

Equipment Eligibility Criteria

Approach to Technical Evaluation of Systems

www.energymining.sa.gov.au



South Australia's Home Battery Scheme

- Technical Paper

Preface:

This document is a '**Technical Paper**' that captures at a high level the requirements that should be met by a system eligible for funding under the SA Government's Home Battery Scheme (HBS).

The 'battery system', for the purpose of the scheme, is the collection of components that achieves the HBS requirements, and will likely include a number of discrete components, among them:

- battery module(s)
- battery system (including battery management system)
- battery inverter
- hybrid inverter
- current sensor
- smart controller/meter

Providers under the scheme shall have proposed and had approved one or more combinations of components that meet the HBS requirements.

This document addresses at a summary level:

1. the requirements for the **product functionality and system functionality** of the system being installed,
2. the requirements for the **design, means of installation and installer** of the system.

This document is not intended to address any other scheme requirements which may apply.

The scheme concepts, requirements, constraints described in this document are presented in draft form and may be modified at the sole discretion of the SA Government

1 Glossary

Acronym	Description
AC	Alternating Current
API	Application Programming Interface
AS/NZS	Australian Standard / New Zealand Standard
BESS	Battery Energy Storage System
BS	Battery System
CEC	Clean Energy Council
DC	Direct Current
DER	Distributed Energy Resources
DRED	Demand Response Enabling Device
DRM	Demand Response Mode
eCOC	Electronic Certificate of Compliance
OEM	Original Equipment Manufacturer
PV	Photovoltaic
SAPN	SA Power Networks
SOC	State Of Charge
VPP	Virtual Power Plant

Category	Requirement	Corresponding Documents Required
General		<p>For each System provided under the scheme, submit a major component list that fully identifies the manufacturer, model, and version of all components comprising the system.</p> <p>Provide a statement or manufacturer's information for each major component stating that the combination of products in the System are compatible.</p>
1.1 Electrical interface	Battery systems may be AC- or DC-coupled.	
1.2 Physical communications interface	<p>The battery system shall include an ethernet port that is capable of being used for communication with the system by authorised parties.</p> <p>It is not a requirement that the ethernet port is used in the installed system.</p>	Submit a Technical Data Sheet or similar product description indicating the system includes an ethernet port.
1.3 Internet accessibility	The system shall be provisioned with at least one means for forming a reliable internet connection accessible by authorised parties (examples include a 4G/5G modem, Wifi connectivity to a homeowner-provided internet-connected LAN, or hardwired ethernet connection to a homeowner-provided internet-connected LAN). The means for forming a reliable internet connection need not be the wired ethernet port.	Submit a Technical Data Sheet or similar product description indicating how the system can reliably connect to the internet for access by authorised parties.
1.4 Remote registration	The system shall support registration of the system via API to remote services (e.g. retailer, OEM, aggregator).	<p>Submit a clear written description of how the system can connect to and be registered with remote services, via an API.</p> <p>May require more information than a Technical Data Sheet.</p>
1.5 Remote monitoring	<p>System shall include a communication function that supports remote monitoring and reporting of system state at 5-minute intervals via an API, with measured/reported parameters to include:</p> <ul style="list-style-type: none"> • Battery SOC • Battery real and reactive power • Connection point voltage 	<p>Submit a clear written description of how the system enables remote monitoring and reporting of these system parameters at intervals no greater than 5 minutes.</p> <p>Indicate which system components and remote services/APIs are involved in the measurement,</p>

Category	Requirement	Corresponding Documents Required
		storage and reporting of system data.
1.6 Remote control	<p>System shall respond to remotely-provided commands from authorised parties to:</p> <ul style="list-style-type: none"> • Charge battery • Discharge battery • Perform the mandatory Demand Response Modes required under AS/NZS 4755.3.5: DRM 0 (<i>open the disconnection device</i>), DRM 1 (<i>do not import energy</i>), DRM 5 (<i>do not export energy</i>). <p>In addition, for a site on which both the battery and solar systems are new installations ('greenfield'), or for a site using a hybrid inverter, the system shall respond to remotely-provided commands to:</p> <ul style="list-style-type: none"> • Dynamically maintain site net power output below or equal to specified export limits that may be required from time to time. 	<p>Submit a clear written description of the system's ability to respond to each of the nominated remotely-provided commands.</p> <p>Support the description with a Technical Data Sheet or other manufacturer-provided information confirming that these functions can be executed.</p> <p>Indicate how the system components work together to execute the remotely-provided commands.</p>
1.7 Remote configuration	System supports remote changes to firmware and operational settings by authorised parties.	Submit a Technical Data Sheet or similar product description clearly indicating how the system supports remote changes to firmware and operational settings by authorised parties. Where relevant, screenshots and/or user guides should be provided to demonstrate how this requirement is met.
1.8 Product performance and safety	<p>Inverters shall comply with AS/NZS 4777.2-2015 <i>Grid connection of energy systems via inverters – Inverter requirements</i> and shall be listed on the <i>CEC Approved Inverter List</i>.</p> <p>Batteries shall comply with the Battery Safety Guide (<i>Best Practice Guide: Battery Storage Equipment – Electrical Safety Requirements, Version 1.0, Published 06 July 2018</i>) and shall be listed on the <i>CEC Approved Battery List</i> (under development). Refer to http://www.batterysafetyguide.com.au for more information.</p>	<p>Submit a Technical Data Sheet, certificate of compliance, or other statement confirming compliance with AS/NZS 4777.2-2015.</p> <p>Provide the certificates corresponding to the certificate numbers listed in the CEC Approved Inverter List and CEC Approved Battery List.</p>

