

Sunrise Energy Group

Capability Statement



www.sunriseenergygroup.com.au

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



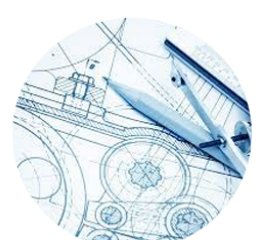
Stand-Alone Power Systems



Renewable Energy Microgrids



FEED Reports & Consultancy





Our Services

Pre-Feasibility and Financial Analysis

- We develop innovative techno-economic proposals for renewable energy systems behind the meter and off-grid.
 - o We can offer various project delivery models or provide the system as a capex investment.
 - Additionally, we can provide power purchase agreements (PPA) and competitive financing options.
- We can complete Front-End Engineering Design (FEED) reports for renewable energy solutions
- We help advise clients on tariff selection and guide them through the network connection / generator connection process with the Network Service Provider (NSP).
- We help de-risk projects for clients by identifying and proposing risk mitigation strategies.

Plan & Design

- We help clients plan and design renewable energy solutions that are tailored to their needs and aligned with their business objectives.

Build & Construct

- We can build and construct projects that are grid connected or off-grid. We are dedicated to safe working practices and enforce zero harm risk management processes.

Testing and commissioning

- Commissioning and testing of 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.

Operate and Maintain

- We can manage the operations and maintenance of the power system for our clients leveraging the knowledge gained in the project life.

Service / Ownership Model

<ul style="list-style-type: none"> • Peel Business Park Industrial Microgrid 1.2MWp Solar PV & 2.5MWh BESS 	<p>Build Own Operate (BOO)</p> <ul style="list-style-type: none"> • Image Resources Gingin 3MWp Solar farm • PNX Metals 4.6MWp Solar PV & 2.3MWh BESS • Image Resources New Mine SPS Options <p>Co-Develop with others</p>	<p>Product Solution Range</p>
<p>Grid connected - Large multiple loads</p> <ul style="list-style-type: none"> • Lynas Corporation Power options study • Collgar Wind Farm FEED report for solar PV & BESS • Perth Airport FEED report for solar PV & BESS • IGE – Northam Solar Farm Design & Engineering 	<p>Grid connected - single load</p> <ul style="list-style-type: none"> • Murray Engineering FEED report for solar PV & BESS • IGE - Arrowsmith Hydrogen Plant 90MW Solar & 65MW Wind <p>Off-grid - single load</p> <ul style="list-style-type: none"> • Koobeja 40KWp Solar PV & 100kWh BESS <p>Off-grid – Large multiple loads</p> <ul style="list-style-type: none"> • Wildwood 230KWp Solar PV & 600kWh BESS <p>Provide services for asset owners</p>	

- Refer to our project experience p.5 for details

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 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. We have to date taken a standard design approach to our projects, around the DC side, using our preferred equipment suppliers, but note that dependent on size there will be optimisation around the inverter/transformer blocks. These design blocks do change each project, typically because panels keep changing, but the underlying design principles remain the same.

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 Nambelup 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 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

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.

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

Wildwood Estate is the holiday estate for a wealthy mining family, south east of Yallingup in Western Australia. Sunrise identified an off-grid stand-alone power system (SPS) solution as an opportunity 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.

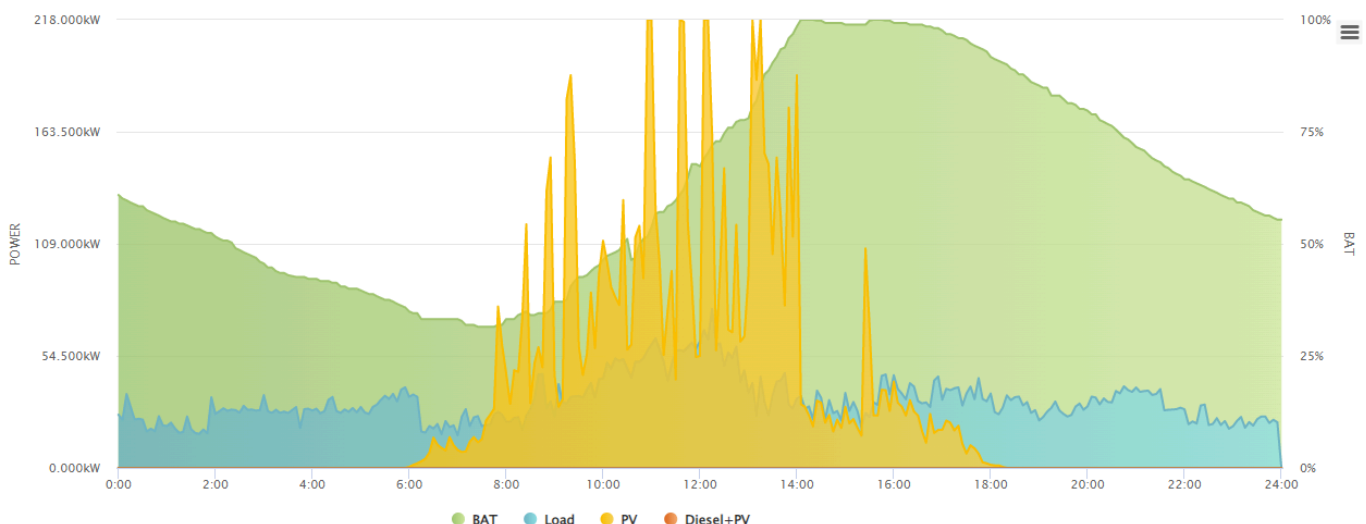


*The 250kW / 600kWh BESS
inside a custom-built plant room*



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.



Koobeja: 40kWp Rooftop Solar PV array, 50kW/100kWh BESS & 50kVA Generators

In July 2021, we completed the installation of another SPS for the Wildwood owners at their Koobeja property 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.

Koobeja: 65kWp Ground Mount Solar PV array, 50kW/200kWh BESS & 88kVA Generators

In March-23, we commissioned a stand-alone power system (SPS) for a newly built home on the Koobeja estate. 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

Koobeja - Shed: 34kWp Rooftop Solar PV array, 50kW/68kWh BESS & 50kVA Generator.

Another SPS at the Koobeja estate for the new farm shed 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. We now look forward to being contracted in early 2023 to complete the FEED study report for the proposed power plant.

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.



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 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 CWF to make an investment decision on the project in Q4, 2022.

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.

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.