Sunrise Energy Group

Capability Statement

www.sunriseenergygroup.com.au

sunrise
energy group

Company Information

Sunrise Energy Group (Sunrise) is a renewable energy project developer, but unlike most project developers, Sunrise seeks to have a “whole of Life” relationship with its customer. In our opinion, this is a necessary requirement when delivering projects either via a power purchase agreement (PPA) / offtake arrangement or capex purchase. This is because we aim to develop and grow relationships so that we can work together to deliver success throughout the entire project life, including the operations and maintenance phase.

Our experience includes designing, modelling, engineering, and delivering renewable energy and electrical infrastructure. We provide full end-to-end value chain services 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 often challenging project timelines, we’re committed to always putting safety and quality first while delivering a variety of renewable energy solutions.

Project delivery, operations and maintenance and ongoing value enhancement all matter to Sunrise, as they are core to a successful “whole of life” relationship. Sunrise has therefore taken a significant amount of time over the past 5-6 years to pull together a suitable delivery model for the construction, operation, and ongoing value enhancement for the projects we develop or assist in developing.

Our delivery model includes our strategic partners, who are sub-contractors we prefer to partner with on projects. We do not tender the project scope; in fact, we bring our partners into the project early so that they can participate in the early development activities alongside us. We collectively understand that what we are often doing has not been done before, and we have a very strong attitude around open communications and learning quickly and adjusting on projects.

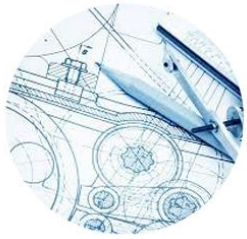
Renewable Energy

Battery Energy Storage Systems

Stand-Alone Power Systems

Renewable Energy Microgrids

FEED Reports & Consultancy



Our Services

Overview

Sunrise provide a wide range of services for our customers ranging from energy modelling reports to developing a project from the early concept to operational management.
Sunrise is dedicated to guiding clients through every phase of renewable energy projects, ensuring seamless execution from inception to completion. Specialising in energy modelling, option and FEED studies during concept development, Sunrise empowers customers to make informed decisions about their sustainable energy investments. By offering comprehensive support throughout the project lifecycle, Sunrise transforms renewable energy aspirations into efficient, viable solutions that meet both environmental goals and financial objectives.

Our services include, but are not limited to:

Build Own Operate Contracts

Sunrise can build, own (finance) and operate renewable power system for clients. We mitigate any risks and reduce workloads for customers by taking responsibility for its design and ongoing management and operation.

Sunrise can offer the renewable energy power system as an energy-as-a-service model via a Power Purchase Agreement (PPA). This means that there are typically no, or very little upfront capital costs to clients. The PPA terms are usually based on a contract of 10 or more years and a buy-out clause can be included. A PPA for a solar PV and BESS project usually include a fixed annual capacity fee to account for the battery hardware in addition to the PPA rate for electricity consumed from the system.

A PPA also includes annual maintenance costs factored into the rate so that Sunrise can service and maintain the system to ensure it provides clients the best value for money.

Microgrids

A microgrid is a system that efficiently controls and integrates the electricity supply and demand on behalf of locally interconnected users, either connected to the grid or as a stand-alone (islanded) system.

Sunrise can provide valuable assistance to customers looking to design and develop microgrids. We understand the complex regulatory and technical compliance requirements to ensure the successful execution and operation of the project. Whether it is a microgrid for a residential or industrial / business estate we can help customers design and implement the system that provides the best solution to suit the power requirements.

Standalone Power Systems

A Standalone Power Systems (SPS) can be used to provide power to large or small electrical loads. Whether it be a large off grid mine or a home wanting to disconnect from the grid or avoid the cost associated with a new grid network connection. An SPS can also be used to provide power whilst a grid connection is obtained.

Sunrise work with our customers who are considering a SPS to get a thorough understanding of their power requirements so we can customise the design of the SPS to meet their needs and budget. An SPS usually consists of solar PV, a battery energy storage system (BESS) and a diesel generator for backup power.

Our SPS systems are designed to endure Australia's tough conditions and are remotely monitored and controlled. This allows us to diagnose and fix faults remotely, with our teams conducting regular on-site maintenance. This approach helps to reduce costs and maintenance efforts.

Studies

As a leading renewable energy developer, we offer a comprehensive suite of services designed to meet your project's unique needs. Our ad-hoc consultancy provides tailored advice and solutions to help you navigate the complexities of renewable energy development. We specialise in energy modelling studies to optimise performance and efficiency, ensuring your project meets its sustainability goals. Our Front-End Engineering Design (FEED) studies provide detailed planning and design services, laying a solid foundation for successful project execution. Additionally, our feasibility studies evaluate the viability of potential projects, considering technical, economic, and environmental factors to help you make informed decisions. With our expertise and commitment to excellence, we are your trusted partner in advancing renewable energy initiatives.

