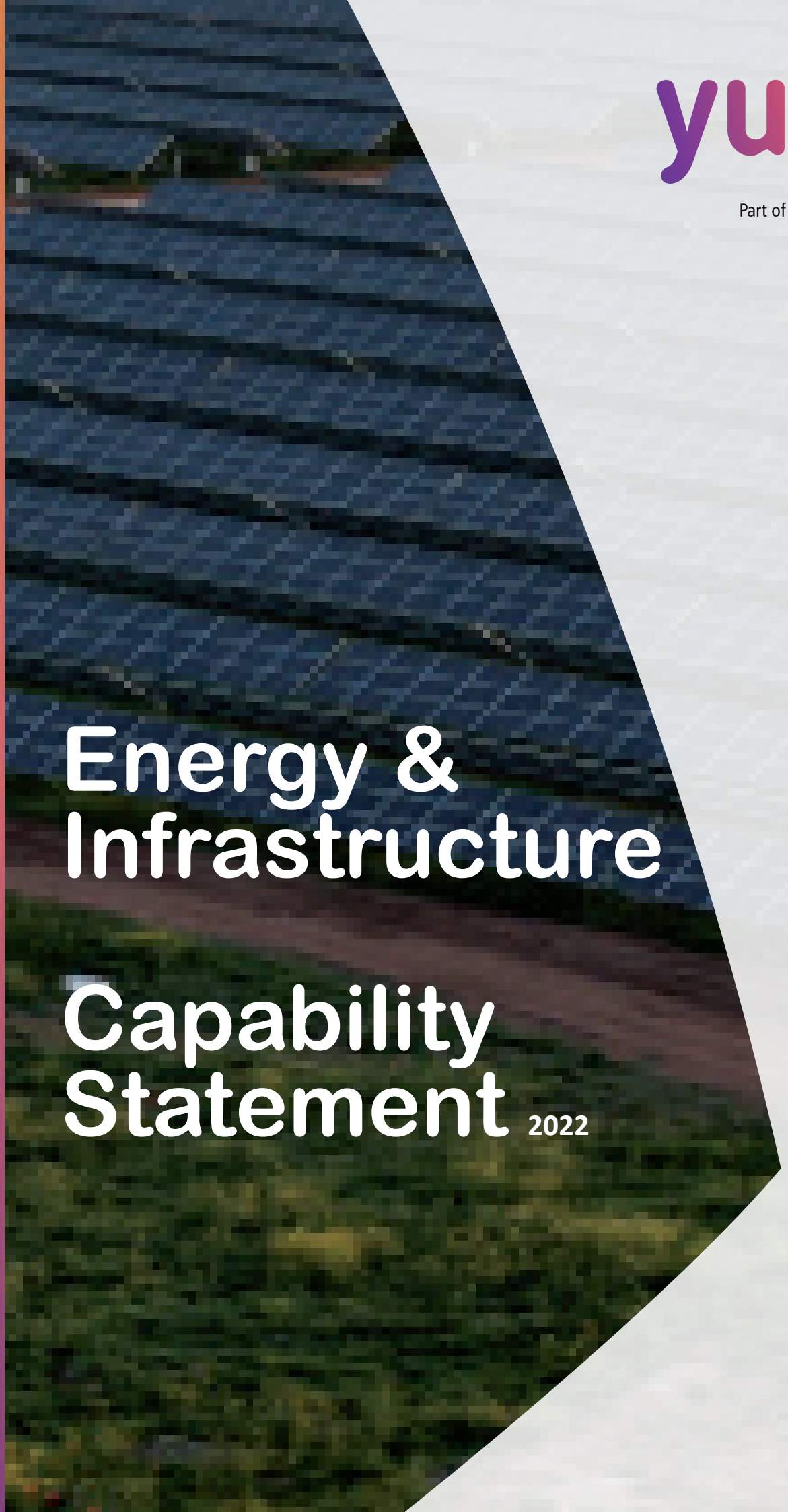


yurika

Part of Energy Queensland

Energy & Infrastructure

Capability Statement 2022

yurika.com.au

Our specialised team of engineers create fit-for-purpose solutions to meet a variety of client budgets.

yurika

Part of Energy Queensland

Energy & Infrastructure

Our experienced, on-the-ground crews adopt a collaborative approach with clients to execute our full turn-key solutions safely, every time.

Transmission & distribution

We specialise in end-to-end, high voltage design, installation, maintenance, testing and commissioning.

