

Meet the SolShare

An introductory guide to behind-the-meter solar distribution for new-build apartments



Hello!

Thank you for choosing to learn more about the SolShare system. You are supporting the growth of cutting-edge Australian made solar technology.

This guide is intended to provide some of the introductory information needed to understand how the SolShare works and what it is used for. It is not intended to be a comprehensive guide into how to design a shared solar system into a project.

To become accredited to include the SolShare into one of your projects, or offer it as an option to one of your clients, you will need to complete our online training program. To access this training program please contact Allume via the contact details below.

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List of supplementary documents available online

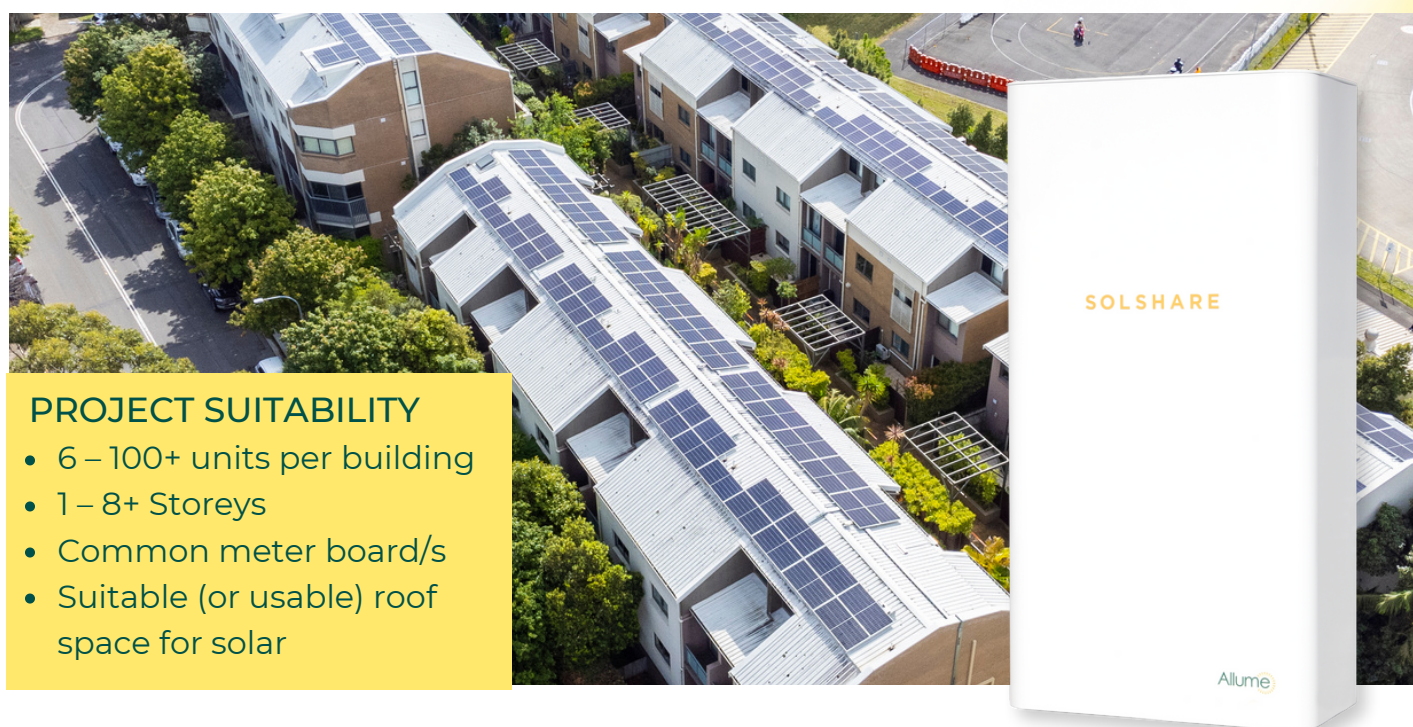
- SolShare-3P-35A-04 Datasheet
- SolShare pre-installation checklist
- SolShare Systems & SLD Design Guide
- How to set-up/change Wi-Fi Credentials
- SolShare Labelling Advice
- Commissioning App Guide



Document Library

For most up to date versions of all documents (including this Installation Manual), scan this QR code or go to <https://allumeenergy.com/document-library/>

SolShare: Solar sharing in multi-tenant buildings



PROJECT SUITABILITY

- 6 – 100+ units per building
- 1 – 8+ Storeys
- Common meter board/s
- Suitable (or usable) roof space for solar

WHAT IS SOLSHARE?