Category	Requirement	Corresponding Documents Required
1.9 Security	System shall be designed such that it is protected to a suitable standard against electronic intrusion and tampering by unauthorised parties.	Submit a clear written description of the system's security measures preventing electronic intrusion and tampering.
1.10 Warranty	<p>System shall be provided with a warranty providing, at a minimum, the following coverage:</p> <p>Battery Energy Storage System (BESS) or Battery System (BS): 7 years under daily cycling operation</p> <p>Any Inverter: 5 years</p> <p>Balance of system (e.g. enclosures): 5 years</p> <p>Workmanship: 5 years</p> <p>Whole of system: 5 years</p>	State the warranty periods that apply to each system component, the whole of system, and workmanship.

2 Installation Requirements

Category	Requirement
2.1 Installation safety	<p>All work to be performed by a licensed electrical worker and eCOC submitted.</p> <p>System shall comply with <i>AS/NZS 4777.1:2016 Grid connection of energy system via inverters – Installation requirements</i>.</p> <p>System shall be installed per <i>CEC Battery Install Guidelines for Accredited Installers</i>, including:</p> <ul style="list-style-type: none"> • Assessing battery system and environment • Determining applicable hazards • Applying risk reduction methods • Applying other requirements (labels and safety signage, commissioning and testing, documentation)
2.2 Other standards compliance	<p>System uses equipment supplied and installed in compliance with all relevant Australian and State Laws and regulations and all relevant Australian and International Standards, including, without limitation:</p> <ul style="list-style-type: none"> • AS/NZS 3000—Electrical Installations (known as the Wiring Rules) for all the classes and types of construction in all buildings • AS/NZS 4509—Stand-alone power systems • AS/NZS 3011—Secondary batteries installed in buildings • AS/NZS 5033—Installation and safety requirements for photovoltaic (PV) arrays • AS 2676—Guide to the installation, maintenance, testing and replacement of secondary batteries in buildings • AS 4086—Secondary batteries for use with stand-alone power systems • AS/NZS IEC 60947—Low-voltage switchgear and controlgear • IEC 60947-3:2015 (ED. 3.2) - Low voltage switchgear and controlgear – Switches, disconnectors, switch-disconnectors and fuse-combination units • AS/NZS 61439.2—Low-Voltage switchgear and control gear assemblies – Power switchgear and controlgear assemblies • AS/NZS 4777—Grid connection of energy systems via Inverters
2.3 Requirements for solar modules, inverters and installation, when installed concurrently	<p>The supply and installation of solar modules and solar-only inverters is not covered under the scheme.</p> <p>Any solar modules or solar-only inverters installed concurrently with the battery system shall be supplied and installed in compliance with all relevant Australian and State Laws and regulations and all relevant Australian and International Standards.</p> <p>In the event that a battery system installed under the scheme requires alteration to an existing solar system, installers shall follow the <i>CEC Installation requirements for alterations, additions, repairs and upgrades to existing grid-connected PV arrays</i> (available at https://www.solaraccreditation.com.au/dam/solar-accred/installer-area/tech-info/installation-requirements-associated-with-alterations.pdf)</p>

Category	Requirement
2.4 NSP requirements	<p>Systems are required to be grid-connected.</p> <p>Systems shall be approved for connection and installed in compliance with SA Power Networks Service and Installation Rules, including inverter limits as described in the 21 April 2018 SAPN industry news bulletin <i>Changes to Inverter Capacity Limits and Forms</i> (available at the link below) and Technical Standard TS 129 (expected to be amended). (https://www.sapowernetworks.com.au/centric/industry/contractors_and_designers/industry_news.jsp)</p>
2.5 Design and installation accreditation	<p>Systems shall be designed and installed by CEC-accredited designer/installer, having CEC Grid-connect Accreditation with Battery Storage Endorsement.</p>