Our experienced engineering team provides solutions geared to meet a variety of client budgets and outcomes. We provide certified solutions aligned with all relevant national engineering Codes and Standards. Our engineers are registered as RPEQ, NPER and CPEng, further supporting our comprehensive list of industry qualifications.

Our experience and expertise in design, manufacturing, installation, testing and commissioning extends across a range of operations — primary plant, civil and structural, secondary systems, protection and control, as well as communications and metering.

Pre-feasibility/Connection

Feasibility and financial analysis

We keep energy simple by offering extensive feasibility study services. These services present comprehensive analytical modelling for current energy bills and meter data, overlaying it with a view of the supporting infrastructure that may be required at your site. We produce a financial summary providing you a cohesive and detailed report with options to reduce your energy costs.

Option and solution development

Demonstrating expertise across grid connection, design and construction:

- Technical solution options
- Loss factor assessments
- CAPEX-OPEX optimisation
- Technical compliance assessment.

Modelling and grid connections

Our teams work with network service providers to support grid connections throughout Australia. We provide comprehensive R1 & R2 testing, as mandated with the Australian Energy Market Operator, and in accordance with the Australian Energy Regulator. Our highly experienced and qualified team of engineers are well placed to negotiate and perform connection and GPS studies.

We deliver:

- Connection studies – PSSE and PSCAD modelling
- Support for registration of new/modified generator connections in line with Chapter 5 of the National Electricity Rules (NER)
- Network Service Provider connection liaison and support.

Delivery

EHV, HV & MV infrastructure

EHV — Extra High Voltage (275kV and above)

HV — High Voltage (66kV, 110kV, 132kV)

MV — Medium Voltage (11kV, 22kV, 33kV)

Our team provides turn-key solutions, comprehensive project and site management, and principal contractor agreements for 11kV – 275kV installations. We have extensive experience and expertise in design, manufacturing, installation testing and commissioning across a variety of operations, including primary plant, civil and structural, secondary systems, protection and control, as well as communications and metering. We offer state-of-the-art in-house testing and commissioning capability, and are NATA certified with a proven track record in meeting AEMO and NSP requirements.

Substations

Our factory-built solutions are an economical alternative to brick-and-mortar construction; minimising wastage, enabling concurrent production unaffected by weather, and allow for offsite factory acceptance testing. Our products are precision engineered, constructed, and fitted-out in our specialised production facility, delivered safely to site in a modular format.

We offer:

- Modular control and switch rooms manufactured in house
- Optimised high voltage substations (greenfield and brownfield)
- Fit-for-purpose, designed to suit client requirements and budgets.

Modular manufacturing

We've supplied a range of factory-built solutions that have been tested under the harshest conditions for a range of major national infrastructure customers. With manufacturing facilities based in Brisbane, we draw on our long-standing experience in the energy industry to deliver modular manufacturing products and services focused on modern energy solutions and tailored to unique customer requirements. Our products are precision engineered to the strictest utility grade standards, constructed, fit-out and installed safely on site.

Our modular substations, control rooms, switch rooms, capacitor banks and skid base substations enable you to fast-track your projects in both brownfield and greenfield environments.

Options include:

- Switch rooms
- Control rooms and communications centres
- Structural fabrications
- Protection and control panels
- In factory testing.

Testing and commissioning

Commissioning and testing of high voltage equipment is critical to the long-term performance and reliability of assets. We provide a wide range of testing and commissioning services from factory acceptance right through to commissioning and energisation.

These services include, but are not limited to:

- NATA Accredited Capability
- Meter Accuracy Testing
- CT/VT Accuracy Testing
- Factory Acceptance Testing (FAT)
- Site Acceptance Testing (SAT)
- R1 Testing
- R2 Testing.

Specialised high voltage test services

We deliver high voltage test services and diagnostics from state-of-the-art facilities on Brisbane's northside, along with mobile on-site services for clients. The specialist staff at the high current and voltage laboratories are available to comprehensively test and maintain equipment, delivering accurate and reliable diagnostics along with experience in electrical engineering, interpretation, and analysis. The field services team installs, overhauls, and maintains transformers and associated substation equipment.

We provide high voltage test and overhaul services for:

- Transformers
- Bushings
- Insulators
- Metal enclosed switch gear
- Cables and transmission line and substation hardware
- Transmission and distribution switches.

