

# Requirements for Distributed Solar – Victoria's Emergency Backstop Mechanism

*Supporting guidance for industry*



We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.



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# Purpose of this document

The Victorian Government has implemented an emergency backstop mechanism (the emergency backstop) to ensure that new, upgrading and replacement rooftop solar systems connected to the electricity distribution network can be remotely curtailed in a minimum system load emergency, to safeguard system security for all Victorians.

The emergency backstop for new and replacement solar systems was introduced in two stages.

- **Stage 1 – Large solar systems:** From 25 October 2023, an emergency backstop applies to all new, upgrading and replacement solar systems greater than 200 kVA. Details of the conditions placed on distribution businesses to implement this stage can be found [here](#). Your distribution business can provide more information about these requirements when you apply to connect or replace a large solar system.
- **Stage 2 – Small and medium solar systems:** From 1 October 2024, an emergency backstop applies to all new rooftop solar systems less than or equal to 200 kVA , or any legacy rooftop solar system less than or equal to 200 kVA which has its inverter replaced, to be emergency backstop enabled. Details of the conditions placed on distribution businesses to implement this stage can be found [here](#). This document provides further guidance on the interpretation and application of the requirements.

# Intended audience

**This document provides guidance to support rooftop solar system manufacturers, installers, and retailers to understand and meet the requirements of the emergency backstop, particularly Stage 2 requirements for small and medium solar systems.**

The information contained in this document is intended to be used by installers and retailers as a starting guide. Further questions regarding the connections process should be directed to the relevant distribution business.

# Version control

| Version | Date         | Changes                                                                                      |
|---------|--------------|----------------------------------------------------------------------------------------------|
| 1.0     | April 2024   | Initial version ahead of commencement of Stage 2 emergency backstop requirements in Victoria |
| 1.1     | June 2024    | References to Stage 2 updated to reflect amended commencement date                           |
| 1.2     | October 2025 | Updated to reflect remade Stage 2 Ministerial Order                                          |

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# 1. Key information

## 1.1. New requirements for rooftop solar systems

The emergency backstop requires that all new, upgrading and replacement rooftop solar systems connected to the electricity distribution network are emergency backstop enabled. This means that electricity generation from these systems can be remotely turned down or switched off in a minimum system load emergency.

This document applies to Stage 2 of the emergency backstop only, which applies from 1 October 2024.

## 1.2. Why Victoria needs the emergency backstop

The rapid uptake of rooftop solar is helping people benefit from and contribute to the energy transition – but it also creates challenges which need to be actively managed to support a smooth transition to a high-solar future.

In the short term, we need an extra safeguard to protect electricity system security in times of minimum system load. This happens when solar exports are high, but energy use is low (typically in spring and autumn, on weekends or public holidays) and can mean the electricity grid exceeds safe operating parameters.

Minimum system load emergencies are rare but have the potential to lead to local or state-wide blackouts. The emergency backstop addresses this risk by providing a last-resort safety net, to remotely curtail excess energy and restore the system to a secure state.

The emergency backstop will also allow more solar to be installed, and will ensure we can keep safely installing rooftop solar and support the renewable energy transition.

## 1.3. Emergency backstop implementation

Victoria's emergency backstop was introduced in two stages.

Stage 1 of the emergency backstop came into effect on 25 October 2023, requiring all new upgrading and replacement solar systems greater than 200 kVA to have the capability to be turned down or temporarily switched off during a minimum system load emergency.

Stage 2 of the emergency backstop came into effect on 1 October 2024. It requires all new rooftop solar systems less than or equal to 200 kVA, or any legacy rooftop solar system less than or equal to 200 kVA which has its inverter replaced to be emergency backstop enabled.

To be emergency backstop enabled, a solar system up to 30kVA must be able to communicate using the Common Smart Inverter Profile Australia (CSIP-AUS) and be connected to the internet.<sup>1</sup>

For solar systems between 30 and 200 kVA capacity, the DNSP may not require a system to be emergency backstop enabled using CSIP-AUS technology, if the system is capable of allowing the DNSP to remotely interrupt or curtail electricity generation.

The use of CSIP-AUS technology aligns with existing mechanisms in other states. Victoria has implemented CSIP-AUS technology so that our approach maximises national consistency, including through the use of a single national product list of inverters with software communication channels compliant to CSIP-AUS.

The emergency backstop will not impact electricity supply from the grid to a household.

### 1.3.1. Benefits of the emergency backstop

As well as providing a last-resort safety net during minimum system load emergencies, the emergency backstop will deliver benefits for Victorians. The backstop:

- enables the installation of more, and larger, solar systems,
- supports rooftop solar to help meet renewable energy targets sooner,
- reduces requirements for distribution network upgrades, and
- reduces emissions and helps support climate action.

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<sup>1</sup> A small number of solar systems may be exempt from being emergency backstop enabled because they are unable to be internet connected. See Section 1.8.1 for further information.

### 1.3.2. Benefits of implementing CSIP-AUS technology

The CSIP-AUS technology protocol is designed to facilitate remote management of rooftop solar systems over the internet. The technology has been successfully trialled through several end-to-end market integration trials, supported by the Australian Renewable Energy Agency and is used in South Australia.

Responses to [public consultation on the emergency backstop](#) were overwhelmingly supportive of the use of CSIP-AUS as the technology to enable the backstop.

Adopting CSIP-AUS for the emergency backstop has significant benefits, including:

- standardising requirements for industry and avoiding future technological changes,
- ease of connection to distribution businesses' systems,
- the ability to underpin the roll out of flexible connections in the future,
- protecting consumers from technology lock-in.

### 1.3.3. Enabling flexible exports

Currently, rooftop solar customers often have 'static' export limits applied by distribution businesses, which means they can only export a set, conservative amount back to the grid. Static limits are often based on worst-case scenario conditions, even though those conditions are likely to occur a limited number of times each year.

The adoption of CSIP-AUS for Victoria's emergency backstop will enable solar systems to cater for flexible exports in future, if a customer chooses.