FEED Studies

A Front-End Engineering Design (FEED) study includes completing an assessment of the technical requirements so that the main costs and risks can be identified. Sunrise usually complete enough of the detailed design in the FEED study so the project can be accurately costed for a clients investment decision.

Energy Modelling and Network Tariff Optimisation

Using modelling software and in-house software and tools, Sunrise can help customers make decisions on the most appropriate size and type of renewable asset(s) required to achieve their goals. For behind the meter (BTM) network connections, Sunrise can also help customers select a retailer and the most cost effective electricity tariff. We provide analysis and assessment of network and energy market fees and charges so our customers can understand the impact the BTM renewables will provide so they can get the best value for money.

Green Hydrogen

We can provide modelling and specification of power systems for green hydrogen production and calculating the expected green hydrogen yield and any storage requirements. Working with our partners we can provide turn-key solutions incorporating all elements of a green hydrogen production facility into a project.

Project management

We can assist with project management services to help navigate clients through complex renewable energy projects or development work.

Key Delivery Partners

Avora Energy (Avora) take on the role of procurement management, construction management, site works and mechanical assembly. The team has a lot of experience across these disciplines but typically use mature resources from other industries who apply different thinking to work execution. Their experience includes extensive work in the mining and oil and gas sector; therefore, they are well versed with regulatory and safety standards so that they can comply with site requirements.

Jarrah Solutions (Jarrah) take on the role of HV connection approval and connection design and delivery. This includes the Access Application process, through to HV submission, technical compliance reporting and commissioning sign off. They also design, procure, install and commission the connection point equipment typically in the form of a container that the project connects through to integrate with the customer's network "behind the meter". Their scope has also extended to including the design of the "Smart Substation" where the project has an extremely high renewable content and electricity flows to and from the grid.

CKE Consulting (CKE) are electrical engineers who take on the role of our design engineers covering the solar and storage components as well as assisting with the connection approval and providing the associated electrical design. They are well suited to this having worked closely with power systems for many decades, including all stages from concept development and planning through to detailed design and also providing inspection and commissioning services on projects. CKE have in depth of knowledge and experience with technical standards relating to the connection of new load and generation onto the SWIS.

West State Electrics (WSE) take on the role of LV electrical work. They undertake the electrical work to connect the panels through to the combiner boxes and on to the inverter blocks. They also confirm the earthing solution has been correctly installed. WSE have a large in-house capability to draw on to complete these activities.

Preferred Technology Products

Sunrise has developed robust relationships with certain technology providers for our solar solutions. Our preferred technology products include:

1. Nextracker: their single axis tracking system that we use on ground mounted projects are a highly advanced engineered design and they optimize energy production by up to 15%.
2. Longi Panels: highly efficient monocrystalline bifacial panels, particularly for our tracking-based solutions.

Our Experience

Sunrise has valuable experience in delivering renewable solutions, providing consultancy advice and developing high level concept models for a variety of clients. The following summaries provide an overview of some of our most recent work:

Image Resources: 3 MWp Solar Farm

Sunrise provides energy under a build, own, operate model to Image Resources in a PPA for the offtake from the solar farm. The asset owner is Climate Capital. The “behind the meter” system was commissioned in September 2020 and consists of Longi solar panels, a Nextracker single axis tracking system to ensure optimal performance and an SMA inverter/transformer.

The 3 MW solar farm is constructed in 3 arrays each of around ~1 MW, all connected to a single 2.5 MVA SMA inverter/transformer. The powerline connecting the solar farm to the connection point container is around 1.9 km and must traverse 2 gas pipelines and abide by environmental constraints (avoiding TEC vegetation) as well as going under the main mine access road.

The 3MW Solar Farm and the Mine in the background.

The project was delivered on time and on budget within the constraints and challenges created by the Covid19 pandemic, including impacts to logistics and construction operating protocols.

Image Resources - New Renewable Energy Solution Consulting

We have been working with Image Resources in a consulting role since July-21 to help them develop renewable solutions for their new mine site and to project manage a new grid connection. The new mine located approximately 130km North of Perth requires a new 25 km overhead network to be installed for the main processing plant. The mines camp and bores however will not be able to be grid connected therefore we have been working with the client to design suitable off-grid stand-alone power systems (SPS) to accommodate their power requirements.

Image Resources has also engaged Sunrise to assist with developing an energy strategy and execution plan for its other projects currently under development as each project moves through to FID.