High voltage specialist services

We rigorously test to Australian and international electricity standards and recommendations covering:

- Partial discharge
- Dielectric loss angle
- Radio interference voltage
- Visual corona
- Wet/dry power frequency withstand and flashover
- Dry lightning impulse critical flashover and withstand
- Wet and dry switching impulse critical flashover and withstand
- Compliance to class for instrument transformers.

Our team develops and customises testing programs tailored for research and new product development and offers detailed testing and analysis into high voltage apparatus failure.

High voltage capabilities

Our specialised high voltage testing capabilities cover lightning impulse voltage tests up to 1000kV, switching surge tests up to 1000kV, and power frequency tests up to 1000kV.

We routinely conduct:

- Lightning and switching impulse tests on power apparatus
- Impulse tests on transformers
- Partial discharge tests on internal insulation
- Visual corona on transmission and substation hardware
- Load cycling and qualification tests on high voltage power cables
- Contamination testing of external insulation
- Design and type tests on polymeric, porcelain and glass insulators
- Generator and motor stator tests
- Periodic safety testing of HV safety equipment
- Compliance to class of instrument transformers.

Power quality infrastructure

This includes specialised capabilities including delivery:

- Synchronous condensers
- Harmonic filters
- Cap banks
- Statcoms.

Overhead lines and underground cables

We offer turn-key solutions for all overhead connections, maintenance, decommissioning and full engineering, procurement, and construction (EPC) works.

We are an accredited service provider for NSW Utilities with a full complement of fleet and personnel to provide an end-to-end service from design through to construction, we deliver:

- Overhead or underground reticulation infrastructure
- Wind turbine generator interface infrastructure.

Overhead powerlines

- Dedicated project and construction management
- Certified design and engineering
- Procurement and logistics
- Large scale regional warehousing and logistics capacity
- Broad and well-established national supplier network
- Construction, maintenance and testing through dedicated field resources
- Lines and substation crews providing a wide range of services from anti-corrosion maintenance right through to lattice towers and line pulling for transmission networks
- OPGW installation and replacement
- Foundation civils works and earthing installation
- Testing and commissioning of installation on completion of works including HV audits and supporting energisation of assets.

yurika

Part of Energy Queensland

yurika

Part of Energy Queensland

Operations & maintenance

We are a longstanding, established technical services provider, independent from manufacturers and EPC. We have a diverse range of reliable, national resources and approach preventative and corrective maintenance activities with a bottom-up, defined approach. Our on-site services are delivered in partnership with an expansive network of engineers, electrical workers and technicians ensuring that plant performance is optimally designed to safeguard and optimise your generation and/or high voltage connection assets. Preventative maintenance activities routinely conducted by our expert team.

High voltage networks

When it comes to high voltage assets, experience, specialisation and safety are paramount. We routinely conduct:

- Substation maintenance
- Communications maintenance
- Line works and line maintenance
- Inspection of overhead distribution system
- Thermography of high voltage connections
- Substation earth resistance tests
- Protection system inspection and maintenance
- Approval of the maintenance schedule

We work with you to develop customised services to ensure you get the best solution, backed by our support, service and resources.

Our maintenance services include:

- Initial site audit and electrical drawing validation
- Identification of corrective works
- Development of an approved routine maintenance plan
- Force (emergency) corrective works
- Corrective works
- High voltage switching
- 24/7/365 access to operations control centre hotline and callout services

Identification and resolution process

We operate a dedicated in-house Service Operations Centre (SOC) focused on alert management and responsiveness. It delivers first line monitoring, supported by second line analysis, maximising the ability to investigate alarms while resources are being dispatched. All activities support our plant managers in delivering better assessment and accurate reporting to stakeholders.

Energy storage and renewables

We offer:

- Preventative maintenance
- Corrective maintenance
- Extraordinary maintenance

Renewables – Generation & Storage

Our experience in the design, modelling, engineering and delivery of key electrical infrastructure is at the core of what we do. We are resourced and committed to the provision of the full end-to-end value chain which begin with pre-contract works such as planning, modelling, design, through to construction, supervision and commissioning services. Reducing costs and working within defined and challenging project timelines, we're committed to always putting safety and quality first while delivering a variety of contemporary, renewable solutions.

Solar farms and rooftop systems

Solar photovoltaics (PV) are the fastest growing bankable technology used to generate electricity. We understand the relationship solar PV presents to electrical infrastructure- inverters, substations, transformers, metering- as well as its connection to distribution or transmission networks.