SolShare is the world's only “behind-the-meter” solution for sharing a common rooftop solar system to apartments. There is no need for apartments to sign up to additional billing services or solar trading platforms, making SolShare the most simple and affordable solution to rooftop solar for apartments. SolShare is also used for offices, townhouses and small commercial applications, or a mix of all.



NEW DEVELOPMENTS

- Increase property value up to 12% (source: CoreLogic)
- Sell apartments faster
- Meet ESG requirements
- Cost-effective solution
- Unlock more roof area for other amenities
- BTS and BTR suitable



RETROFITS/REFURBS

- Utilise existing metering (individual meter or embedded networks)
- Share solar benefits with all tenants in a building
- Shared system allows more available roof area



OWNER'S CORPORATIONS

- Opt-in, opt-out options
- Equitable for all tenants
- Can supply common meter
- Retain retailer freedom of choice
- Landlords and tenants benefit
- Multiple finance options



The SolShare system, which allows direct supply of solar to apartments in a building, has been a key value add for our prospective buyers. Mirvac has freedom to choose which apartments to connect, and our residents maintain the freedom to select an electricity retailer of their choosing.

– JAMES HARVEY, SENIOR PORTFOLIO MANAGER, MIRVAC



Get in touch with us to learn how you can implement shared solar within your project, irrespective of its development stage.



info@allumeenergy.com.au



allumeenergy.com/au/contact-us/

SolShare Benefits



Solar for apartments without the embedded network

The SolShare's world first behind-the-meter approach enables residents to maintain full flexibility to select their retailer, and means solar can be accessible for buildings which are typically too small for an embedded network to stack up.



Reduced electricity bills for residents

The SolShare allows direct connection of solar to each apartment, allowing residents to gain undiluted benefit from their solar allocation. As little as 1.5kW allocation per unit can save 30-40% on each resident's electricity bills.



Improved environmental rating for the development

Including a shared solar system is a cost effective way to reduce the carbon footprint of a building, increasing its environmental rating as well as its appeal to eco-conscious customers.



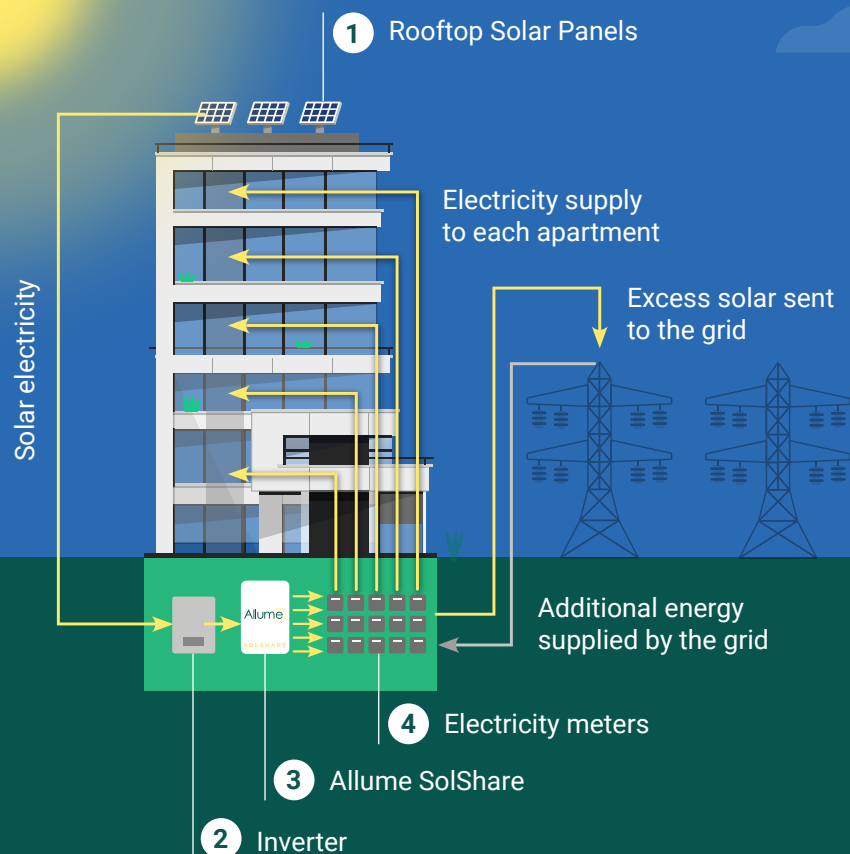
Fair but optimised distribution

The SolShare ensures each apartment gets an even share of solar energy over the course of a month. However, it constantly monitors the energy demand of each unit to send them their solar at a time which maximises their savings.



