SolShare three-phase tenancy guide

For SolShare system designers and installers

ⓘ NOTICE

This document is intended to provide guidance on how to design shared solar systems with SolShare connected to three-phase tenancies. This document does not override any local electrical safety standards, regulations and wiring rules. It is the responsibility of the installer to ensure the shared solar installation meets the relevant regulations and standards in the installation locality.

ⓘ TIP

You can always access the most up-to-date versions of any documents (including this document) in the Resource Library on Allume's website at https://allumeenergy.com/au/resource-library/.

ⓘ TIP

An example SLD showing Option 3 for connecting SolShare to three-phase tenancies is provided at the end of this document.

1. Options to connect three-phase tenancies to SolShare

Many tenancies, especially residential tenancies, in multi-tenant buildings in Australia are single-phase. However, some buildings may have three-phase tenancies, and many buildings have a three-phase common area meter. When installing a shared solar system with SolShare in these buildings, there are a number of options available to the system designer to connect these tenancies to solar.

1.1. Option 1: Connect all three phases to SolShare

Where a building has three-phase tenancies, you may opt to connect all three of these phases to SolShare. This may be advantageous for multi-tenant buildings that:

- Have higher loads or solar requirements, e.g. commercial buildings, larger residential tenancies.
- Only require solar connections to up to five three-phase tenancies.
- Require Allume's SolCentre monitoring portal to match other data sources.

However, **a maximum of 5 x three-phase tenancies can be connected to each SolShare when all three phases are connected to that SolShare**. In choosing option 1, you will be using three of the 15 available tenancy connections on a SolShare for each three-phase tenancy.

1.2. Option 2: Connect one of three phases to SolShare

Instead of connecting all three phases of a tenancy to solar, you may opt to connect just one of the three phases to solar. **When each tenancy has one phase connected to solar, each SolShare can be connected to up to 15 x three-phase tenancies**. Reasons why this may be advantageous include:

- Reduced number of SolShares required for a multi-tenant building, compared to Option 1 (where only five tenancies can be connected to solar via a single SolShare).
- In Australia, net metering is applied to three-phase tenancy meters. Net metering is the term used when a three-phase meter is charged or pays for electricity only on the sum of current activity on all its three phases, rather than what is occurring on individual phases. Therefore, even if solar is only connected to one phase, and an excess of solar is exported on that one phase, then financially, this means that the tenant is no worse off than having had the solar feed all three phases at that point in time.

Additional considerations for this option include:

- Each SolShare can supply solar to up to 5 tenancies on red (or L1) phase, up to 5 tenancies on white (or L2) phase, and up to 5 tenancies on blue (or L3) phase.
- Choosing which of the three phases for each tenancy to connect to solar can have impact on return on investment (ROI) and solar self-consumption. For each tenancy, connecting solar on the phase with the highest loads during solar hours will result in more favourable outcomes. See Section 2 for more information.
- Allume's SolCentre monitoring portal will only display data for the phase/s connected to solar for each tenancy. As such, SolCentre may not reflect other data sources with data for all three phases, such as the tenancy's electricity bill. See Section 3 for more information.

1.3. Option 3: Combination of both options

SolShare is flexible around the combination of single- and three-phase tenancies connected to SolShare's tenancy connections . When there are three-phase tenancies with differing solar needs, you can opt to connect a combination of connections.

For example, one SolShare may use 14 of its 15 output connections for:

- 2 x three-phase tenancies with all three phases connected to solar (6 SolShare connections), and
- 5 x three-phase tenancies with only one phase connected to solar (5 SolShare connections), and
- 3 x single-phase tenancies (3 SolShare connections)

An example single line diagram (SLD) showing an installation of SolShare using Option 3 is provided at the end of this document.

2. Solar sharing considerations

ⓘ TIP
Supplying solar to only one phase of a three-phase tenancy (options 2 or 3 above) may affect the effectiveness of SolShare's solar sharing algorithm.

SolShare uses information about a tenancy's load consumption in real time to decide when it is most beneficial to send solar to that tenancy (i.e. to maximise solar self-consumption). This information about load consumption comes from the SolShare CT for that tenancy, which will only be monitoring load for the phase/s connected to solar via SolShare. Where only one phase of a three-phase tenancy is connected to solar, the readings of the SolShare CT will not include other phases. Therefore, SolShare may not have all the information required to know when to send solar to the tenancy to most effectively maximise solar self-consumption.

Where only one phase of a three-phase tenancy is connected to solar, **connecting solar to the phase with the highest loads during solar hours will enable the SolShare CT to measure the tenancy load consumption more accurately**. This will mean that SolShare will be able to more effectively allocate solar to maximise solar self-consumption for that tenancy.