Peel Business Park: Microgrid with 1.2MWp Solar Farm & 1MW / 2 MWh BESS

The Peel Business Park in Nambeelup is a strategically located industrial estate designed with a focus on agri-innovation and sustainability. This project is our first joint development with Peel Renewable Energy (PRE) and Synergy – a consortium established to build, own and operate the industrial park's embedded network/microgrid for Development WA.

The initial ground mounted 1.2MWp Solar Farm, 1MW/2.5MW Battery Energy Storage System (BESS) and smart sub-station for the renewable energy microgrid operates "behind the meter" and is scalable as energy demand within the park grows. This Australian first renewable energy industrial microgrid now supplies customers at the Peel Business Park with safe, reliable and renewable power at a meaningful cost saving to regulated electricity tariffs.

Using high efficiency Longi mono-PERC bifacial solar PV panels, a Nextracker single axis tracking system, FIMER skid mounted inverters and transformer and a SAFT BESS, we are providing a renewable solution that can be expanded upon utilizing additional warehouse rooftop mounted solar arrays as the park grows.

The smart substation was energised in August 2020, the solar farm was installed in late 2020 and the BESS was installed in February 2021. The system was commissioned and energised in March 2021. The project was delivered on time and on budget within the constraints and challenges created by the Covid19 pandemic, including impacts to logistics and construction operating protocols.

Photo: Solar farm shortly after installation of panels Dec-2020

Zenith Energy acquired PRE and now have two more Microgrid projects in Ocean Reef and Eglington with Sunrise providing project management and technical advisory services for these.

Perth Airport – Front End Engineering Design Report for a 5MWp Solar Farm

In November 2021, Perth Airport awarded Sunrise the contract to complete the FEED for a 5MWp solar farm. The FEED includes the activities and engineering design work that needs to be undertaken to accurately cost the capital investment of the project. The FEED report includes such things as the preliminary electrical drawings, solar farm grid connection, integration and communication report and a procurement and construction schedule. Our report also documents the key risks that remain on the project, the likelihood, and consequences of them occurring and the proposed mitigation measures we can undertake to reduce them. We expect the Perth Airport to make an investment decision on the project in Q1, 2023.

Private Estate: 230kW Solar PV, 250kW/600kWh BESS & 176kVA Generators

Sunrise identified an off-grid stand-alone power system (SPS) solution as an opportunity for a private estate near Yallingup in Western Australia to avoid the high costs associated with the required network connection upgrade.

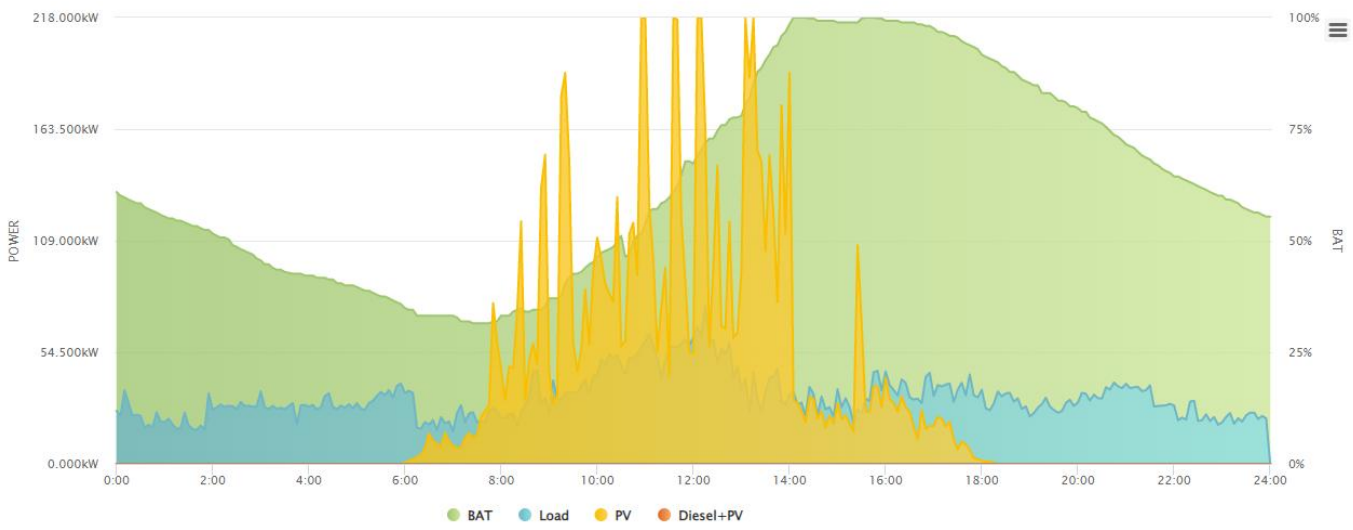
Through consultation and analysis of the energy options available, Sunrise designed, supplied and installed a “small commercial solution”. The solution comprises of a 600kWh AlphaESS battery with a 250KW Sinexcel battery inverter, a 230kW solar PV array with 4x50kW GoodWe solar inverters and two 176kVA backup diesel generators.