Advanced energy monitoring

The SolShare offers monitoring to the residents and the developer so they can track their financial and environmental savings.



Existing options haven't made solar attractive for apartments, here's why

|  ATTRIBUTES / OPTIONS |  INDIVIDUAL SOLAR SYSTEMS PER UNIT |  EMBEDDED NETWORK SOLAR |  SOLSHARE SHARED SOLAR |
|--|---|--|--|
| Solar directly connected to apartments | ✓ | ✗ | ✓ |
| Tailorable solar allocation for each unit | ✓ | ✗ | ✓ |
| Optimised solar sharing | ✗ | ✓ | ✓ |
| Freedom to choose retailer | ✓ | ✗ | ✓ |
| Proven increase in apartment value | ✓ | ✗ | ✓ |
| Single system cost and space efficiencies | ✗ | ✓ | ✓ |
| Impacts of shading and roof direction shared fairly among apartments | ✗ | ✓ | ✓ |
| No ongoing contracts | ✓ | ✗ | ✓ |
| Energy monitoring available | ✓ | ✗ | ✓ |
| Suitable for townhouses and walk up apartments (<10 units) | ✓ | ✗ | ✓ |
| Suitable for mid size apartment buildings (10-50 units) | ✗ | ✗ | ✓ |
| Suitable for large apartment buildings (50+ units) | ✗ | ✓ | ✓ |
| Battery options available | ✓ | ✓ | ✓ |

AWARD WINNING AUSSIE-MADE TECHNOLOGY:



Sharing solar with the SolShare

Optimising Sharing

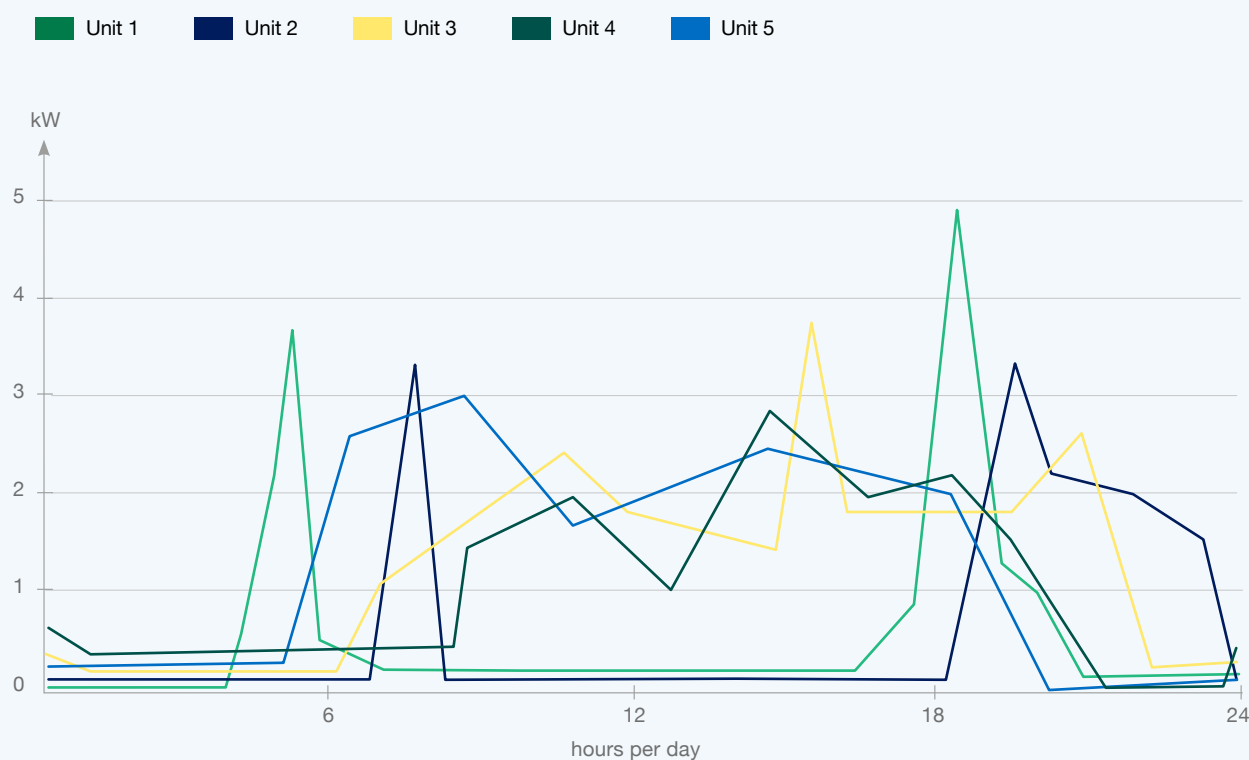
The SolShare distributes energy to users in a way that maximises savings. It achieves this because each apartment will use energy at slightly different times. This diversity in load profiles means the SolShare can distribute the solar to where it is needed at that moment in time.