With flexible exports, export levels can be changed dynamically according to the real-time conditions of the electricity grid. This allows Victorians to export more solar, more of the time. A lower limit can be applied on the rare days when it's required, to manage the grid safely and securely.

## 1.4. Rooftop solar installer checklist

The checklist below identifies the key steps required to complete rooftop solar system installations compliant with the emergency backstop.

|                          | Action                                                                                                                                           | Relevant information                                                             |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <input type="checkbox"/> | Determine if a solar system is required to be emergency backstop enabled                                                                         | Section 1.6                                                                      |
| <input type="checkbox"/> | Select equipment (or combination of equipment) that is CSIP-AUS compliant (including if required an export monitoring or gateway device)         | Section 2.1 and <a href="#">Clean Energy Council list of compliant inverters</a> |
| <input type="checkbox"/> | Follow instructions from the relevant distributor to ensure the inverter can receive remote instructions and lodge a connection application      | Section 2                                                                        |
| <input type="checkbox"/> | Ensure you have complied with all connection requirements including correctly configuring inverter settings to 'Australia A'                     | <a href="#">Solar Victoria website</a>                                           |
| <input type="checkbox"/> | Ensure the inverter is connected to the customer's internet and leave the premises de-energised                                                  | Section 2.2                                                                      |
| <input type="checkbox"/> | Show customer(s) how to reconnect their inverter to the internet if it loses connectivity                                                        | Section 2.2.4                                                                    |
| <input type="checkbox"/> | Arrange licenced electrical inspector to inspect the installation, who energises the installation and provides a certificate to the distributor. |                                                                                  |
| <input type="checkbox"/> | Complete the relevant distribution business' commissioning tests                                                                                 | Section 2.2.7                                                                    |
| <input type="checkbox"/> | <i>Recommended:</i> Share customer fact sheet with customers at the point of installation                                                        | <a href="#">Customer fact sheet</a>                                              |

## 1.5. Roles and Responsibilities

| Person or organisation                                                            | Roles and responsibilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rooftop solar installers and solar retailers                                      | <ul style="list-style-type: none"> <li>• Incorporate communication materials for consumers into existing processes, including the <a href="#">customer fact sheet</a>.</li> <li>• Consider the impact on consumers' bills, in line with the indicative potential feed-in-tariff impacts outlined in the emergency backstop customer fact sheet.</li> <li>• Prior to any installation works being undertaken, contact the distributor to lodge a pre-approval for a connection application of a new solar system or modification to an existing connection.</li> <li>• Install solar systems compliantly with backstop requirements. Typically, this will involve: <ul style="list-style-type: none"> <li>○ selecting CSIP-AUS compliant equipment (or combination of equipment),</li> <li>○ connecting the inverter(s) to the internet,</li> <li>○ arranging licenced electrical inspector, and</li> <li>○ configuring the installation to communicate with the relevant distribution business' utility server, and</li> <li>○ completing all application close off activities.</li> </ul> </li> <li>• Adhere to relevant Australian Standards (AS 4777.2:2020, AS 4509, AS/NZS 5033, AS/NZS 5139:2019).</li> <li>• Ensure that knowledge of solar installation requirements and practice is up to date, including: <ul style="list-style-type: none"> <li>○ accreditation with the Accreditation Scheme Operator (ASO)</li> <li>○ as part of maintaining accreditation, completing relevant training in line with the Accreditation Scheme's Continuous Professional Development (CPD) requirements.</li> </ul> </li> <li>• Share information with householders and consumers at the point of installation, including the <a href="#">customer fact sheet</a>.</li> <li>• Show customers how to reconnect the inverter to the internet if it becomes disconnected.</li> </ul> |
| Distributed Energy Resources (DER) original equipment manufacturers and suppliers | <ul style="list-style-type: none"> <li>• Understand technical and legislative requirements of the Victorian emergency backstop.</li> <li>• Provide instructions to installers for connecting and configuring backstop enabled systems to the internet.</li> <li>• Produce and supply compliant technology with appropriate default settings.</li> <li>• Provide appropriate warranties.</li> <li>• If complying with CSIP-AUS via a cloud platform, maintain a connection to the distribution business' utility server.</li> <li>• Work with distribution businesses to resolve issues.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Rooftop solar customers                                                           | <ul style="list-style-type: none"> <li>• Ensure solar systems are appropriately maintained.</li> <li>• Ensure backstop enabled systems remain internet connected, including when updating Wi-Fi passwords or changing internet providers.</li> <li>• Ensure contact details provided to the distribution business remain up to date.</li> <li>• If notification is received from the manufacturer or distribution business that the solar system has lost internet connectivity, follow manufacturer instructions to reconnect (typically through the inverter smart phone application or display).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Distribution businesses                  | <ul style="list-style-type: none"> <li>• Operate and maintain a utility server that can remotely interrupt and curtail the electricity generation of solar systems (less than or equal to 200 kVA) connected to their distribution system.</li> <li>• Implement and publish an emergency backstop procedure(s).</li> <li>• Communicate real-time diagnostic information to solar installers in the form of meaningful error messages and possible rectification steps when a solar system fails the backstop capability testing on installation.