The system was commissioned in September 2020 and has been running well since. The solar and battery can accommodate the maximum daily consumption without the use of diesel during reasonable weather conditions. In the first year of operation the system has provided more than 85% renewable content to the owners saving them electricity costs and creating a positive environmental impact.

The 250kW / 600kWh BESS inside a custom-built plant room

The 230kW Solar Array

Real time monitoring and control of the system is achieved through the energy management system (EMS). The below image shows an example of the EMS dashboard showing the generation and consumption data as well as the state of charge of the BESS.



Off-Grid SPS: 40kWp Rooftop Solar PV, 50kW/100kWh BESS & 50kVA Generators

In July 2021, we completed the installation of an SPS for a customer in The Lakes, Western Australia. The solution comprises a 50kW Sinexcel hybrid inverter and 100kWh of battery storage capacity using AlphaESS batteries and 40kWp of solar PV. The solar is mounted on a shed at the property and connected to the hybrid inverter that is housed in a custom-built plant room that was added to the back of the shed. A 50kVA diesel generator is also connected to the system and a second 50kVA diesel generator is available for backup or maintenance via a manual transfer switch.

Off-Grid SPS: 65kWp Ground Mount Solar PV, 50kW/200kWh BESS & 88kVA Generator

In March-23, we commissioned a stand-alone power system (SPS) for a newly built home in Western Australia. To maintain aesthetics, a custom plant room to house the battery and associated electrical equipment was designed and built. The 65kWp north facing ground mount solar array was installed, consisting of three rows with the plant room and diesel generator situated at the south end.

The client wanted high renewable content for this system, ideally as close to 100% as possible. They also wanted us to design the system so that it could support EV charging and make provisions so that the system can be expanded in the future. To help achieve this we created a load profile for the property which was then extrapolated into a 12-month synthetic load. Using this data, we modelled the solar generation and battery storage so that we could define the system requirements to achieve high renewable content. An 88kVA diesel generator was installed so that during winter when lower solar irradiance is expected the generator can support the house load and quickly charge the battery, reducing diesel run time and consumption.

The 65kWp Ground Mount Solar Array

Custom Built Plant Room for the BESS

Off-Grid SPS - Shed: 34kWp Rooftop Solar PV, 50kW/68kWh BESS & 50kVA Generator

This SPS was designed to provide power for a farm shed and was commissioned in April-23. Another custom plant room to house the battery and associated electrical equipment has been designed, built, and installed for this system.

Infinite Green Energy (IGE): Arrowsmith Green Hydrogen Plant

Sunrise have been providing consultancy services to IGE since 2017 to help develop their hydrogen processing plant concept. In early 2020, IGE contracted us to complete the Front-End Engineering Design (FEED) report for the renewable power supply for stage 1 of their proposed Arrowsmith hydrogen plant.

The plant has been designed to scale up as demand for hydrogen grows making it one of the world's largest renewable hydrogen production facilities. In collaboration with Avora Energy and Jarrah Solutions we designed a 65MW solar farm, a 90MW wind farm and smart sub-station for the plant. We also provided modelling and analysis as to whether a battery energy storage system (BESS) could add value to the project. Included in this modelling was analysis of the economic value of market participation in regard to selling and buying energy at WEM balancing rates.

Lynas Corporation – New Renewable Energy Solution Consulting

Sunrise was engaged by Lynas in a consulting role to review the feasibility of wind, solar and battery solutions for their new processing plant in Kalgoorlie. Sunrise provided an evaluation of options and recommendations for suitable renewable energy solutions that aim to benefit the local community and meet local content and cost reduction requirements.

PNX Metals: 4.6MWp Solar Farm, 2.3MW/2.3MWh BESS & 3,000kVA Generators

In December 2021, PNX Metals made an ASX announcement that Sunrise are the preferred supplier for their power plant at their Fountain Head Gold Mine project in the Northern Territory. We completed preliminary analysis and modelling of the mines forecast load requirements and proposed that a 4.6MWp Solar Farm, 2.3MW/2.3MWh BESS and three 3,000kVA diesel generators would offer the best value.

