# Nxera

Empowering the
## AI GENERATION
and
## DIGITAL ECONOMIES
sustainably.

Nxera Sustainability Summary Report

# Message from the CEO

I am delighted to launch this inaugural edition of Nxera's sustainability summary report. This marks a significant milestone in our journey as a standalone business unit within the Singtel Group.

The carve-out of Nxera is a strategic move and reflects the growth potential of our data centre business. With rapid digitalisation, cloud services expansion and AI advancements, the demand for data centres has been on a sharp rise. While Singapore remains a key data centre hub with excellent connectivity, supply constraints in the city-state will lead to a spill-over effect. Hence, it is opportune that we are quickly growing Nxera's regional data centre platform.

**Sustainability takes centre stage in our growth strategy as we scale the business. We recognise data centres consume significant energy and as a leader of digital infrastructure, we are focused on delivering next-generation innovative and sustainable data centres.**

Our new brand identity Nxera, which we launched in January 2024, embodies our vision to propel the data centre business into the next era. And it transcends business growth. Nxera conveys our commitment to ushering in a new generation of data centres where digital progress and environmental stewardship go hand in hand.

To achieve this, we are consciously embedding sustainability into Nxera's operations and have committed to achieving operational net-zero emissions by 2028. We will make a complete switch to green energy from the grid for our internal operations and common utilities. We will also support our customers in their green transition by providing access to renewables and carbon offset solutions.

We are excited about our upcoming flagship sustainable data centre, DC Tuas, which we broke ground on 8 August 2023. DC Tuas is poised to be a 58MW high-density data centre, featuring best-in-class Power Usage Effectiveness (PUE) of less than 1.3 at full load.
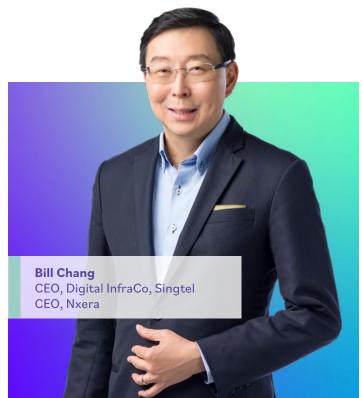
It will integrate cutting-edge innovation like liquid cooling systems for high compute intense AI workloads and use smart IoT systems and AI digital twin platform to enhance our operations. For our existing data centres, we are developing key partnerships and incorporating various technologies and solutions to further improve their operational efficiency.

Strong partnerships are essential to succeed – very much aligned to Sustainable Development Goal 17 of Partnerships for the Goals. With our track record in Singapore and the backing of Singtel and KKR, a leading global investment firm, we believe we can develop a thriving digital ecosystem of partners to help develop various technologies and solutions to further improve our current and future data centres.

Besides environmental sustainability, we are equally committed to social responsibility and governance to ensure the responsible growth of Nxera for our customers, investors, employees, communities and other stakeholders.

In this report, we outline our sustainability strategy and performance, including how we design, build and operate our data centres sustainably. We look forward to continue working with the industry towards a stronger, more sustainable and resilient future.

Thank you for your ongoing support.

**Bill Chang**
CEO, Digital InfraCo, Singtel
CEO, Nxera

# Nxera's Sustainability Approach

From concept to operation, Nxera approaches every aspect of our data centre life cycle with a sharp focus on creating positive impact, maximising value creation and minimising our environmental footprint.

We are phasing out our five older data centres and consolidating the IT power allocation into our next generation DC Tuas, which will be one of the most efficient and lowest PUE data centres in the region.

We are committed to designing, building and operating sustainable data centres that protect nature and the environment, as well as community care and support. Our next generation data centres lead the way in sustainability across four areas in energy, carbon and waste management and water stewardship.

## Design and Build
We strive to build greener data centres by using low carbon materials, adopting green construction methods and recycling construction waste to lower our embodied carbon footprint.

## Infrastructure and Technology
We endeavour to deploy equipment that has sustainable technologies to maximise resource efficiency, be it power or water.

**01** Activate power saving mode to avoid unnecessary energy use.

**02** Deploy innovative liquid and immersion cooling technologies to deliver cooling for high compute intense workloads efficiently.

**03** Pilot various water-related solutions to enhance water utilisation efficiency and optimise water usage, including rainwater recycling.

