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| Connecting a New or Existing Battery to an Approved Virtual Power Plant; Residential or Small Energy Consuming Customer (SECC) Only | Activity No. |
| | VPP1 |

1. ACTIVITY SPECIFIC DEFINITIONS

Virtual power plant (VPP) means an aggregated set of multiple home battery systems that are operated together to store energy, and supply electricity into the grid.

Approved Virtual Power Plant (VPP) is a VPP approved by the Minister or their delegate.

Battery means a battery storage systems (BESS) that is installed in accordance with and covered under the scope of AS/NZS 5139:2019 (Electrical installations - Safety of battery systems for use with power conversion equipment) as well as any additional product requirements of the Approved VPP

2. ACTIVITY DESCRIPTION (SUMMARY)

Connect an existing Battery or new Battery to an Approved Virtual Power Plant (VPP).

3. ACTIVITY ELIGIBILITY REQUIREMENTS

- (1) Any residential or energy consuming customer premises in South Australia where the installed product requirements and minimum installation requirements can be met, and this activity has not already been implemented.
- (2) Any additional eligibility requirements of the chosen Approved VPP
- (3) The activity can be implemented at the same premises on the renewal of a contract with a VPP with the customer providing explicit consent, provided that previous contract period was no shorter than three years.

4. INSTALLED PRODUCT REQUIREMENTS

- (1) Batteries shall comply with the Battery Safety Guide (*Best Practice Guide: Battery Storage Equipment –Electrical Safety Requirements, Version 1.0, Published 06 July 2018*) if installed after and during January 2019. Batteries installed prior to January 2019 must comply with the VPP requirements.
- (2) Batteries must have a capacity greater than, or equal to, 2 kWh.
- (3) The system must support remote monitoring and remote changes to firmware and operational settings by the VPP operator.
- (4) The system shall respond to remotely provided commands from authorised parties to:
 - a. Charge/discharge battery.
 - b. Perform mandatory demand response modes
- (5) The system shall be designed such that it is protected to a suitable standard against electronic intrusion and tampering by unauthorised parties.
- (6) Systems shall be provided with the following minimum warranties at time of installation:
 - a. Battery Energy Storage Systems (BESS) or Battery System (BS): 7 years under daily cycling operation.
 - b. Any inverter: 5 years.
 - c. Balance of system (e.g. enclosures): 5 years.

- d. Workmanship: 5 years.
- e. Whole of system: 5 years.

5. MINIMUM INSTALLATION REQUIREMENTS

- (1) The activity connection must be installed and maintained in a manner consistent with the equipment, orchestration, and contractual requirements the Approved VPP
- (2) System must be designed, or have been designed, and installed by CEC-accredited designed/installer.
- (3) System shall be installed, or must have been installed, per CEC *Battery Install Guidelines for Accredited Installers*.
- (4) System uses equipment supplied and installed in accordance with all relevant Australian and State Laws and regulations and all relevant Australian and International Standards, including, without limitation:
 - a. AS/NZS 4777 – Grid connection of energy systems via Inverters.
 - b. AS/NZS 3000 – Electrical installations for all the classes and types of construction in all buildings.
 - c. AS/NZS 4509 – Stand-alone power systems.
 - d. AS/NZS 3011 – Secondary batteries installed in buildings.
 - e. AS/NZS 5033 – Installation and safety requirements for photovoltaic (PV) arrays.
 - f. AS 2676 – Guide to the installation, maintenance, testing and replacement of secondary batteries in buildings.
 - g. AS 4086 – Secondary batteries for use with stand-alone power systems.
 - h. AS/NZS IEC 60947 – Low-voltage switchgear and control gear.
 - i. IEC 60947-3:2015 (ED. 3.2) – Low voltage switchgear and control gear –Switches, disconnectors, switch-disconnectors and fuse-combination units
 - j. AS/NZS 61439.2 – Low-Voltage switchgear and control gear assemblies –Power switchgear and control gear assemblies.

6. NORMALISED REPS GIGAJOULES

The normalised REPS Gigajoules achieved from undertaking this activity is equal to:

Normalised REPS Gigajoules = Productivity factor (as per table below) x number of eligible appliances

ACTIVITY VPP1 – PRODUCTIVITY FACTORS

| Battery Size (kWh) | Productivity Factor |
|-----------------------|---------------------|
| 2 ≤ Battery size < 4 | 17.2 |
| 4 ≤ Battery size < 6 | 34.5 |
| 6 ≤ Battery size < 8 | 51.7 |
| 8 ≤ Battery size < 10 | 68.9 |

| Battery Size (kWh) | Productivity Factor |
|------------------------|---------------------|
| 10 ≤ Battery size < 12 | 86.2 |
| 12 ≤ Battery size < 14 | 103.4 |
| 14 ≤ Battery size < 16 | 120.6 |
| 16 ≤ Battery size < 18 | 137.8 |
| 18 ≤ Battery size < 20 | 155.1 |
| 20 ≤ Battery size < 22 | 172.3 |
| 22 ≤ Battery size < 24 | 189.5 |
| 24 ≤ Battery size < 26 | 206.8 |
| 26 ≤ Battery size < 28 | 224.0 |
| 28 ≤ Battery size | 241.2 |

7. GUIDANCE NOTES (INFORMATIVE ONLY – NOT MANDATORY)

Productivity factors assume a 10-year contract term with the VPP and that every day of the year the VPP will ensure the premises sources electricity from the full capacity of the battery, before relying on grid energy between 6 AM – 10 AM and 3 PM – 1 AM, and that the battery will be fully recharged from the grid or on site solar PV between 1 AM and 6AM and again between 10 AM and 3 PM.

In approving an Approved VPP, the Minister may consider requirements including but not limited to the VPP's:

- Customer contract length, terms and conditions;
- Demonstrated commercial capacity and capability, intent and practice to orchestrate battery operation for the duration and frequency required;
- Control hardware, software and communications connections and operational capacity and capability for VPP orchestration;
- Product and installation quality and safety provisions; and
- Consumer protection provisions.

The Minister or their appointed delegate may approve VPPs.

All demand response and VPP activities (APP4, EV1, VPP1, HC2C & WH4) are **not** mutually exclusive.