Once the solar assets are operational, we offer ongoing operations and maintenance services that include energy management platforms, to ensure customers are provided transparent control and insights into the performance of their solar assets. We focus on providing high quality energy generation systems that use locally supported, market-leading technologies, to ensure that any commitment to long term performance is continually maintained with confidence.

Wind farms

From planning and development right through to design, construction, testing and commissioning, we can provide Balance of Plant (BoP) services for wind farm projects across Australia.

Our depth of understanding, in particular the Electrical Balance of Plant (EBoP) performance and interface requirements, sees us as a strong delivery partner for renewable energy. Post-commission, we can manage and maintain the ongoing operational requirements which allows optimal efficiency and energy production.

As at 2022, our team is delivering EBoP services for two wind farm projects with combined capacity of over 1,400MW.

EBoP for 100 turbines, 450MW wind farm including:

- Three 275kV/33kV substations
- Two 275kV transmission lines (≈22km)
- 33kV underground reticulation (≈100km)
- 33kV overhead reticulation (≈26km)

EBoP design for 180 turbines, 1,026MW wind farm including:

- Three 330kV/33kV substations
- 33kV underground reticulation (≈400km)

We have proven abilities in managing difficult terrain, hard geotechnical conditions and tight programs of works that sees the CBoP, EBoP and TSI scopes of work being constructed concurrently on our wind farm projects.

Demonstrating capability in batteries, Yurika has designed, installed, tested and commissioned numerous 4MW/8MWh BESS across Townsville, Windemere, Beach Holm, Kleinton, Tanby and Urangan.

The BESS are connected to the local High Voltage Network and act as solar soaks for the high level of residential solar systems in the area.

Battery Energy Storage Systems

Battery Energy Storage Systems (BESS) are a great way to further optimise your energy savings, or even generate revenue.

The BESS are connected to the local High Voltage (HV) networks with direct connection to the National Electricity Market (NEM). The option to generate revenue by providing energy via arbitrage and by providing grid support during demand peaks. It does this while operating as a virtual power plant (VPP), trading on the wholesale energy and FCAS markets.

Different types and depths of storage*:

- **Distributed storage** non-aggregated behind-the-meter battery installations designed to support customer load
- **Coordinated DER storage** behind-the-meter battery installations that are enabled and coordinated via VPP arrangements
- **Shallow storage** grid-connected energy storage durations <4 hrs
- **Medium storage** energy storage with durations between 4-12 hrs
- **Deep storage** – energy storage with durations greater than 12 hrs

* AEMO Draft ISP Report

Bundled and hybrid offerings

Grid connected and stand-alone power systems

Hybrid and off-grid systems can be achieved using a combination of different technologies to produce power and/or heat. Our ongoing and extensive experience in working with other distribution networks means that we have a long-standing history in designing, building, owning, maintaining and operating vertically integrated (generation, distribution, metering and retail) isolated power networks in remote and regional parts of Australia.