</li> <li>• Provide solar installer support by way of business telephone and internet information on testing failures and utility server outages.</li> <li>• Publish information in their Distribution System Planning Report (often referred to as the Distribution Annual Planning Report) about: <ul style="list-style-type: none"> <li>○ any uses of the emergency backstop for testing purposes,</li> <li>○ number and aggregate capacity in megawatts of emergency backstop enabled solar connections in their network</li> <li>○ length of unplanned outages in their utility server.</li> </ul> </li> <li>• Meet the requirements of the emergency backstop for large solar systems (greater than 200 kVA), which commenced on 25 October 2023.<br/>Ensure activations of the emergency backstop prioritise actions which minimise customer harm.</li> <li>• Incorporate communication materials into the existing connection process.</li> <li>• Ensure connection agreements include necessary backstop requirements and if relevant, are approved by the relevant regulator.</li> <li>• Manage the connection agreement process.</li> <li>• Implement the commissioning process to embed compliance.</li> <li>• Monitor and report on compliance to the Essential Services Commission or Energy Safety Victoria, depending on the nature of the issue.</li> <li>• Publish a notice on their website as soon as possible in an emergency backstop event.</li> <li>• Where possible, notify affected customers about uses of the emergency backstop, as outlined in the Ministerial Order.</li> <li>• Undertake at minimum two, but not more than four tests annually, to ensure that systems and platforms which remotely interrupt or curtail electricity generation function as expected during minimum system load emergency conditions. For testing outside network wide tests, give affected customers at least 48 hours' written notice, via the customer's nominated preferred method of communication, of any tests that the distribution business anticipates will result in their solar system's generation being interrupted or curtailed for a cumulative total of more than 30 minutes within a 48-hour period.</li> </ul> |
| Australian Energy Market Operator (AEMO) | <ul style="list-style-type: none"> <li>• Responsible for power system operation in the National Electricity Market.</li> <li>• Use power under the National Electricity Rules to issue directions to distribution businesses to maintain and return the power system to a normal operating state.</li> <li>• Where necessary, intervene when operational demand falls below required thresholds, to maintain system security. This can include: <ul style="list-style-type: none"> <li>○ directing network service providers to return lines or elements to service,</li> <li>○ directing generators (or loads) to operate in a certain way or deliver essential services, and</li> <li>○ as a last resort, directing a distribution business to use the emergency backstop to switch off or turn down a solar system's electricity generation.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | <ul style="list-style-type: none"> <li>• Issue market notices (known as ‘minimum system load notifications’) to notify the market when the power system is under stress and the emergency backstop may be activated.</li> <li>• Monitor and report on power system operation and emerging issues.</li> </ul>                                                                                                                                                                        |
| Victorian Government                       | <ul style="list-style-type: none"> <li>• Prepare Ministerial Orders.</li> <li>• Work with distribution businesses to develop a consistent process for ensuring compliance in the commissioning process.</li> <li>• Prepare and disseminate communications for residential and business rooftop solar owners and installers.</li> <li>• Update these guidelines as required.</li> <li>• Work with training providers to develop emergency backstop/CSIP-AUS CPD training.</li> </ul> |
| Solar Victoria                             | <ul style="list-style-type: none"> <li>• Incorporate equipment requirements into the Solar Homes program, to be communicated via the Solar Victoria Notice to Market.</li> </ul>                                                                                                                                                                                                                                                                                                    |
| Clean Energy Council                       | <ul style="list-style-type: none"> <li>• Provide and maintain list of CSIP-AUS compliant equipment.</li> <li>• Host emergency backstop/CSIP-AUS CPD online training for installers.</li> </ul>                                                                                                                                                                                                                                                                                      |
| Accreditation Scheme Operator              | <ul style="list-style-type: none"> <li>• Manage accreditation requirements for solar design and installation.</li> <li>• Provide relevant solar design and installation training.</li> </ul>                                                                                                                                                                                                                                                                                        |
| Essential Services Commission              | <ul style="list-style-type: none"> <li>• Regulate distribution businesses through legislation and licence conditions, including codes of practice and Ministerial Orders.</li> <li>• Report on performance of distribution businesses.</li> <li>• Promote and enforce compliance with relevant obligations.</li> </ul>                                                                                                                                                              |
| Australian Energy Regulator (AER)          | <ul style="list-style-type: none"> <li>• Responsible for regulating energy networks under national energy legislation and rules.</li> </ul>                                                                                                                                                                                                                                                                                                                                         |
| Energy and Water Ombudsman Victoria (EWOV) | <ul style="list-style-type: none"> <li>• Responsible for investigating and resolving complaints in Victoria's electricity sector.</li> </ul>                                                                                                                                                                                                                                                                                                                                        |