Murray Engineering – FEED Report for a 1MWp Solar Array

We completed the preliminary modelling and analysis of Murray Engineering's new warehouse load requirements and proposed that a 700kW to 1MW rooftop solar system would provide them with the greatest value for money. In October 2021, we were contracted by Murray Engineering to complete the FEED study report for the system. In addition to the FEED report we have been helping the client navigate their way through the connection process with Western Power.

Perth Airport – 5 MW Solar Farm

Sunrise were engaged by Perth Airport in 2021 to complete the Front-End Engineering Design (FEED) report for a 5 MW solar farm to be deployed at the airport "behind the meter". In conjunction with Avora Energy and Jarrah Solutions, we completed the FEED report in December 2021.

Collgar Wind Farm (CWF) – Front End Engineering Design Report for a 5MWp Solar Farm and 1MWh BESS

In August 2022, CWF awarded Sunrise the contract to complete the FEED for a 5MWp solar farm. The FEED includes the activities and engineering design work that needs to be undertaken to accurately cost the capital investment of the project. Integral to this FEED report is the design of the control system so that the solar PV can be integrated with the existing Vestas control system and AMSC's reactive power units whilst maintaining technical compliance.

The FEED report also included such things as the preliminary electrical drawings, solar farm grid connection, integration and communication report and a procurement and construction schedule. Our report also documents the key risks that remain on the project, the likelihood, and consequences of them occurring and the proposed mitigation measures we can undertake to reduce them.

Infinite Green Energy – Northam Solar Farm Consulting Services

In December 2021, IGE engaged Sunrise to provide a technical due diligence report for the Northam Solar Farm (NSF). The report provided assessment of the current condition of the solar farm, identified any issues and identified any constraints or network concerns on the SWIS that (may) impact the farms operations.

In August 2022, IGE engaged us to provide a cost estimate report with options for the expansion of the solar farm. We provided four options for the expansion of the solar farm that included preliminary solar PV layouts, a PVSyst solar PV report, marked up existing single line diagram (SLD) drawings to show how additional solar PV could be connected and advised on network augmentation that would be required to facilitate extra solar PV at the site.

In October 2022, IGE awarded Sunrise the contract to complete the engineering design works and cost estimate to facilitate a new Hydrogen production plant at the NSF. The work includes a design to upgrade the existing NSF sub-station and plan for a new HV overhead cable to connect to the new hydrogen plant.

Mullewa Renewable Microgrid – 1MW Solar, 1/2MW Wind, 3MWh battery

Sunrise were awarded grant funding to investigate the feasibility of establishing a renewable Microgrid in the fringe-of-grid town of Mullewa that would improve power reliability and amenity for Mullewa residents and could be applied as a repeatable model to other fringe-of-grid towns suffering from poor reliability.

The output from the study was the proposed development of a renewable microgrid that consisted of a 1MW solar farm, two 600kW wind turbines, a 3MWh battery and a 600kW back-up diesel generator all connected to the Mullewa distribution network via automated protection and controls that would enable it to automatically island from the main grid on loss of grid power, forming a self-sustaining microgrid.

A development application has been submitted based on this proposal for Mullewa and the project has an application in for grant funding to support its implementation.

Kemerton Battery Energy Storage System (BESS) – 100MW/400MWh

Sunrise have been developing our big battery project since 2022. Strategically located within the Kemerton Industrial Area the 100MW/400MWh BESS will be connected to the SWIS to participate in the Wholesale Electricity market (WEM). The Western Power connection application was submitted in 2023 and talks are ongoing to agree and finalise the access offer. The Development Application is currently with the local shire and JDAP for approval.

Caravel Minerals

Sunrise is assisting Caravel Minerals with their strategy for powering a new mine with a combined load of 125MW. This includes providing services associated with grid connection options.

Green Steel of WA

Sunrise is assessing behind the meter (BTM) renewable generation and energy storage options in support of the proposed operations in Collie Western Australia.

Edenlife

Sunrise have completed a techno economic energy modelling report for the new Edenlife Byford residential estate. The modelling report has now led to Edenlife engaging Sunrise to complete a FEED study for an off-grid renewable energy power station to power the estate until a grid connection can be obtained in about 2 years.

Sunrise Strengths

- We deliver reliable, bespoke solutions based on the location and available connection.
- We take into account the customers values, budget and mindset.
- We have a “whole of life” relationship with our customers.
- We are committed to assisting our customers in a seamless transition to renewables.
- The high-quality information provided to us allows us to develop commercial propositions beneficial to all parties involved.
- We are transparent in our assumptions surrounding our cost benefit calculations.
- We have a substantial amount of IP, experience in the energy industry and project analysis techniques available.