3. SolCentre monitoring portal considerations

ⓘ TIP
Supplying solar to only one phase of a three-phase tenancy (options 2 or 3 above) may result in an incomplete set of data shown in Allume's SolCentre monitoring portal.

SolShare CT/s for each tenancy only measure the current on the phase/s connected to solar. These SolShare CTs are used to provide the data for each tenancy's load and grid import/export in SolCentre. As such, SolCentre will only reflect the load consumption and grid import/export on the phase/s connected to solar, rather than for all three phases. Therefore, the data shown in SolCentre may not correspond to other data sources, such as the tenancy's electricity bill. This will typically result in:

- Lower tenancy load reported in SolCentre than what is measured by the tenancy's NMI meter (and shown on their electricity bill). This is because the SolShare CTs are not measuring the load on the phases that are not receiving solar.
- Higher grid export energy reported in SolCentre than what is measured by the tenancy's NMI meter (and shown on their electricity bill). This is because the export measured by the SolShare CT will sometimes be offset by import on other phases due to Australia's net metering.

Where a three-phase tenancy has all phases connected to solar (option 1 above), SolShare CTs will be measuring the current on all three phases, and therefore, the SolCentre monitoring portal will accurately reflect the load and grid import/export of that tenancy.

4. Example of net metering on a three-phase tenancy

Below are several scenarios of snapshots in time of a three-phase tenancy with red (L1) phase having the highest loads during solar hours. Solar is connected to red (L1) phase via SolShare (under a configuration in option 2 above).

4.1. Example 1

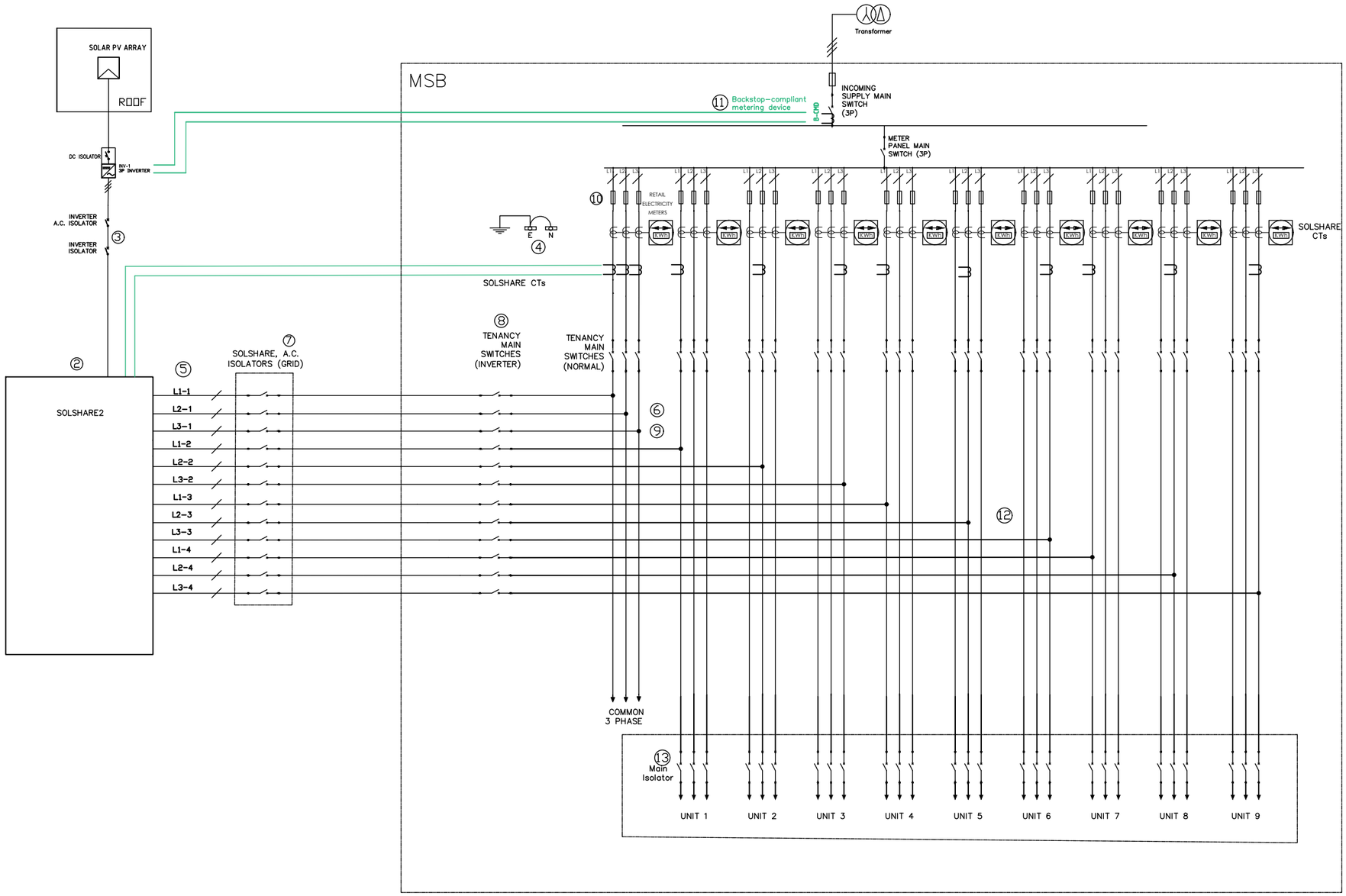
Some single-phase appliances are on. All three-phase appliances are off. Solar supply on red (L1) only.

