# Ergon Energy Network
# Register of completed distribution connected resource projects
# 1 July 2020 to 30 June 2025

# Contents

# 1. Introduction

This register provides a record of completed distribution connected resource projects that are connected to the distribution network and owned, operated, or controlled by Ergon Energy Network. It has been developed to improve access to technical information on projects that have been successfully integrated into the network.

# 2. Purpose of this Register

Under the NER, Ergon Energy Network is required to publish a register of completed distribution connected resource projects. This register must:

- include in the register the details contained in paragraph (b) for all completed distribution connected resource projects within the 5 year period preceding the establishment of the register; and
- update the register by the DAPR date each year thereafter with details of all completed distribution connected resource projects in the 5 year period preceding the DAPR date.

# 3. Details to be included in the register

A register of completed distribution connected resource projects includes, but is not limited to:

- technology of distribution connected unit (e.g. synchronous generating unit, induction generator, photovoltaic array, etc) and it's make and model;
- maximum generating capacity of all distribution connected units comprised in the system;
- contribution to fault levels;
- the size and rating of the relevant transformer;
- a single line diagram of the connection arrangement;
- protection systems and communication systems;
- voltage control and reactive power capability; and
- details specific to the location of a facility connected to the network that are relevant to any of the details in the bullet points above.

# 4. More Information

For more information around connecting a large Distribution Energy Resource (DER) system, please refer to the following web pages:

- **For High Voltage DER systems:** Large high voltage DER systems | Ergon Network , or
- **For Low Voltage DER systems:** Solar connections & other technologies | Ergon Network

Alternatively, you can refer to Large customer connections support | Ergon Network.

# 5. Register of completed distribution connected resource projects

| Year Completed = Connected | Location | Technology of each distribution connected unit | Network Connection Voltage (kV) | System details (Make and Model) | Generator Voltage Level (kV) | maximum power generation capacity of all distribution connected units comprised in the system (kw) | Contribution to fault levels (kA) at connection point | The size and rating of the relevant transformer (Voltages & kVA) | A single line diagram of the connection arrangement | Protection systems and communication systems | Voltage control, power factor control and/or reactive power capability | Details specific to the location of a facility connected to the network, that are relevant to any of the details. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020/21 | West Gladstone | Solar PV | LV | ECO 27.0-3-S, ECO 25.0-3-S, SYMO 20.0-3-M, SYMO 17.0-3-M | LV | 224 | 0.39 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var | Partial Export |
| 2020/21 | Earlville | Solar PV | LV | 3 x SolarEdge SE82.8kW | LV | 248.4 | 0.43 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var | Non-Export |
| 2020/21 | Cannonvale | Solar PV | LV | 2 x Sungrow SG110CX | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Bayview Heights | Solar PV | LV | 2 x Huawei SUN2000-50KTL-Mo | LV | 210 | 0.36 | 500kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2020/21 | Kingaroy | Solar PV | LV | 5 x SMA Sunny Tripower Core 1 STP 50-40 | LV | 250 | 0.43 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2020/21 | Smithfield | Solar PV | LV | SMA STP 25000TL, SMA STP 15000TL x 2, SMA STP 20000TL, SMA STP 10000TL | LV | 333 | 0.58 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Edmonton | Solar PV | LV | Solar Edge 27.6K Inverters | LV | 303 | 0.52 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2020/21 | Garbutt | Solar PV | LV | 9 x SE27.6K | LV | 248 | 0.43 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Bundaberg | Solar PV and Battery | LV | 26 x Fronius ECO 25.0-3-S, Tesla Powerpack 2.5 | LV | 940 | 1.63 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2020/21 | Mackay | Solar PV | LV | Sungrow Power Supply SG110CX x 2 | LV | 220 | 0.38 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Thuringowa | Solar PV | 11kV | ABB PVS-50-TL – S x 5 | LV | 650 | 0.04 | 1MVA + 1.5MVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2020/21 | Woree | Solar PV | 22kV | SMA STP 15000TL, SMA STP 25000TL x 2, SMA STP 10000TL, SolarEdge SE82.8kW x 4 | LV | 496 | 0.02 | 2x 1.5MVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Rockhampton | Solar PV | LV | Sungrow SG110CX x 3 & SG50CX | LV | 380 | 0.66 | 1500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2020/21 | Kingaroy | Synchronous EG | LV | Perkins 4012-46TAG0A with Stamford P1734F | LV | 1250 | 12.63 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Fixed power factor | Non-Export |
| 2020/21 | Edmonton | Solar PV | LV | SolarEdge 2 x SE82.2K, 1x SE50K | LV | 225 | 0.39 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Garbutt | Solar PV | LV | 15 x SolarEdge SE27.6K | LV | 414 | 0.72 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Parkhurst | Solar PV | LV | 4 x SMA SHP75-10 | LV | 300 | 0.52 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Highfields | Solar PV | LV | 3 x SMA SHP5-10 | LV | 225 | 0.39 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2020/21 | Railway Estate | Solar PV | LV | 2 x Sungrow SG110CX | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2020/21 | Bowen | Solar PV | LV | 4 x SMA SHP75-10 | LV | 300 | 0.52 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |