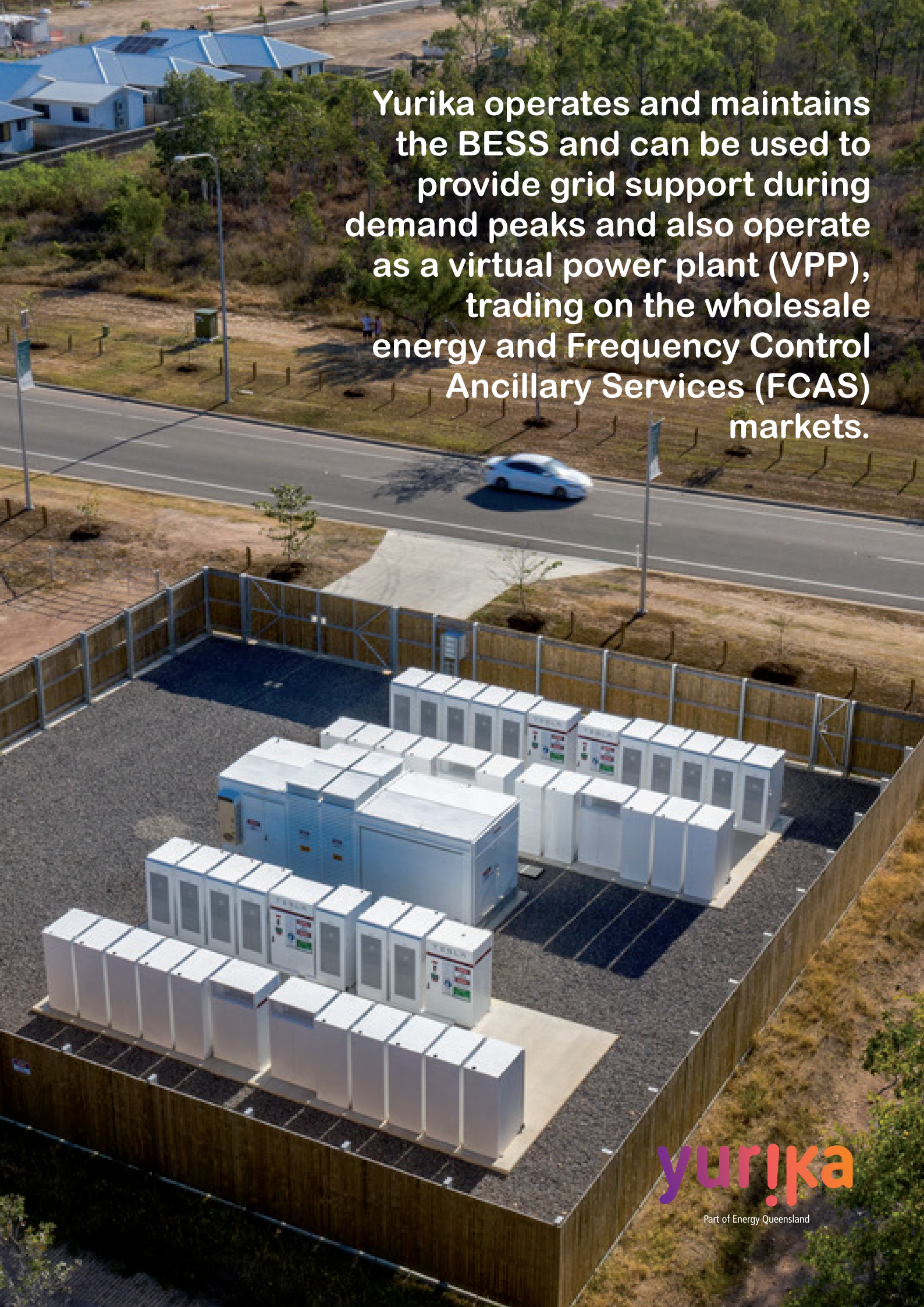
We have demonstrated experience in the design, engineering, delivery and operation of a variety of power systems including:

- Isolated community systems
- Edge of grid systems
- System strengthening
- Backup power and
- Business systems.

Microgrids and embedded networks

We offer extensive experience in the distribution network. Coupled with this, our work in metering supports our capability to efficiently engineer and construct microgrids or networks that are geared at optimising revenue for network owners. Our in-house capability enables us to streamline processes and deliver savings in energy management by buying electricity in bulk and selling it to tenants through our specialised, tailored-made embedded network solutions.

Our microgrid technology allows customers to achieve energy independence, delivering localised reliable, economical, and eco-friendly energy.



Yurika operates and maintains the BESS and can be used to provide grid support during demand peaks and also operate as a virtual power plant (VPP), trading on the wholesale energy and Frequency Control Ancillary Services (FCAS) markets.

yurika

Part of Energy Queensland

yurika

Part of Energy Queensland

Charging infrastructure & services

Fleet

With an in depth understanding of networks and electrical infrastructure, we have the foundations required to set up and scale electric vehicle fleets for any growing business.

Through rich data insights relating to your fleet, we provide valuable insights that include:

- Location of vehicles
- Most popular charging locations
- Length of time vehicles are charged
- Trends on vehicle usage

Our professional fleet charging capabilities include:

- Consultation and strategic planning to ensure future scalability
- Energy load management and charge scheduling
- Operations and maintenance
- Reporting and analytics.

Commercial charging infrastructure

We understand the importance of long-term thinking, and ensuring that infrastructure is well planned, offering important services for your region. We proudly specialise in complex infrastructure builds that are future fit to meet the needs of large-scale electric vehicle fleets and charging solutions including industrial builds and public transportation.

Hydrogen

We are agnostic to charging types and support several hydrogen project business cases. We make strong contributions through our energy and storage expertise at both grid and distributed scales.

yurika

Part of Energy Queensland

Building a world of opportunity with solar power solutions

Delivering the high voltage infrastructure for a 96,000-panel solar farm during a pandemic wasn't the only challenge Yurika's team faced when working on Mytilineos' ambitious project in 2020.