Phase	Load consumption (kW)	Solar supply (kW)	Grid import (+ve) / export (-ve) (kW)
Red L1	1	1.5	-0.5
White L2	0	N/A	0
Blue L3	0	N/A	0
Total	1	1.5	**-0.5**
Result	**Tenancy is exporting net of 0.5kW to the grid (and may be paid feed-in tariff for this)**		

4.2. Example 2

Some single-phase appliances are on. Three-phase appliances are on. Solar supply on L1 only.

Phase	Load consumption (kW)	Solar supply (kW)	Grid import (+ve) / export (-ve) (kW)
L1	1.5	2.0	-0.5
L2	1	N/A	1
L3	1	N/A	1
Total	3.5	2.0	**1.5**
Result	**Tenancy is importing net of 1.5kW from the grid (and pays grid electricity rates)**		



NOTES

1. ICables shall be sized correctly to meet all relevant standards, including AS/NZS 4777.1.2024, AS/NZS 3000.2018 and AS/NZS 3008.1.2: 2017 requirements.
2. Each SolShare requires its own dedicated inverter/inverters.
3. The Inverter A.C. Isolator or Inverter Isolator shall provide overcurrent protection rated to the inverter's maximum output current. The isolator at the input to SolShare's inverter port shall be labelled as Inverter Isolator.
4. Each SolShare requires a single connection to neutral and a single connection to earth.
5. All output cables of a SolShare shall be sized to carry the maximum output current per phase of the inverter, as at points in time the SolShare may direct all current to one tenancy on each phase.
6. Solar phase connections shall match the grid phases for each tenancy connection on SolShare.
7. SolShare, A.C. Isolators (Grid) shall provide a means of isolation adjacent to SolShare.
8. Tenancy Main Switch (Inverter) shall be grouped with the Tenancy Main Switch (Normal) for each tenancy.
9. The solar point of connection is on the load side of the Tenancy Main Switch (Normal) for each tenancy. Tenancy Main Switch (Normal) will isolate both grid and solar supply to the tenancy.
10. In South Australia, Service Side fuses will be replaced by meter isolators. If this is the case the system shall be configured for SYSTEM LEVEL ANTI-ISLANDING.
11. Site consumption monitoring for emergency backstop is required for in some jurisdictions in Australia. For further information, see https: //www.energy.vic.gov.au/households/victorias-emergency-backstop-mechanism-for-solar https: //www.energy.nsw.gov.au/households/action/initiatives/emergency-backstop
12. Where solar is connected to only a single phase of a 3-phase tenancy, this should be connected to the phase with the tenancy's highest loads during solar hours, to facilitate more beneficial solar sharing.
13. Allume's SolCentre monitoring portal will display tenancy load consumption as measured by SolShare CTs. Therefore, for those three-phase tenancies receiving solar only on a single phase, SolCentre will display only the load consumption on that phase.
14. The tenancy main switch shall be appropriately rated to protect the tenancy consumer mains from the combined current of both grid and solar supply, see https: //www.energysafe.vic.gov.au/sites/default/files/2025-03/Guidance-%E2%80%93-Solar-for-Apartments-v1.0.pdf

LEGEND

	Circuit Breaker
	Meter
	Backstop-compliant metering device
	Solshare CT
	CT Cable
	MEN Link
	Fuse

For installation design

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DATE: 18/05/2026

TITLE: SAMPLE SLD-CONNECTING SOLSHARE2 WITH THREE PHASE TENANCIES

SHEET SIZE		DRAWING NUMBER	REV
A3		ALL-SOL-017	A2
SCALE	NTS		