This allows residents to save more money than is possible with individual systems of the same aggregated size. The increase in savings caused by the optimised distribution is typically between 15 and 30%.

The below example shows five SolShare users. The different lines show their varying load profiles throughout a typical day. It can be seen that each apartment would benefit from receiving their solar at different times during the day.

This effect is further outlined in the case study included later in this guide.

Graph showing usage and behaviour per flat in a typical day



Unit 1 profile

This type of user is an early riser and is away from home all day. Their main energy consumption is early mornings and evenings.



Unit 2 profile

This type of user is a night owl. They will have a similar profile to the early riser but shifted later in the day.



Unit 3 profile

This type of user is a large family with young children. They will use a lot of energy throughout the whole day.



Unit 4 profile

This type of user works from home. They will use peaks of energy throughout the day.



Unit 5 profile

This type of user is retired. They wake up early and go to bed earlier than other users and use a steady amount of energy throughout the day.

Fair Distribution

Despite the SolShare aiming to send the solar to where it is needed at any point in time, it still ensures that each apartment receives their fair share from the solar system.

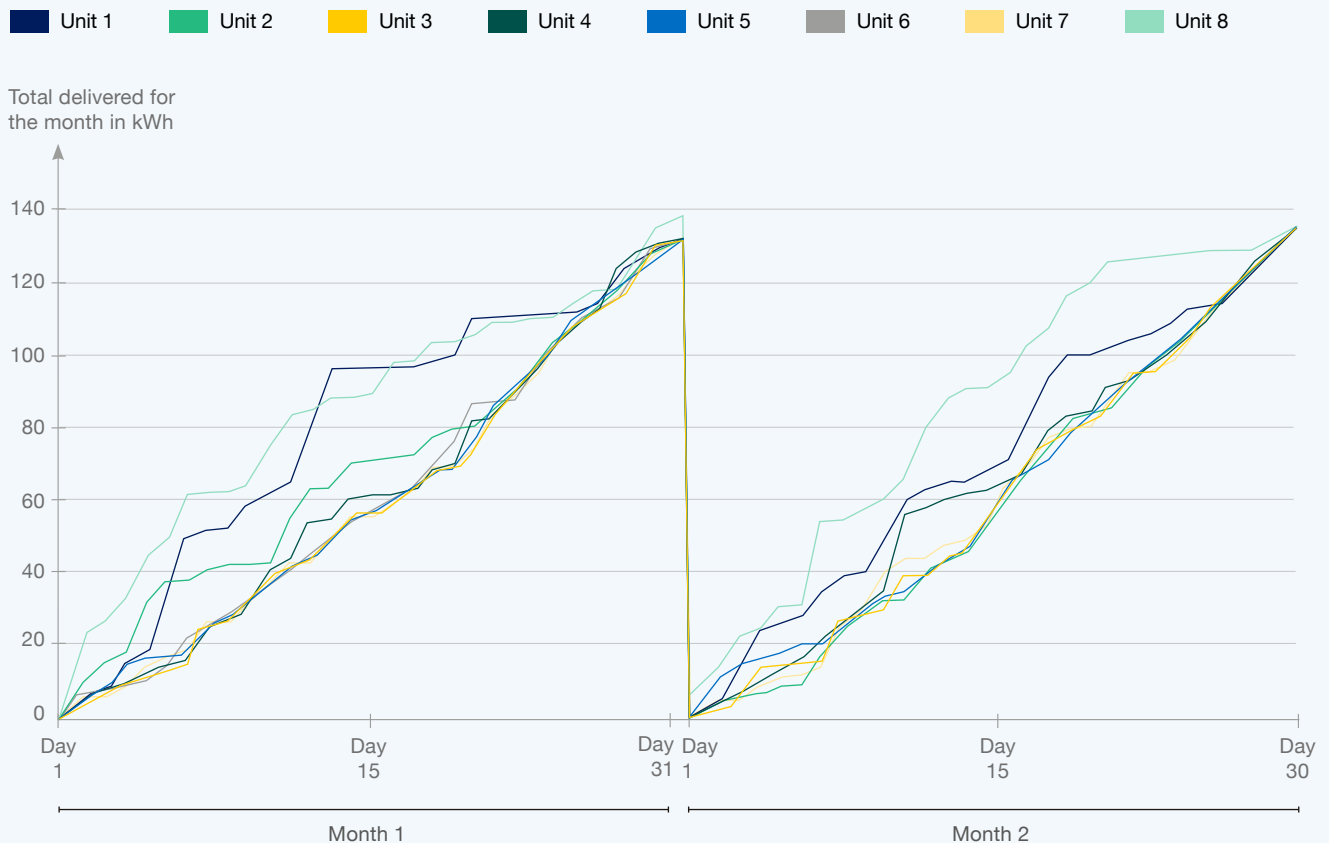
Over the course of a month the SolShare will track the total solar delivered to each unit. If any unit hasn't received much solar they will be prioritised when they are using power, encouraging them to catchup to their neighbours in the solar that they have received.

