

# Stand-alone Power Systems (SAPS)

Essential Energy is responsible for building, operating, and maintaining one of Australia's largest electricity networks. Our network spans a wide area across New South Wales and parts of Southern Queensland, including humid coastal environments, semi-arid desert, alpine peaks and a grain belt. A vast network spread across a range of environments means that there are a high number of our network assets which look after a proportionally small amount of customers.

There are approximately 4,300 customers who are connected to our network which carry less than one customer per 3km of the network. While these customers equate to approximately 0.5% of our customer base, they require around 17 percent of the installed network.

Essential Energy's Stand-alone Power System (SAPS) is an alternative, off-grid power source suited for customers whose properties are located on long powerlines, servicing a small number of connections. When a SAPS is installed and operational, the powerlines that supply the property may be removed. All SAPS will be installed and maintained by Essential Energy as a replacement of the traditional poles and wires.

## How a Stand-alone Power System works

The solar panels generate electricity during daylight hours with any excess energy used to charge the battery. The battery then provides power at night or when the weather is overcast for long periods of time.

A diesel generator provides back up when, on occasion, energy use is higher than what the solar panels and battery can supply.

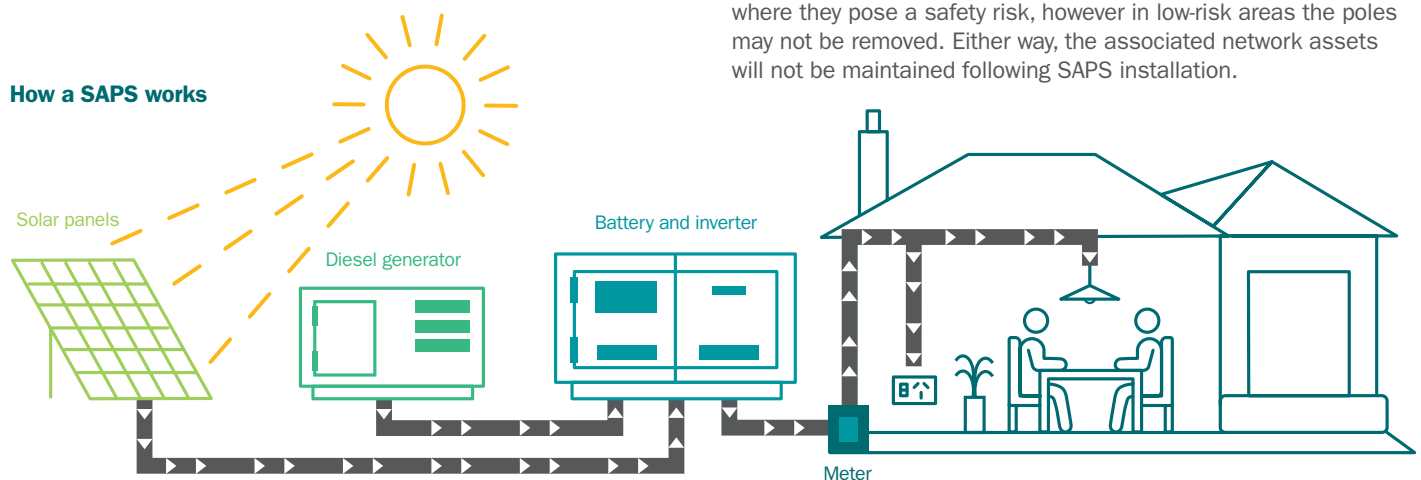
SAPS can be used to power homes, sheds, workshops, offices, and accommodation. The system is optimised to meet individual customer needs. While SAPS are more commonly installed to provide power to a single customer, we can also create a small, low-voltage MicroGrids that can supply multiple connections at a single location.

## How they integrate into our network

The SAPS units will not connect to the national electricity grid and will be a totally off-grid power solution for our customers. The customers' meter and retailer connection will remain in place.

Ideally, over time existing powerlines would gradually be decommissioned after successful SAPS implementation, although poles may not be removed immediately. Poles will be decommissioned where they pose a safety risk, however in low-risk areas the poles may not be removed. Either way, the associated network assets will not be maintained following SAPS installation.

### How a SAPS works



# Stand-alone Power Systems (SAPS)

## Benefits of SAPS

### Increased reliability

For customers whose properties are located on the end of long powerlines, this can sometimes mean poorer, overall electricity supply reliability and supply capacity. With the electricity generated on-site, this removes the need for long powerlines and the SAPS can be configured to meet specific individual customer demand.

### Reduced environmental impact

With no network assets required with SAPS, this removes the need for vegetation clearing requirements on private land. Additionally, SAPS power is provided primarily from renewable sources.

### Improved resilience during natural disasters

SAPS can provide a more reliable service, especially in the event of natural disasters. SAPS generate electricity on-site, meaning they do not rely on supporting infrastructure that could be affected by natural disasters, such as bushfires.

### Quicker energy resupply

SAPS provides the ability to resupply energy to customers after natural disasters quicker than traditional poles and wires network. In cases like these, the SAPS would be set up as a short-term emergency response to supply power to affected areas.

### Improved bushfire risk management

With the removal of long powerlines, the installation of SAPS helps reduce the bushfire risk. SAPS also have the potential to enable a customer or community to isolate itself and remain energised in a bushfire emergency. This is particularly important for keeping telecommunication towers and fire-fighting equipment operational.

### Reduce operating costs

The removal of the traditional poles and wires means there are reduced operating costs for asset and vegetation maintenance, infrastructure and the high-cost-to-serve areas of our network.

### Improved safety outcomes

SAPS helps to provide improved safety outcomes with the removal of powerlines, associated land activities and the removal of hard to access sections of the network.

## Customer Engagement

When alternative power solutions such as SAPS are a viable option for our customers, a detailed customer engagement strategy will be implemented to provide education and information on SAPS to explain the benefits and limitations of SAPS units. Because SAPS power is provided primarily from renewable sources, the capacity of these systems is vastly different than being connected to the network. As such, ensuring our customers are engaged and informed before agreeing to the installation is critical to their success. All SAPS will be installed and maintained by Essential Energy as a replacement of the traditional poles and wires, ensuring our customers will receive the same level of service as the traditional network.

## When are SAPS installed?

The Australian Energy Market Commission (AEMC) has recently finalised the design of a national SAPS Regulatory Framework which is currently in the process of being adopted in NSW, with oversight to be provided by the Australian Energy Regulator. In anticipation of the SAPS framework being adopted in mid-late 2021, Essential Energy is currently trialling SAPS across our network to assist our learning and knowledge of the systems and impacts to customers.

Once the regulatory framework is approved, Essential Energy intends to install SAPS to address the fringe-of-grid, low-resilient and high-cost-to-serve areas of our network. All sites selected for possible SAPS installation will go through detailed modelling to ensure the best outcomes are achieved for our customers. We are currently researching potential customers who would benefit from the installation of SAPS.

In the event of natural disasters such as floods and bushfires, SAPS can be used as a permanent replacement of the network, or a short-term emergency response to maintain power supply to affected areas.



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