## Operations and Maintenance
We conduct careful material utilisation planning, recycle to minimise waste and optimise our equipment to reduce utilities consumption. Smart IoT and AI technologies are leveraged to monitor and optimise efficiency of our data centre and equipment performance.
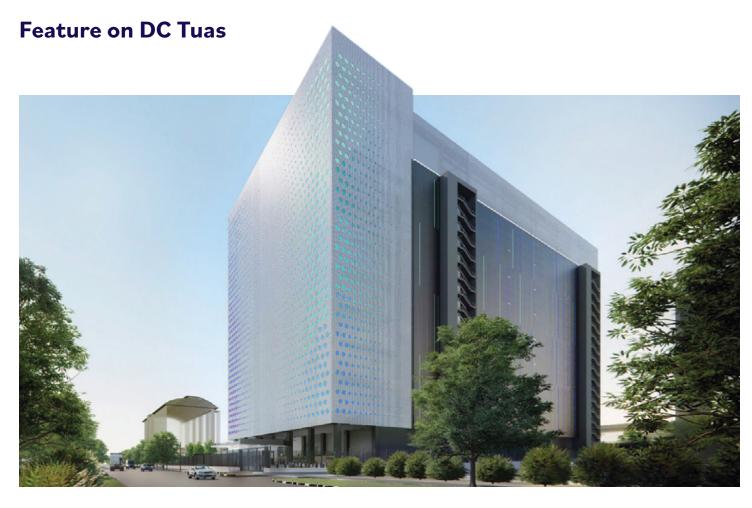
## Renewable Energy Sources
We are committed to achieving net-zero operational emissions by 2028 when all the energy used in our internal operations and common facilities are fully backed by renewables. To achieve this, we will maximise deployment of solar photovoltaic (PV) systems at all our facilities where feasible and work closely with our strategic energy partners to source renewable energy, as well as high quality carbon credits.

Meeting our customer needs is our top priority. We are committed to fully supporting our customers in their green transition, empowering them to move quickly to a low carbon economy. In collaboration with strategic partners, we will provide our customers access to various carbon offset solutions to help achieve their sustainability goals.

# Feature on DC Tuas



**Key sustainable features include:**

**01** Innovative façade designs aimed at mitigating urban heat island effect and reducing heat gain.

**02** Water conservation initiatives such as installation of a cooling tower with seven Cycles of Concentration, water efficient fittings, private meters, water leak detection systems and rainwater harvesting from the rooftop.

**03** Material conservation initiatives which encompass responsible use of refrigerants and suppressants, promotion of waste minimisation and recycling, optimising power efficiency, adopting sustainable building systems and construction, and use of green certified products.

**04** Onsite renewable energy through installation of solar PV systems, alongside rigorous energy monitoring.

In addition to certifying DC Tuas to Green Mark Platinum (Data Centre), we will conduct a Whole Life Carbon assessment. This involves comprehensive planning and design across all stages, such as tender, demolition, construction and operation of the data centre's development life cycle. We are setting a precedent for best-in-class sustainable practices in the data centre industry.

# Energy and Water

**At Nxera, we optimise energy and water use across our facilities. We employ rigorous energy and water monitoring methods to track, benchmark and minimise usage.**

Nxera is committed to transparent and meaningful public disclosure of our sustainability achievements. The table below shows the key environmental metrics of our two major data centres in Singapore – DC West and Kim Chuan 2.

In our pursuit of sustainability, we are exploring various innovative water management technologies and solutions to help save water and remove scaling problems, which optimises Water Usage Effectiveness (WUE).

We are also investigating the potential of rainwater recycling and feasibility of recycling cooling tower blowdown water at our sites. We installed solar PV systems at DC West in end-2023 to do onsite harnessing of solar energy.


DC West Data Centre


Kim Chuan 2 Data Centre


Solar panels at DC West Data Centre

**Table 1: FY2024 environmental metrics**

| ENVIRONMENTAL METRICS | DC West | Kim Chuan 2 |
|---|---|---|
|  | **FY2024** | |
| Total electricity use (MWh) | 270,058 | 98,932 |
| Total IT load (MWh) | 195,579 | 65,652 |
| PUE (Total electricity use/total IT load) | 1.38 | 1.51 |
| Water use (m³) | 332,288 | 157,344 |
| WUE (Water usage/total IT load) | 1.70 | 2.40 |
| Common spaces and DC operations (scope 2) (MWh) | 6,488 | 8,634 |
| Client usage (scope 3) (MWh)* | 263,569 | 90,298 |
| **Green Mark Certification** | **Platinum** | |

*As Nxera's first sustainability summary report, we are disclosing key data for FY2024 and setting this as our baseline year.

# Green Partnership Ecosystem



**Nxera has cultivated a diverse network of green partners who share our values and goals. Through collaborative efforts, we drive innovative resource efficient solutions for our data centres to address environmental challenges and push for a more sustainable future. Our partnerships focus on four key areas.**

## Driving Sustainable Growth through Partnerships

Renewable energy plays a pivotal role in Nxera's operational net-zero strategy. Regionally, we partner leading energy players such as Gulf Energy, Medco Power, Sembcorp Industries and Tenaga Nasional Berhad to leverage their renewables initiatives for our data centres across the region.