## 1.6. Determining if a rooftop solar system must be emergency backstop enabled

After 1 October 2024, emergency backstop is required for:

- **New systems:** New solar systems where an inverter and array are being installed for the first time, including on a new build. This includes where a new system is added alongside an existing (legacy) solar system.
- **Inverter replacements:** Existing (legacy) solar systems where an existing inverter is replaced, except for repairs, replacements with like-for-like equipment under warranty, or relocation.

Most rooftop solar systems are required to be emergency backstop enabled. The flowcharts below (**Figure 1** and **2**) outline the requirements for different rooftop solar systems.

## Determining if a distribution network connected solar system ≤200 kVA must be emergency backstop enabled

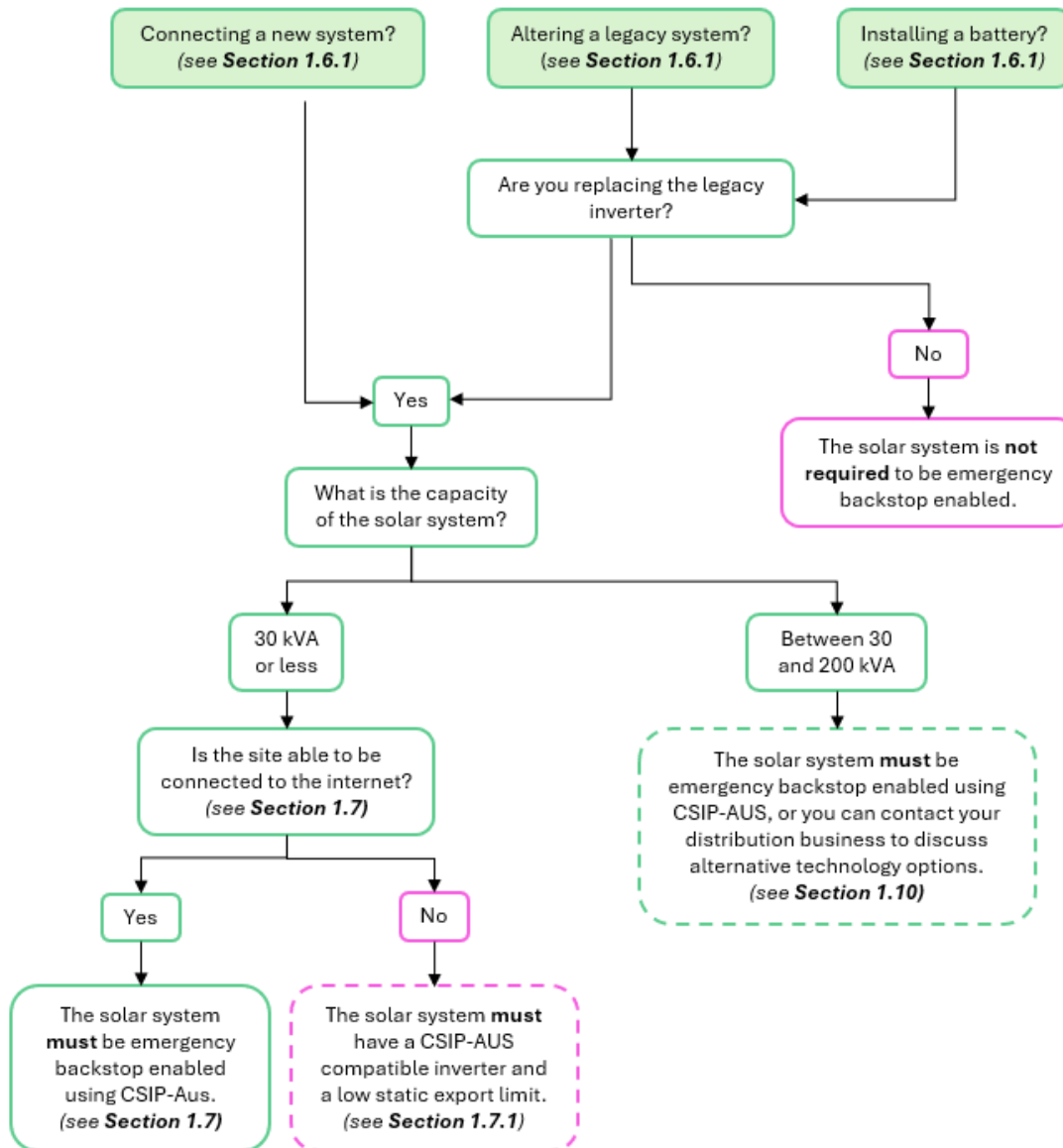


Figure 1: Determining if a rooftop solar system ≤200 kVA must be emergency backstop enabled

## Determining if a distribution network connected solar system >200 kVA must be emergency backstop enabled

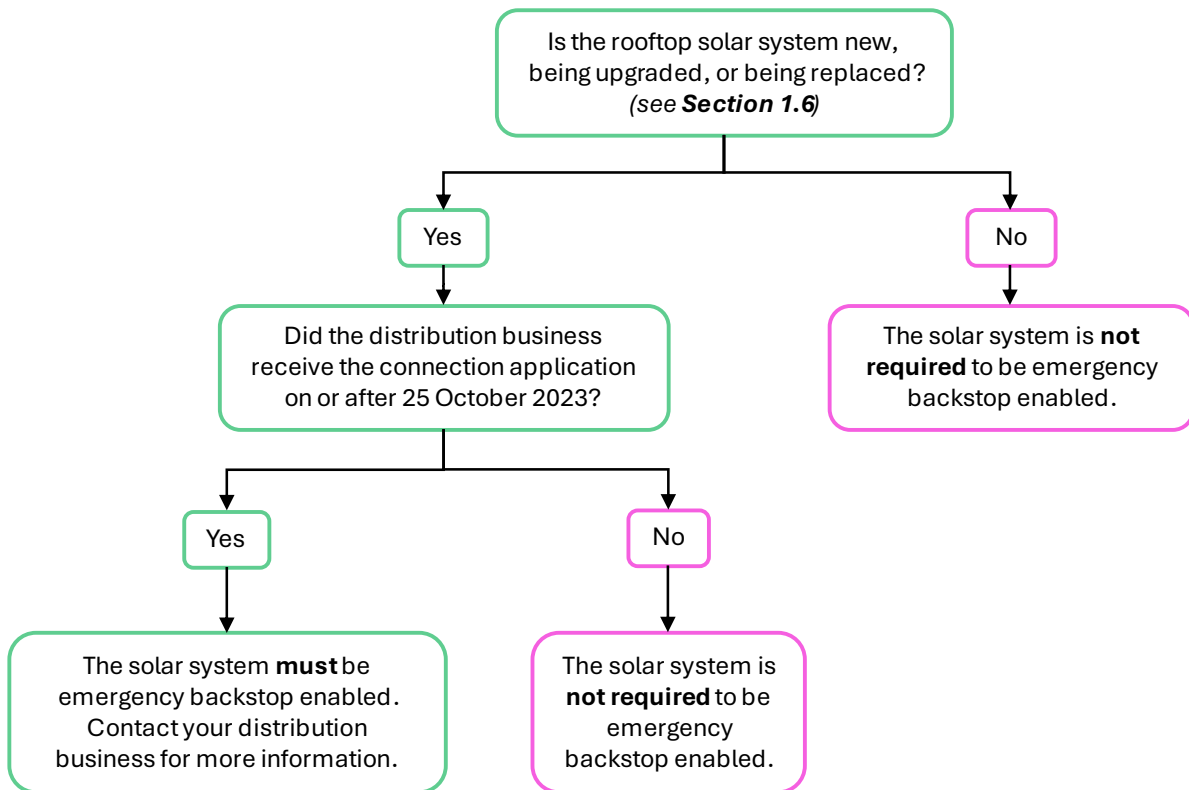


Figure 2: Determining if a rooftop solar system >200 kVA must be emergency backstop enabled

### 1.6.1. Backstop scenarios for systems ≤200 kVA

The table below outlines emergency backstop requirements under different scenarios. This is not an exhaustive list of scenarios; refer to **Figure 1** for the key guiding principles. If you are unsure whether emergency backstop requirements apply in your situation, contact the relevant distribution business.