If there is discrepancy at the end of the month in solar delivery (e.g. due to cloud cover at the end of the month)

this offset will be carried over to the following month to ensure it is trued up. This behaviour can be observed in the real world data below, displaying the solar delivery to each unit over the course of two months.

Although the default is even allocation, the SolShare can be configured to have a different allocation for each unit if suitable. For example, it can allocate a larger % of generation to the 3 bedroom apartments in the building than the single bedroom apartments.

Graph showing solar distribution per flat over two months



“The SolShare system, which allows direct supply of solar to apartments in a building, has been a key value add for our prospective buyers. Mirvac has freedom to choose which apartments to connect, and our residents maintain the freedom to select an electricity retailer of their choosing”

– James Harvey, Senior Portfolio Manager, Mirvac

Installation Overview

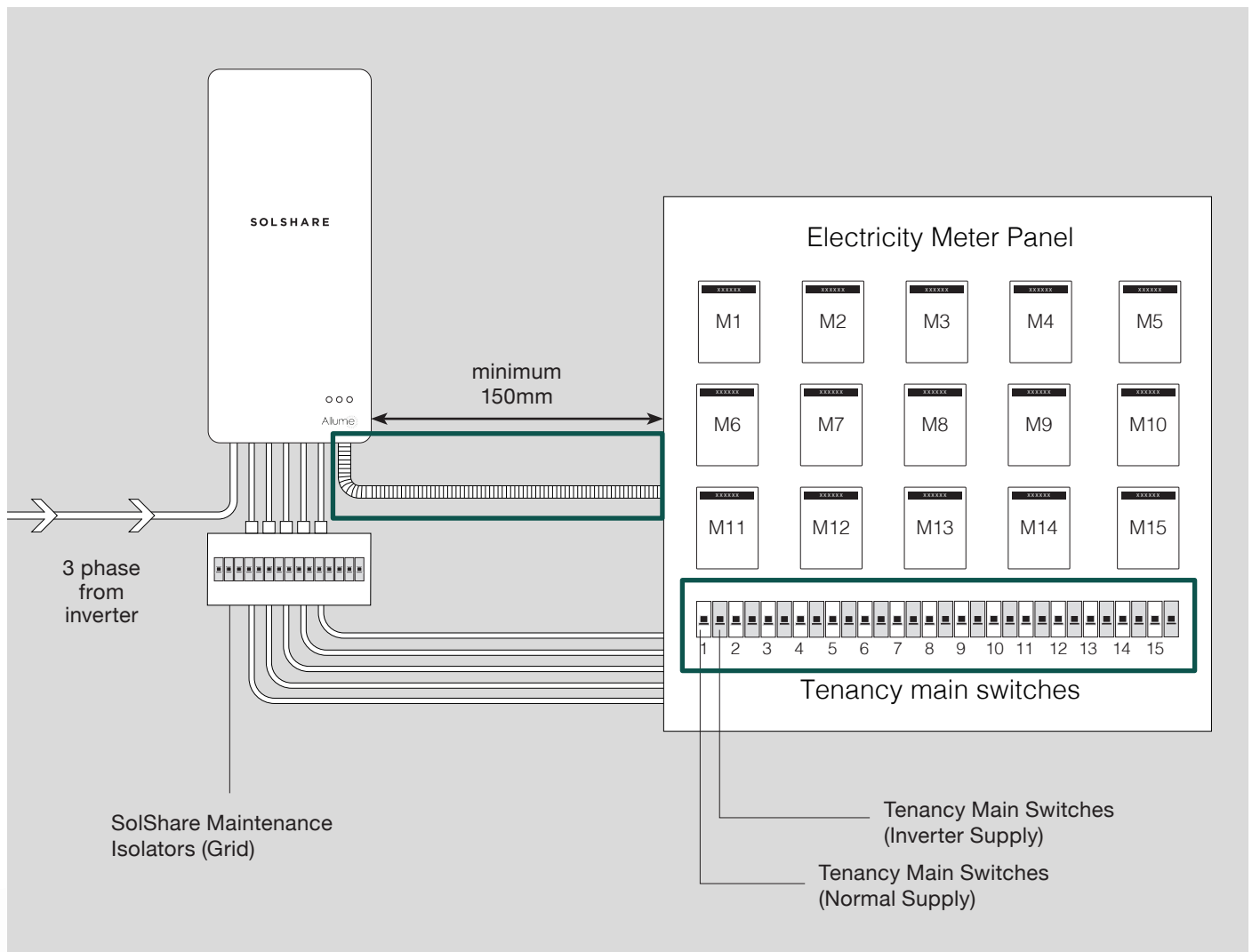
A single SolShare unit can distribute the power generated from a single solar system to up to 15 single-phase or 5 three-phase units (or a combination of the two).

The SolShare takes a single three-phase input from a grid-connected solar inverter(s) and connects to each participating unit on the load side of their retail electricity meter at the unit main switchboard.