There were 6.5 kilometres of high-voltage overhead transmission line to upgrade while keeping the lights on to other customers, plus the delivery of a network switching station and private substation that met two different standards. How did Yurika's team meet the challenge?

Power partnership

Halfway between Sydney and Melbourne, among the wheat fields, sheep farms, and vineyards of the New South Wales Riverina region, a new solar farm is helping grocery giant Coles make the switch to renewable energy.

Junee was always the perfect location for a solar farm with sunny days, clear skies and open space. An Australian-owned specialist in renewable energy development spotted the site's potential in 2017 and partnered with landowners and the local community to get the project off the ground.

Then, in 2019, Mytilineos acquired a portfolio of solar projects and struck a landmark 10-year deal with Coles that would see around 10% of Coles' electricity needs generated from three large-scale solar farms, including the one in Junee.

The company, which takes on complex and demanding solar projects worldwide, has 400MW of solar in Australia. But the Junee project was one of its first forays into the Australian market. Mytilineos selected Yurika to manage the delivery of the switching station, substation and the high voltage lines that connect with Essential Energy's network.

Green and regional growth

- 30MW, 96,000-panel solar panel solar farm on 80 hectares of land
- 6.5-kilometre upgrade of 66kV high-voltage overhead lines to dual fibre optic cable
- A three-way 66kV switching station that meets two sets of standards
- A 10-year power purchase agreement supplies Coles with renewable energy.

Smart solutions

Yurika, part of Energy Queensland, took responsibility for installing the high voltage connection asset of distribution lines, switching station and substation. This included electrical cabling, telecommunications equipment, and the harmonic filter yard, which eliminates unwanted harmonics to improve equipment performance and reduce energy costs.

The plan was to export the energy generated from the solar farm to Essential Energy's distribution network – but an upgrade of the existing overhead transmission line was required first to support the load.

"It was a big technical challenge to upgrade more than 6.5 kilometres of existing in-service overhead transmission line – but it was a challenge Yurika's team of accredited service providers met with zero safety incidents and without any major customer outages," Yurika's General Manager Energy and Infrastructure Peter Schofield said.

Flexible and fast-tracked

Delivering on time and budget during the depths of Covid-19 presented unprecedented roadblocks. "State borders were shut and we faced a multitude of shortages of both skilled resources and supplies," Mr Schofield noted.

Yurika adopted a flexible delivery model that fast-tracked purchasing and supply of goods to the site. The modular switch room, for example, was built in Brisbane and transported to Junee.

A geographical resourcing strategy saw several key personnel relocate to the region. The project also created dozens of jobs for local engineering, civil, and fibre optic subcontractors who are now skilled up for a renewable energy boom that could employ 45,000 people by 2035,[1] three-quarters of those in regional and rural Australia.

[1] Based on scenario modelling set out in the Renewable Energy Jobs in Australia: Stage One Study, June 2020

"We find that communities are excited about the opportunity of solar projects as they bring money into town, create jobs, and build skills in a twenty-first-century industry," Mr Schofield said.

The third big challenge was to deliver energy infrastructure that met two different standards. Essential Energy's switching station operates to one standard, where energy is routed from various sources or to different customers. At the same time, the adjacent solar farm substation requires a different standard to step up generation voltage to network voltage.

"Because Yurika is an end-to-end service provider, we could meet the technical requirements of standard compliance with a cost-effective solution," Mr Schofield explained.

Sustainability and social benefits

Yurika completed the project in August 2020 – on time and budget – and the multi-dimensional solution is already delivering big dividends.

Today the 96,000 solar panels on the farm operate as a single-axis tracking system, following the sun during the day to maximise energy generation. The farm powers grocery stores around the country and has been designed with spare capacity as Australia's energy mix evolves. "The farm is future-ready," Mr Schofield said.

Yurika's team takes great satisfaction in delivering energy solutions that support Australia's renewable future. "Balancing three different elements was challenging – but achieving our client's ambitions makes this a stand-out project. Success is measured in the relationship we have with our clients and partners. We have completed two other projects with Mytilineos and have another two in the pipeline."

Mr Schofield concluded: "Yurika's future is bright."

And Junee, a town characterised by old-fashioned charm – lamp posts, hitching rings, and nineteenth-century buildings – is now playing its part in the twenty-first century renewables race.

yurika

Part of Energy Queensland

Yurika Pty Ltd
ABN 19 100 214 131
Part of Energy Queensland Pty Ltd
Level 3, 420 Flinders Street, Townsville QLD 4810
PO Box 1090, Townsville QLD 4810