| Scenario                                                  | Backstop requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>New</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Installing a new system</b>                            | <ul style="list-style-type: none"> <li>The new system must be emergency backstop enabled.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Installing a new system, alongside a legacy system</b> | <ul style="list-style-type: none"> <li>The new system must be emergency backstop enabled.</li> <li>If the legacy system's inverter is not replaced, the legacy system is not required to be emergency backstop enabled.</li> <li>If the legacy system's inverter is being replaced, the legacy system must be backstop enabled (see <b>Section 1.6</b>).</li> <li>However, where the entire site is able to comply, for example through a secure gateway device, it is recommended to make the</li> </ul> |

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | <p>entire site comply as this will lead to a more streamlined connection process and eligibility to participate in future flexible export offerings.</p> <ul style="list-style-type: none"> <li>Regardless of whether the installation of the new system results in the total site capacity surpassing the 200 kVA threshold, the same backstop requirements above apply.</li> </ul>                                                                                                                                 |
| <b>Inverter replacements or other changes</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Adding panels to a legacy system</b>                     | <ul style="list-style-type: none"> <li>If the legacy system's inverter is not replaced, the legacy system is not required to be emergency backstop enabled.</li> <li>If the legacy system's inverter is being replaced, the legacy system must be backstop enabled (see <b>Section 1.6</b>).</li> </ul>                                                                                                                                                                                                              |
| <b>Adding a battery to a legacy system</b>                  | <ul style="list-style-type: none"> <li>If the legacy system's inverter is not replaced, the legacy system is not required to be emergency backstop enabled.</li> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                     |
| <b>Export limit increase for a legacy system</b>            | <ul style="list-style-type: none"> <li>If the legacy system's inverter is not replaced, the legacy system is not required to be emergency backstop enabled.</li> <li>If the legacy system's inverter is being replaced, the legacy system must be backstop enabled (see <b>Section 1.6</b>).</li> </ul>                                                                                                                                                                                                              |
| <b>Inverter repair, warranty replacement, or relocation</b> | <ul style="list-style-type: none"> <li>The legacy system is not required to be emergency backstop enabled where the inverter is: <ul style="list-style-type: none"> <li>repaired; or</li> <li>replaced with like-for-like equipment under warranty; or</li> <li>relocated to another position on the same building e.g. due to renovations or building works (see <b>Section 1.6</b>).</li> </ul> </li> <li>If the inverter is replaced for any other reason, the legacy system must be backstop enabled.</li> </ul> |
| <b>Other</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Site is unable to connect to the internet</b>            | <ul style="list-style-type: none"> <li>A new solar system is not required to be emergency backstop enabled if the customer (or the customer's authorised agent) has advised the distribution business that the solar system has a capacity of 30 kVA or less and the site cannot practicably be connected to the internet (see <b>Section 1.8.1</b>). A low static limit will apply.</li> </ul>                                                                                                                      |



## 1.7. Sites must be connected to the internet to be backstop enabled

For a site to be emergency backstop enabled, it will need to be connected to the internet. The options for connecting an inverter or Secure Gateway Device (SGD) to the internet include ethernet, Wi-Fi, or a sim card. Each of these options have pros and cons which you should consider to ensure an option is selected which best meets a customer's needs. Some of these considerations are detailed below.

| Internet connection option                                          | Pros                                                                                                                                                | Cons                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet</b>                                                     | Typically reliable.<br>Typically fast.<br>Does not require additional data costs.<br>Less prone to issues causing loss of connection than Wi-Fi.    | Needs to be directly plugged into the inverter.                                                                                                                                                                                                       |
| <b>Wi-Fi</b>                                                        | Typically low cost.<br>Typically easy to configure.<br>Does not require additional data costs.                                                      | May not work if the router is very far away from the inverter (mitigation options include a Wi-Fi range extender).<br><br>The connection can be lost if the Wi-Fi password is changed. The customer should be shown how to reconnect to the internet. |
| <b>Sim card</b>                                                     | May be more reliable than Wi-Fi.<br>May be less prone to issues causing loss of connection than Wi-Fi.                                              | Requires additional data costs.                                                                                                                                                                                                                       |
| <b>Temporary internet connection (e.g. a tethered mobile phone)</b> | Suitable to pass capability testing for emergency backstop at sites where other internet connection options are unavailable, such as in new builds. | Customer will need to reconnect to the internet once it becomes available. The customer should be shown how to do this.                                                                                                                               |

### 1.7.1. Sites 30 kVA or less that cannot practicably be connected to the internet

A new solar system is not required to be emergency backstop enabled if the customer (or the customer's authorised agent) has advised the distribution business that the solar system has a capacity of 30 kVA or less and the site cannot practicably be connected to the internet.

A site may be considered unable to practicably connect to the internet if:

- There is no internet coverage at the premises.
- There is a way to connect to the internet at the premises, but it would be prohibitively costly for the customer.
- There is internet coverage, but it is so patchy or unreliable that the installer is unable to complete the process of connecting the equipment to the distribution business' server.

In these circumstances, the solar system:

- a) Must have CSIP-AUS compliant equipment but it will not need to be connected to the internet or be set up to communicate with the distribution business' server.
- b) Will have a low static export limit applied to the solar system. This export limit will be set by the distribution business and be based on several factors including the nearby rooftop solar penetration and the local capacity of the electricity grid.

The distribution business must include terms reflecting these requirements in its agreement with the customer.

If the customer's internet circumstances change (for example a new customer moves in and connects internet at the premises), then it will be possible for the customer to apply to the distribution business to have the low static export limit removed and be emergency backstop enabled. To have this limit removed, the inverter will need to be connected to the internet and the distribution business' server. This will typically require a site visit by a solar installer.

## 1.8. Sites with a low static export limit

Sites with a low static export limit (that can be connected to the internet) are required to be emergency backstop enabled, to ensure that their electricity generation can be turned down or switched off in a minimum system load emergency.

The emergency backstop has been implemented in a way that ensures solar systems are also flexible export ready. Flexible exports enable export limits to be changed dynamically according to the real-time conditions of the electricity grid. For customers with a low static (or zero) export limit, the implementation of flexible exports can enable these customers to have their export limits increased provided their site is connected to the distribution business' server and emergency backstop enabled.. This will allow Victorians to export more solar, more of the time.

