

**COMMUNITY BATTERY DESIGN BRIEF
MUDGEONGA PUBLIC HALL**

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1. Site Overview

1.1. Solar PV capacity max

Pylon model suggested the Hall could host an additional 15kW. The Hall already has a 5kW system.

1.2. Electrical infrastructure and limitations

The Hall connects to a 50kVa transformer. The switchboard is presently capable of 63 amps two phase. Therefore, we expect to be limited to 5kW to 10kW export capacity at any one time from any solar and battery system.

1.3. Preferred output as suggested by modelling

We would recommend installing an additional 10kw of solar PV and 20kwh of battery storage to the hall.

2. System Design

2.1. Recommended System

2.1.1. System Summary

For sites that have an energy resilience focus a flow battery is recommended.

Solar PV Size	10kW
Solar PV Brand	Tier One (Tindo, SunPower, Hyundai, Jinko)
Battery Size	20kWh
Battery Brand	Redflow
Inverter Size	2 x 5kW
Inverter Brand	Deye
Control Device	Mondo UBI
Electrical infrastructure	63-amp Two Phase supply
Grid Connectivity	Connected to a 50kva transformer

2.1.2. Site Battery System Details

Supply and Install 2 x Redflow ZBM3 10kWh battery stacks with Redflow heating system. This system will be coupled with a 5kW Deye Hybrid Inverter and a 5kw grid facing inverter. Battery decibel rating is low at no more than 40dB.

2.2. Design Layout

2.2.1. Solar PV layout



2.2.2. Site layout



The dimensions of the proposed battery are:

- Height: 1m
- Width: 1m
- Length: 1m

Redflow batteries are a containerised unit and can be padlocked to ensure the safety of the site is maintained. No cages or bollards are required to protect the battery or to restrict access.

Battery placement is based on the applicable standard (AS5139). In summary, the standards state that a pre-assembled integrated battery energy storage system shall not be installed:

- a) Within 600mm on any exit, window, door, an appliance, in access walkways or evacuation routes.
- b) Within 900mm below any of the above.
- c) Against a wall where there is a habitable room on the other side unless the wall is of a suitably non-combustible barrier, or there is a non-combustible barrier between the wall and the battery. A surface or barrier material is considered suitably non-combustible if the material is deemed to be not combustible when tested in accordance with AS1530.1. The following are considered non-combustible and do not need to be tested: brick or masonry block, concrete, compressed cement sheeting, ceramic or terracotta tiles.

2.2.3. Structural considerations

No observed structural issues.

3. Delivery

3.1. Delivery Plan

Delivery of a project like this should take around 6 months.

3.2. Indicative Delivery Costs

We estimate the cost of the above to be around \$58,000 ex GST.

The installation above will generate 110 STC's. These STC's will be kept and sold by the installer. The value of the STC's has been subtracted from the total cost of the solar installation and this cost reduction is reflected in the total estimated cost of the facility. If STCs are retired, rather than sold, the above total cost will increase by around **\$4,125 ex GST**.

4. EV Charging Addition

The Alpine Shire Council has requested information to support the possible installation of an EV charging facility at the site.

4.1. Technical Considerations

This site is currently limited by its supply capacity and therefore a 7 kW EV charging facility is the only option for this site. This is due to the site only having a two-phase supply. To install a larger capacity EV charger this site we would need to establish a new 3 phase connection. We would also need to upgrade the transformer for the LV network in this area due to it being undersized. Therefore, the cost of a new connection and an upgrade to the network would be too uneconomical. We estimate around \$100,000.

The EV charging facility would be supplied from the behind the meter solar and battery system. A sub meter could be installed after the primary site meter and before the EV charger to account for all energy consumed at the EV charger. This would offer Council the option of having the solar and battery system and the EV charger managed separately.

The EV charger could provide EV drivers with competitive charging rates given its access to onsite renewable energy.

4.2. Fee Estimate

Our fee estimate for the delivery of a 7kW charger is \$40,000 ex GST. This cost includes:

1. Design and electrical engineering
2. Project management of installation
3. Procurement of charger
4. Installation and commissioning
5. Supply and install metering
6. Civil and site works including traffic bollards, concrete foundations for the charger, line marking and concrete slab for car parking.
7. Travel

4.3. Site Layout



5. Appendix

5.1. Site electrical infrastructure

Detailed photos of site electrical infrastructure can be found at the below link.

<https://drive.google.com/drive/folders/15JAYEIOCarB-TAxAbymMn1OQyeK9gu-b?usp=sharing>

5.2. Site structural and layout photos

Detailed photos of structural building integrity and proposed layout locations can be found at the below link.

https://drive.google.com/drive/folders/159HKr9lfXmiUSoqy_cQ4i0YzFGQfbBfj?usp=sharing

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