A Tenancy Main Switch (Inverter Supply) is required on each output (ideally located within the unit main switchboard) between the SolShare and each unit's main switch. In series with this, additional SolShare Maintenance Isolators (Grid) are recommended to allow for the isolation of the SolShare and the solar supply of any of the connected units.

A typical installation configuration is displayed below. The configuration displayed below may differ your installation configuration depending on location of SolShare and electricity meter panel configuration.

For buildings with >15 meters, multiple SolShares can be used. Each SolShare must have its own dedicated solar array and inverter.



Installation Requirements

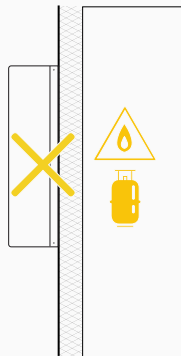
To minimise cabling required, the SolShare should be mounted as close to the main switchboard (tenancy isolator board) as possible.

To allow for easy installation and maintenance, ensure that there is adequate space surrounding the SolShare and that it is mounted at a convenient height. Please ensure the following mounting requirements are also met when selecting the location of the SolShare.

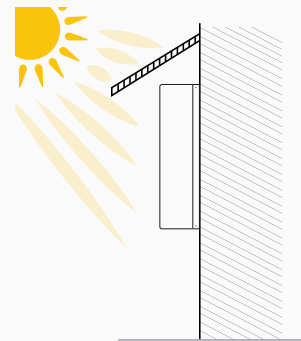
Do not mount the SolShare on flammable wall material