Distribution business will contact eligible customers when flexible export limit pilots and products are available.

## 1.9. Solar systems with a connection application approved prior to 1 October 2024

A solar system is not required to be emergency backstop enabled if:

- the solar system has a capacity less than or equal to 200 kVA, **and**
- the connection application for the solar system or modification of the connection application was made before 1 October 2024.

## 1.10. Options for solar system >30 kVA

A new solar system is not required to be emergency backstop enabled using CSIP-AUS if the solar system:

- has a capacity between 30 kVA and 200 kVA (inclusive), **and**
- the distribution business can remotely interrupt or curtail the solar system's electricity generation using an alternative technology (such as through a Generation Monitoring Meter (GMM) or Supervisory Control and Data Acquisition (SCADA)).

For larger solar systems this creates additional options which may be necessary to reflect these customers' specific circumstances. Contact your distribution business for more information about these options.

## 1.11. Telling customers about the emergency backstop

The Victorian Government has prepared a fact sheet which we recommend you provide to your customers. This fact sheet is available [on the Energy Victoria website](#).

## 1.12. Installer support

Distribution businesses must make available to solar installers, by way of a business hours telephone service and by way of frequently updated information on a part of its website, information about any utility server outages, including:

- an estimate of when an outage-affected utility server will be restored or,
- if reliable information is not available to inform that estimate, an estimate of when reliable information on restoration of the utility server will be available.

Distribution businesses must:

- provide options for solar installers who call the business hour telephone service to be directly connected to a telephone operator
- use best endeavours to restore capability and functions of the utility server as soon as possible making allowance for reasonable priorities
- when the distribution business becomes aware that capability testing of a solar system's inverter to the utility server has failed testing, communicate meaningful error messages and outline possible steps the solar installer can take to remedy in near real time.

## 2. Technical guidance

The guidance below outlines requirements for completing solar system installations in line with CSIP-AUS requirements.

Please refer to the relevant distribution business' website for any process requirements that are specific to the distribution business.

### 2.1. Selecting compatible equipment

To meet the requirements of the emergency backstop, equipment must be compliant with the Common Smart Inverter Profile Australia (CSIP-AUS) protocol. Some inverters have CSIP-AUS capability built in, while others require the installation of a third-party device. Solar retailers and installers must ensure compliant equipment, or combination of equipment is installed including third-party devices where relevant.

Where multiple inverters are being installed, the installer must confirm any additional requirements with the equipment supplier to ensure that the inverters can comply with emergency backstop requirements.

CSIP-AUS is the Australian implementation guide for the IEEE 2030.5 Smart DER communications protocol. This protocol is designed to facilitate the remote management of distributed energy resources by a utility server over internet communications. More information about CSIP-AUS is available on the [Australian Renewable Energy Agency website](#) and through [Standards Australia](#).

#### 2.1.1. Key functions of CSIP-AUS

The table below outlines key functions of CSIP-AUS that must be utilised.

| Function                       | Requirements                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Export limit monitoring</b> | The communications software client must monitor net export at the network connection point and manage the solar system to keep the site within the export limit under the relevant distribution business connection agreement.                                                                                                                                                                       |
| <b>Emergency curtailment</b>   | The communications software client must have the capability to: <ul style="list-style-type: none"> <li>• manage the gross generation setpoint of the solar system in response to the command from the distribution business' utility server.</li> <li>• de-energise the solar system in response to the command from the distribution business' utility server.</li> </ul>                           |
| <b>Communications failsafe</b> | The communications software client must have the capability to manage export to a failsafe level on the expiration of an export limit, where no further export limit has been received (e.g. when communications to the distribution business' utility server is lost or an export limit expires). The value of this communications failsafe export limit shall be updateable by the utility server. |
| <b>Monitoring</b>              | The communications software client must be capable of monitoring telemetry readings from the network point of common coupling and all exporting devices on site. These telemetry readings shall be provided to the distribution business' utility server as part of commissioning of the site where required. Any ongoing                                                                            |

### **2.1.2. Solar inverters compliant with Common Smart Inverter Profile Australia (CSIP-AUS)**

The list of CSIP-AUS compatible equipment is maintained by the Clean Energy Council. From 1 October 2024, a site will be considered compliant if the solar system (and related devices as necessary) contains equipment which has successfully completed the communications software client test procedure provided by the distribution business and subsequently been approved and listed as a compliant interoperable pairing by the Clean Energy Council. Distribution businesses also provide information on their websites regarding compatible inverters.

### **2.1.3. Inverter communication models**

A solar system can be backstop enabled using a compliant native inverter, single or multiple PV inverters using a Secure Gateway Device (SGD), as shown below (**Figure 3**). An export monitoring device will also need to be installed.