> *As a leading renewables player in the region, we look forward to partnering Nxera in progressing decarbonisation initiatives for its data centre operations. Sembcorp Industries' strong pipeline of sustainable energy, low carbon projects and carbon management solutions will comprehensively support Nxera's next phase of growth in Singapore. Our carbon management business, GoNetZero™, will support its progress towards operational net-zero goals through digital platform solutions and sourcing of verified environmental attributes, including renewable energy certificates and carbon credits."*
>
> **Koh Chiap Khiong, CEO**
> **Singapore and Southeast Asia, Sembcorp Industries**

> *Supermicro is very happy and respectful of Nxera's vision to realise an energy-efficient AI data centre. It not only shows that they care about our planet's $CO_2$ footprint, but indeed they will also reduce their data centre energy cost significantly. As their close AI and server partner, we will do our best to help Nxera with the lowest energy consumption systems and work with them to achieve one of lowest PUE data centres in the world."*
>
> **Charles Liang, Chairman and CEO of SuperMicro**

## Testing Sustainable Technologies

We collaborate with both local enterprises and global leaders such as Deston, QCT, Red Dot Analytics, SGP Global, Shell, Stulz and Supermicro. We want to establish a co-innovation platform for developing and testing sustainable technologies, like digital twin technologies and liquid and immersion cooling, with the goal to deploy impactful solutions at our data centres. We also aim to pioneer innovative use cases for increased energy efficiency and service resilience at our AI-ready data centres.

## Supporting AI Development

Our strategic partnership with Nvidia is pivotal in supporting Singapore's NAIS2.0 initiative. We aim to become an NVIDIA Cloud Partner, working to establish an AI infrastructure and platform that provides access to Graphic Processing Units (GPUs), AI tools and support capabilities. Leveraging Nxera's extensive connectivity and Singtel 5G Paragon cloud platform, we will drive AI development and innovation in the region.



## Talent Attraction and Development

Recognising the shortage of skilled data centre professionals in the region, Nxera is developing a Regional Sustainable Data Centre Academy with various Institutes of Higher Learning – Institute of Technical Education, Nanyang Polytechnic, Singapore Polytechnic, Temasek Polytechnic and Singapore Institute of Technology.

Together, we will develop and pioneer a comprehensive training programme to cultivate a robust pipeline of talent for the design, build, operations and maintenance of next generation of sustainable, hyper-connected and AI ready data centres. When ready, the academy will offer accreditation at all proficiency levels from diplomas and specialist diplomas to university degrees. We are also developing micro-credentials and industry certifications to provide upskilling and retraining opportunities for all aspiring professionals.

Our forward thinking training programme encompasses fundamental data centre knowledge and specialised areas such as sustainability, green energy and data centre design for AI applications. By equipping our workforce with knowledge and expertise in these evolving areas, we aim to address talent shortage and advance our industry.

This underscores our dedication to fostering innovation and meeting the growing demands of the data centre industry in a holistic and sustainable manner.

# Social Impact and Governance at Nxera

## Diversity, Equity, Inclusion and Belonging, and Employee Engagement

At Nxera, we recognise the importance of diversity, equity and inclusion in fostering a thriving workplace. Currently, 26% of our employees are female. We are committed to promoting diversity and ensuring equal opportunities for all employees.

Our dedication to employee engagement is evident in the significant increase in our engagement score, rising to 63 from 51 last year. Through regular feedback mechanisms and initiatives, we strive to cultivate a culture of open communication and collaboration among our teams.

**Table 2: FY2024 employee metrics**

| Total employees by gender | |
|---|---|
| Female | 45 |
| Male | 117 |
| Total | 162 |
| **Total employees by age group** | |
| < 30 years old | 12 |
| 30– 49 years old | 106 |
| ≥ 50 years old | 44 |
| **Total training investment ($million)** | **0.14** |
| **Average training hours per employee** | **11.29** |

## Employee Safety and Well-being and Fair Labour Practices

In alignment with Singtel Group's ***Environmental Policy*** and ***Workplace Safety and Health Policy***, Nxera upholds rigorous safety protocols and labour practices to ensure the well-being of our employees. We create a safe and supportive work environment where every individual is valued and empowered. All our data centres are ISO 14001 certified.





With a strong emphasis on transparency and accountability, this inaugural report underscores Nxera's commitment to sustainability and environmental stewardship, driving positive change for our business, industry and planet.

Through meticulous data analysis, rigorous efficiency protocols and strategic partnerships and collaborations, we are actively reducing our carbon footprint while setting new standards for sustainable practices within our industry. We also continue to develop and care for our workforce, which plays a pivotal role in this journey.

**As Nxera continues on our sustainability journey, we remain resolute in our pledge to integrate sustainable practices into every aspect of our business and operations, thereby shaping a more resilient and better future for all.**