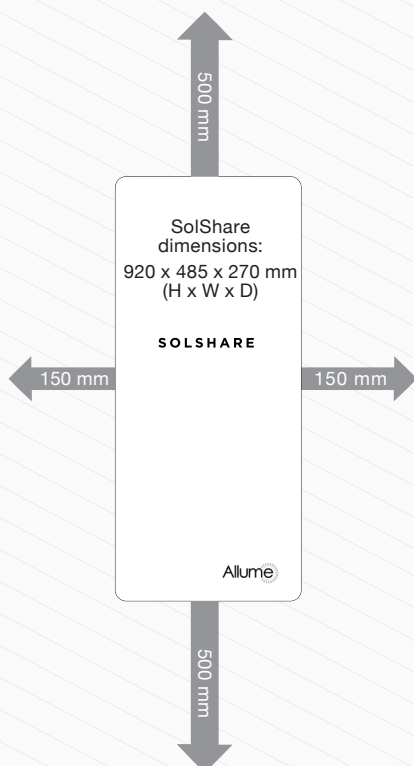
Do not mount the SolShare near flammable material or gases



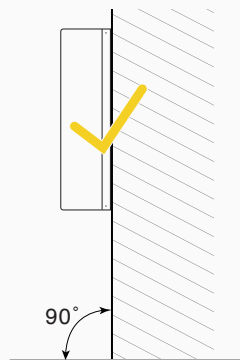
Install a shade cover over the SolShare when installed outdoors in direct sunlight or when in the path of debris (e.g. under a tree with falling leaves)



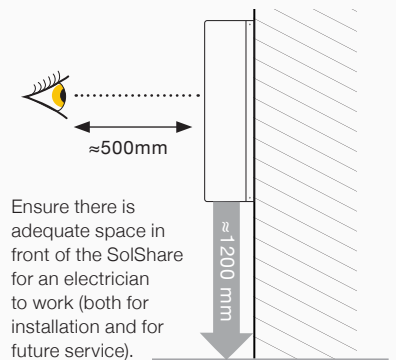
Requirement for installation space



Mount vertically



Install in an easy to observe and operate location



Environmental boundaries



Max ambient temperature:
50°C (+122°F)



Min ambient temperature:
-10°C (-13°F)



Relative humidity:
0-90%

Internet communications



A Wi-Fi network must be available at the site to enable commissioning and ongoing monitoring.



Note: Where possible, do not install the SolShare below a cable tray - this may affect the SolShare's ability to connect reliably with the Wi-Fi at site.

SolShare case study



Folia Apartments by Mirvac is nestled within Tullamore, Doncaster's most prestigious community, surrounded by established parkland and abundant amenity. Committed to creating sustainable living environments for residents to enjoy, Mirvac have implemented forefront technology in Folia allowing the Prestige and Penthouse Apartment residents to share a single set of solar panels and distribute solar power in a manner that optimises the financial benefit to all connected residences.

AT A GLANCE

-  **Project:** Folia Apartments of Tullamore
-  **Location:** Doncaster, Victoria, Australia
-  **Project type:** new build
-  **Completed:** 2021
-  **Developer:** Mirvac
-  **Connected Apartments:**
39 prestige and penthouse apartments
-  **Size of solar system:** 70 kW

PROJECT LOCATION



OUTCOMES FOR PARTICIPATING RESIDENTS

In the first nine months, participating units saw on average:

2
tonnes of
CO2 saved

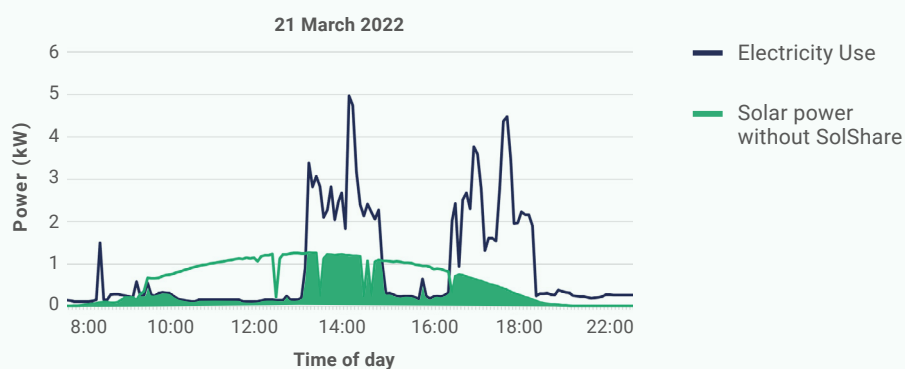
-30%
grid consumption
reduction

~\$300
electricity bill
saving

SOLAR VS GRID ELECTRICITY

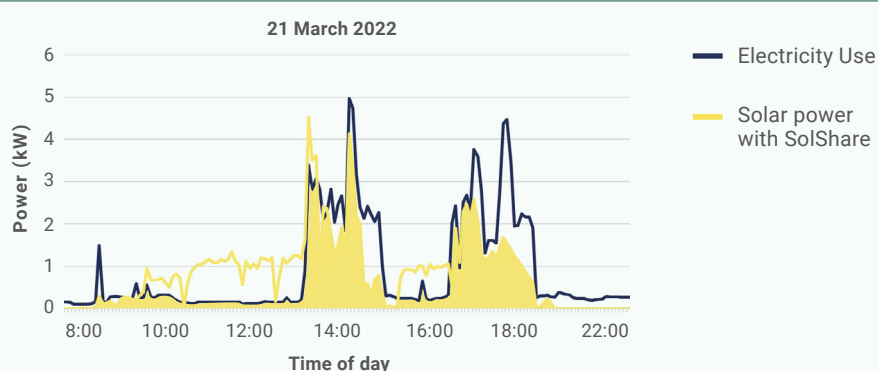
Without the SolShare

If each apartment had its own small rooftop solar installation, then most of the electricity generated is sent to the grid instead of being used within the apartment (the green shaded area).



With the SolShare

The SolShare ensures solar electricity is sent to the apartments that are using power at that time. This maximises the use of solar in the apartment (the yellow shaded area) and reduces electricity bills by as much as possible.



We were attracted to the Folia building in Doncaster because of its impressive sustainability features, particularly the latest rooftop solar technology. We enjoy having some energy independence and contributing to climate action.

– Jackie & Rod, residents at Mirvac Folia, Tullamore



SolShare 35 Product Datasheet

Allume's SolShare is the world's first power division control system (PDCS). Providing functionality to supply the AC energy outputted from a solar inverter to multiple grid-connected units behind-the-meter. The SolShare opens the solar market to apartments and businesses that share a roof.

The SolShare 35 has a maximum recommended input capacity of 22kW, and can be connected to 15 units, making it primarily suitable for residential sites.

The behind-the-meter solution requires no change to smart meter infrastructure and is intuitively designed to make the installation process as simple as possible for solar installers.

The SolShare unit is placed between the inverter and the main switchboard. Receiving one three-

phase AC input from the inverter and outputting up to 15 single-phase or 5 three-phase AC outputs (or a combination of both). Outputs are wired on the load side of each unit's meter, at the building's common main switchboard.

Information on how to design a SolShare system can be found in our 'SolShare System & SLD Design Rules' document.



Solar delivery optimisation



Complete solar & usage monitoring



Suitable for indoor and outdoor installation



Over the air firmware updates



Multiple solar delivery algorithms to suit project requirements

Technical Data

General Specifications

| Parameter | Value |
|------------------------------------|---|
| Dimensions | 920 x 485 x 270 mm (H x W x D) |
| Weight | 38kg |
| Max number of connections per unit | 15 single-phase or 5 three-phase (or a combination) |
| Install environment | Degree of protection IP56 (as per IEC 60529) |
| Operating temperature range | -20 – 50°C |
| Metering accuracy | ± 2% |

Electrical Specifications

| Parameter | Value (at 25°C) |
|---------------------------------------|-----------------|
| Max nominal current (per phase) | 35 A |
| Voltage range (phase to neutral) | 216 – 260 VAC |
| Voltage drop (I is nominal current) | 2.8 V |
| Mains frequency range | 50 – 60 Hz |
| Overcurrent rating | 30 kA |
| Max power input at 230V (recommended) | 22 kW |
| Input Power Factor | 1 |

Safety Certification

The SolShare is a certified with the Regulatory Compliance Mark (RCM)



AS/NZS3820:2009

Accessories

15 x Current Transformers (10 meter cable lengths)

Installation Requirements

1. Power input from a three-phase, grid connected inverter (single-phase grid connected inverters can be used if required)
2. Number of connections:
 - 6 or more single-phase outputs
 - 2 or more three-phase outputs
3. Ganged/co-located smart meters and main switches
4. Cable access between SolShare unit and central main switchboard
5. Installation must be carried out by a licensed electrician
6. SolShare must be kept free of dust and water ingress during installation



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