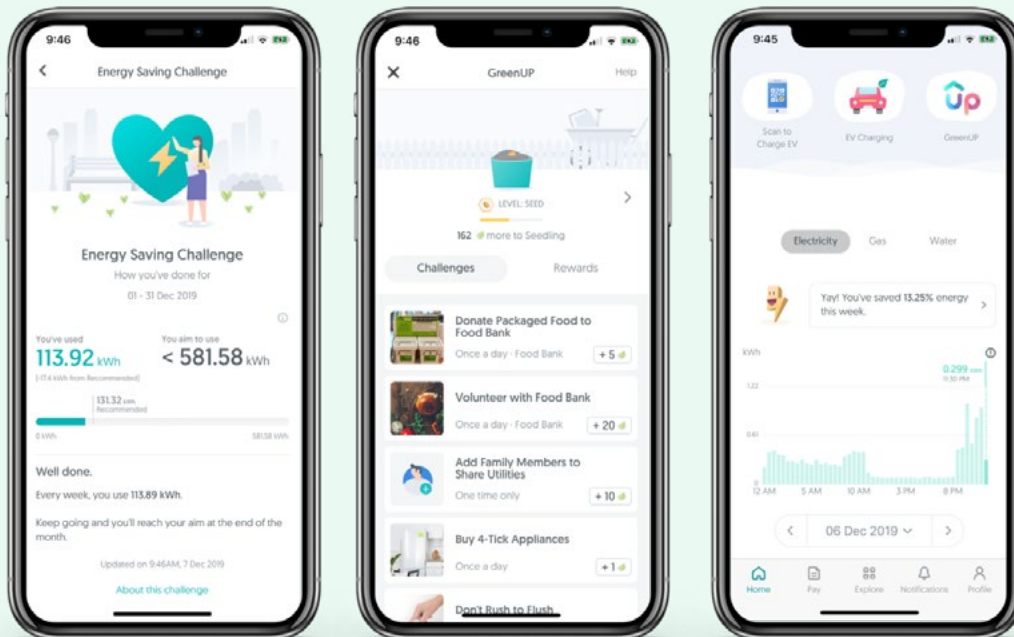
The Energy Savings Challenge was rolled out through various platforms including the SP Utilities app. A partnership between the National Environment Agency and SP Group, the Challenge was first launched in 2017 as a call to households to reduce their electricity use by 1 per cent by practising simple energy saving habits as a way of life to contribute to a sustainable environment.



A screengrab of *My Carbon Footprint*.



Approximately **13 per cent** of SP Utilities app users had participated in GreenUP and completed over **1.3 million** activities



With the GreenUP feature on the SP Utilities app, users can participate in challenges and earn rewards.

Performance

Customer Empowerment

As of 31 March 2020, 46 per cent of households and 43 per cent of eligible businesses have switched to buying electricity from a retailer of their choice. They have since enjoyed savings of about 20 per cent to 30 per cent off the regulated tariff.

Customers also have the option of buying electricity from the wholesale electricity market. Under this arrangement, customers buy at the wholesale electricity price which varies every half an hour depending on the prevailing demand and supply situation in Singapore's wholesale electricity market.

Customers are empowered with their utilities consumption data via the SP Utilities app. With more than 900,000 app downloads, customers are submitting their meter readings, viewing their bills and paying directly via the SP Utilities app. Customers can pay with all credit cards from over 380 banks and enjoy rebates and rewards offered by banking partners for payment through the app. We have processed over 800,000 unique transactions through the app since 2019, giving customers greater convenience.

SP Group has also installed 480,000 smart meters to businesses and households as of March 2020 and will continue to roll these out incrementally over the next five years.



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Future Outlook

SP Group's overarching goal is to empower everyone with the knowledge and tools to foster a low-carbon future for all. We will continue to harness digital technology to provide our customers with the information and means to lower their electricity consumption and adopt a more sustainable lifestyle.



SP Group enables a low-carbon and sustainable future for Singapore.

SUSTAINABILITY REVIEW FY2019/2020



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