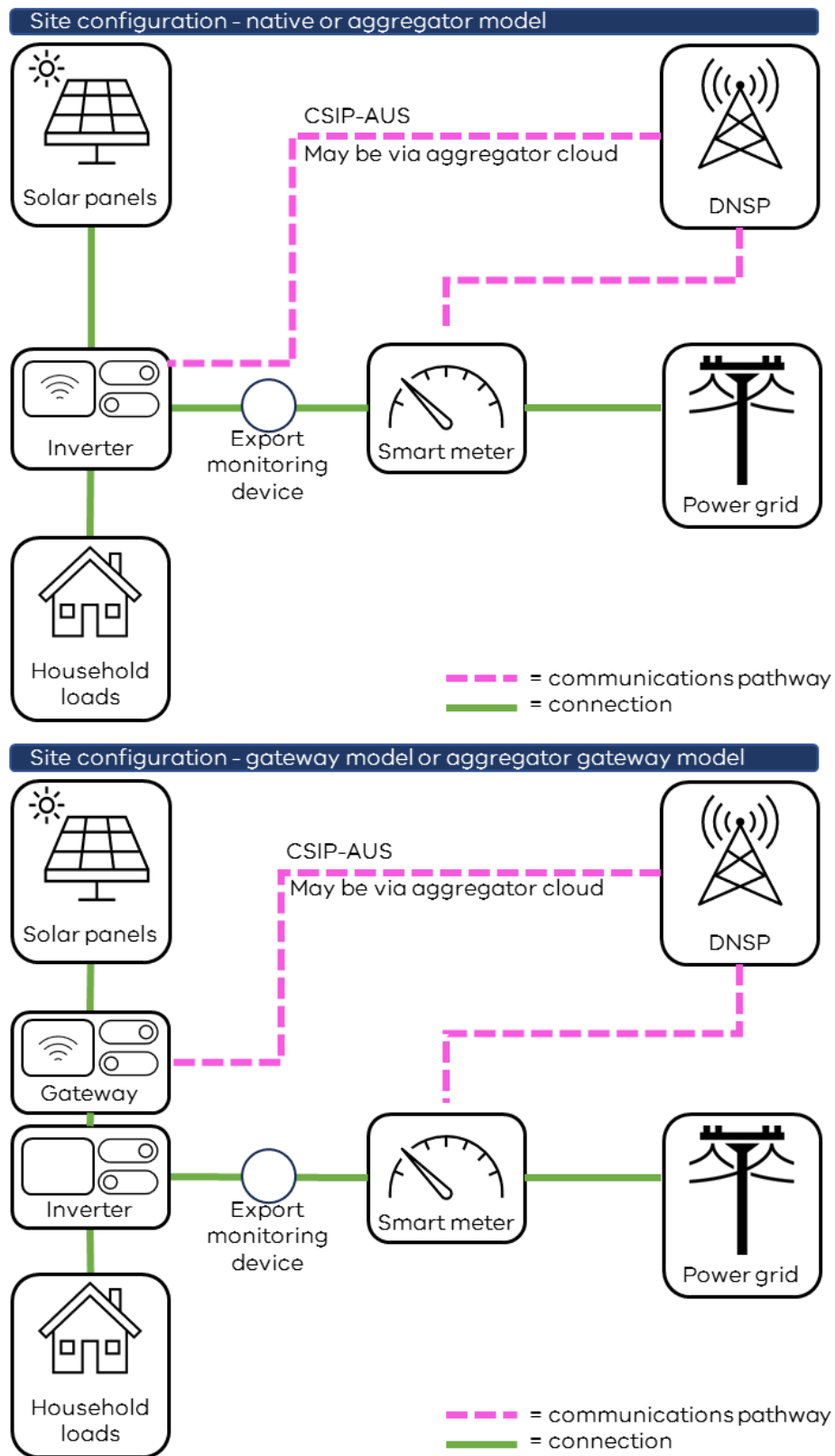


Figure 3: CSIP-AUS site configuration and communication models

**NOTE: The smart meter in this diagram can also be known as the revenue meter.**



| Inverter model                  | Use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Native model</b>             | <p>Suitable for small installations such as residential rooftop solar systems.</p> <p>The inverter is CSIP-AUS compliant and has a built-in communications software client enabling direct communications between the utility server and the solar system.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Gateway model</b>            | <p>Suitable for larger or more complex installations with multiple end devices (e.g. inverters, battery storage, electric vehicle charging) where an inverter cannot act as the communications software client. Also suitable for small installations where there is no native inverter functionality. The gateway is CSIP-AUS compliant and collects data from and controls the end devices. It may appear as a single device to the utility server.</p> <p>Fail-safe operating modes must be implemented at each site, either in the end device or within the local gateway/Generating Facility Management System (GFEMS).</p>                                                                                                                                                                                                                                                               |
| <b>Aggregator model</b>         | <p>Suitable where an aggregator platform is used for multiple end devices.</p> <p>The aggregator platform acts as the communications software client, communicating with the utility server and end devices.</p> <p>The end devices do not need to be located within one electrical installation and can be distributed across a large geographic area but aggregated together by a single entity.</p> <p>The utility server must be able to identify each individual end device as an IEEE 2030.5 end device so that each can be monitored and controlled individually.</p> <p>Fail-safe operating modes must be implemented at each site (such as in the end device), so that fail-safe export limits will operate correctly if there is a failure of the aggregator platform.</p>                                                                                                           |
| <b>Aggregator gateway model</b> | <p>Suitable where an aggregator platform and gateway device(s) are used in conjunction.</p> <p>The aggregator platform acts as the communications software client, communicating with the utility server. The aggregator platform then communicates with a combination of a gateway(s) and end devices.</p> <p>The end devices and gateway(s) do not need to be located within one electrical installation and can be distributed across a large geographic area but aggregated together by a single entity.</p> <p>The utility server must be able to identify each individual end device as an IEEE 2030.5 end device so that each can be monitored and controlled individually.</p> <p>Fail-safe operating modes must be implemented at each site (such as in the end device), so that fail-safe export limits will operate correctly if there is a failure of the aggregator platform.</p> |

#### 2.1.4. Secure Gateway Devices (SGDs)

Cloud vendors utilising the cloud pathway must have a CSIP-AUS compliant IEEE 2030.5 software client which can, in response to signals provided by the distribution business' utility server, exert export limit control via communication to sites which utilise their services to achieve CSIP-AUS capability and provide the required monitoring data to the distribution business.

#### 2.1.5. Site monitoring

Emergency backstop enabled sites must have site level monitoring capability (may be achieved through an export monitoring device, current transformer, inverter meter or other relevant device).

## 2.2. Connecting an inverter to the internet

### 2.2.1. Internet connection options (Wi-Fi, ethernet, cellular)

To communicate with the server of the relevant distribution business, a solar system's inverter will need to be internet-connected.

Customers and installers have the flexibility to choose the most appropriate method to connect to the internet based on the individual characteristics of the site. Where a permanent internet option is unavailable at the site, a temporary internet connection (such as a tethered mobile phone) can be used to commission and confirm the site is emergency backstop enabled. See also Section 1.7.

### 2.2.2. Positioning of Wi-Fi router

Where a site is connected via Wi-Fi, installers should confirm a reliable signal can be received. If the Wi-Fi router is located too far from the inverter such that a reliable signal cannot be received, a Wi-Fi range extender may be needed to ensure a reliable connection can be established.

### 2.2.3. Loss of connectivity

Site connectivity may be lost for a range of reasons including:

- temporary internet outages,
- an inverter has lost connectivity to the internet, due to a change in Wi-Fi router or password,
- a manufacturer cloud has lost connectivity with the distribution business' utility server.

If a site loses connectivity, the inverter will slowly turn down export to a default 'failsafe' limit. For temporary outages, the inverter will return to a normal operating state when connectivity is restored. For longer outages, distribution businesses must have a procedure that sets out the process they will follow to contact customers if an emergency backstop enabled solar system loses connectivity. Distribution businesses are required to publish these procedures on their websites.

### 2.2.4. Reconnecting to the internet after Wi-Fi router or password changes

As part of the installation process, customers should be shown how to reconnect their inverter or gateway device to the internet in the case of a Wi-Fi router or password change. Typically, this can be done via the solar inverter smart phone application or the display.

Guides including internet connection instructions for some common devices are listed in the table below. If the relevant device does not appear in the table, please refer to the manufacturer's website.

| Manufacturer                            | Internet connection instructions                                                                           |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------|
| GoodWe Technologies                     | <a href="#">Micro Inverter User Manual</a><br><a href="#">Smart Dongle Installation Guide</a>              |
| Shenzhen Growatt New Energy             | <a href="#">Growatt Monitoring Device Setup Guidance</a>                                                   |
| Fronius Australia                       | <a href="#">Commissioning Fronius Monitoring via smartphone/tablet</a>                                     |
| Sungrow Power Supply                    | <a href="#">Sungrow Wi-Fi configuration</a>                                                                |
| Ginlong Technologies                    | <a href="#">Ginlong SOLIS Wi-Fi Dongle connection</a>                                                      |
| SolarEdge Technologies                  | <a href="#">SolarEdge Wi-Fi instructions</a>                                                               |
| Enphase Energy Australia                | <a href="#">Enphase Instructions (refer to support article)</a>                                            |
| Shenzhen SOFAR SOLAR                    | <a href="#">SOFAR Residential PV inverters (select the relevant device, then download the user manual)</a> |
| Huawei Technologies                     | <a href="#">Huawei SUN2000 – Commissioning</a>                                                             |
| SolaX Power Network Technology Zhejiang | <a href="#">SolaX Pocket Wi-Fi Set-Up</a>                                                                  |

|                   |                                                                                |
|-------------------|--------------------------------------------------------------------------------|
| SMA Australia     | <a href="#">SMA Sunny Boy Inverter Wi-Fi connection</a> (refer to service tip) |
| Delta Electronics | <a href="#">My Delta Solar connection instructions</a>                         |

## 2.2.5. Installer obligations and compliance

### Privacy

When handling sensitive customer information such as Wi-Fi credentials, installers must adhere to Accreditation Scheme requirements.

## 2.2.6. Solar inverter settings

In line with the Australian Standards for inverters, solar and battery inverters in Victoria and all Eastern Australia must be installed with AS/NZS 4777.2:2020 Australia A settings.

Instructions for correctly configuring inverter settings are available on the [Solar Victoria website](#).

## 2.2.7. Establishing connectivity with the distribution business' server and running capability tests

For a solar system to be considered emergency backstop enabled, confirmation must be provided by the distribution business' utility server. Refer to your equipment manufacturer to understand the information required to successfully register and connect the solar system.

A temporary internet connection (such as a tethered mobile phone) may be used for running capability tests to confirm a site is backstop enabled. If a temporary connection is used, once removed, the solar system must be reconnected to a permanent on-site internet connection. It will then re-establish connection with the distribution business' utility server.

Instructions for connecting to each Victorian distribution business' utility server are available via distribution business websites. For links to distribution business websites, please see Section 3 below.

## 3. More information

### 3.1. Distribution businesses

Solar installation information specific to each distribution business can be found at each Victorian distribution business' website:

- [CitiPower/Powercor](#)
- [United Energy](#)
- [AusNet](#)
- [Jemena](#)

### 3.2. Training

[How to correctly configure inverter settings | Solar Victoria](#)

Multiple reviews have found that many inverters have been installed to incorrect inverter settings. This page outlines the process for correctly configuring solar inverter settings.

[Accreditation Scheme's Continuous Professional Development \(CPD\) requirements](#)

This page lists the education and training courses that meet the learning criteria for Accreditation Scheme's Continuous Professional Development (CPD) requirements. Accredited persons are required to complete 100 CPD points annually to maintain their accreditation.

### 3.3. Information for customers

[Energy Victoria - Victoria's emergency backstop mechanism for solar](#)

A downloadable customer fact sheet is available on the Energy Victoria website. It is recommended that you share this fact sheet with customers at the point of installation.

### 3.4. Minimum system load

[AEMO Minimum Operational Demand fact sheet](#)

This fact sheet provides further information on minimum system load (also known as minimum operational demand).

### 3.5. Australian Standards and Handbooks

| Standard/Reference                                  | Title                                                                          |
|-----------------------------------------------------|--------------------------------------------------------------------------------|
| CSIP Implementation Guide                           | <a href="#">Common Smart Inverter Profile CSIP Implementation Guide</a>        |
| AS TS 5573:2025                                     | <a href="#">Common Smart Inverter Profile – Australia with Test Procedures</a> |
| CSIP-AUS Communications Client Test Procedures v1.0 | <a href="#">CSIP-AUS Communications Client Test Procedures v1.0</a>            |

### 3.6. Consultation on emergency backstop

[Engage Victoria](#)

Information about the previous public consultation process for the emergency backstop may be found on this webpage. You can subscribe for project updates using the 'Follow' button.

## 4. Contact Us

If you have any feedback on this guidance, please let us know at [DER.Victoria@deeca.vic.gov.au](mailto:DER.Victoria@deeca.vic.gov.au).