# Register of completed distribution connected resource projects - July 2020 to June 2025

| Year Completed = Connected | Location | Technology of each distribution connected unit | Network Connection Voltage (kV) | System details (Make and Model) | Generator Voltage Level (kV) | maximum power generation capacity of all distribution connected units comprised in the system (kw) | Contribution to fault levels (kA) at connection point | The size and rating of the relevant transformer (Voltages & kVA) | A single line diagram of the connection arrangement | Protection systems and communication systems | Voltage control, power factor control and/or reactive power capability | Details specific to the location of a facility connected to the network, that are relevant to any of the details. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020/21 | Maryborough | Solar PV | LV | 2x SolarEdge SE82.8K + 2x SMA STP20000TL-30 | LV | 205 | 0.36 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Townsville | Solar PV | LV | SolarEdge SE50K x 1 + SE25K x 1 + SE8K x 2 | LV | 291 | 0.46 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Maryborough | Solar PV | LV | 2x SMA STP 110-60 | LV | 220 | 0.35 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2021/22 | Heatley | Solar PV | LV | 3x SolarEdge 82.8kVA Inverter | LV | 248 | 0.39 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Bentley Park | Solar PV | LV | SolarEdge SE82.8K-AU0P0BNU4, SE50K-AU0P0BNU4, SE30K-AU00IBNV4 | LV | 378 | 0.60 | 500kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Gunyarra | Solar PV | LV | 4x SolarEdge SE82.8K | LV | 331 | 0.53 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Manunda | Solar PV | LV | SolarEdge SE82.8K-AU0P0BNU4, SE50K-AU0P0BNU4, SE27.6KAU000BNU4, SE17K-AU0T0BNU4 | LV | 487 | 0.77 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Proserpine | Solar PV | LV | Fronius Aust + SolarEdge Tech + Selectronic Aust Model: ECO 27.0-3-S x 4 + SE50K x 1 + SPMC482-AU x 3, ABB Trio 27.6-TL x 3 + PVI-12.5-TL x 1 | LV | 253 | 0.40 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Chinchilla | Synchronous Machine | LV | Cummins C275 D5 | LV | 220 | 2.22 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2021/22 | Annandale | Battery | LV | Tesla Powerpack | LV | 232 | 0.37 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2021/22 | Annandale | Solar PV | LV | SMA STP15000TL-30 x 2 + STP20000TL-30 x 2 + STP25000TL-30 x 1, STP20000TL-30 x 11 + STP25000TL-30 x 8 | LV | 515 | 0.82 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Bohle | Solar PV | LV | SMA Sunny Tripower Core2 x 6, Sunny Tripower Core2 x 3 | LV | 990 | 1.57 | 2 x 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Annandale | Solar PV | LV | Sungrow Power SG50CX x 4 + SG30CX x 5 + SG5K-D x 5 | LV | 374 | 0.59 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | West Mackay | Solar PV | LV | Huawei Technologies SUN2000-50KTL-M0 x 4 | LV | 220 | 0.35 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Cairns | Solar PV | LV | SolarEdge SE82.8K-AU0P0BNU4 x4 | LV | 391 | 0.62 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Alloway | Solar PV | LV | ABB TRIO-20.0 x2 + TRIO-27.6 x8, (ABB) Power-One PVS-100-TL x2 | LV | 460 | 0.73 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Gladstone | Solar PV | LV | SolarEdge SE82.8K-AU0P0BNU4 x2 | LV | 248 | 0.39 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Deeragun | Solar PV and Battery | LV | SMA STP15000TL-30 x 11 + STP20000TL-30 x 4 + STP25000TL-30 x 3, STP50-60 x 1, Tesla Powerpack | LV | 544 | 0.86 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2021/22 | Kirwan | Solar PV | LV | SMA STP25000TL-30 x 6 + STP2000TL-30 x 5 + STP15000TL-30 x 5 + STP 50-40 x 6, Tesla Power Pack | LV | 973 | 1.54 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Chinchilla | Solar PV | LV | Sungrow SG110CX x 2 | LV | 220 | 0.35 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2021/22 | Redlynch | Solar PV | LV | SolarEdge SE82.8K-AU00IBNV4 x4 | LV | 348 | 0.55 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/22 | Yeppoon | Solar PV | LV | Sungrow SG50CX x 5 | LV | 250 | 0.40 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2021/22 | Yeppoon | Battery | LV | Sungrow SC50HV x 5 | LV | 250 | 0.40 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2021/22 | Yeppoon | Solar PV and Battery | LV | Sungrow Power SC50HV x 3, SG110CX x 2 | LV | 370 | 0.59 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Yeppoon | Solar PV | LV | SolarEdge SE82.8K, 2xSE66.6K | LV | 216 | 0.31 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Burnett Heads | Solar PV | LV | ABB UNO-DM-5.0TL Plus x 100 | LV | 500 | 0.72 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Deeragun | Solar PV and Battery | LV | SMA STP15000TL30x4, STP20000TLx4, STP25000TLx5, Tesla Powerpack | LV | 265 | 0.38 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Cranbrook | Solar PV and Battery | LV | SMA STP20000TL30x7, STP15000TL30x2, STP25000TL30x7, Tesla Powerpack | LV | 345 | 0.50 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Burdell | Solar PV and Battery | LV | Various SMA and ABB, Tesla Powerpack | LV | 431 | 0.62 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Hyde Park | Solar PV and Battery | LV | SMA STP15000TL30x2, STP20000TLx5, STP25000TLx4, Tesla Powerpack | LV | 230 | 0.33 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Martyville | Solar PV | LV | Sungrow SG110CXx3 | LV | 330 | 0.48 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Innisfail | Solar PV | LV | SolarEdge82.8K, SE25K | LV | 381 | 0.55 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Mundubbera | Solar PV | LV | Sungrow SG110CX x2 | LV | 220 | 0.32 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Currajong | Solar PV | LV | ABB PVS100TL, ABB TRIO50.0TL, Sungrow SG110CXx2 | LV | 370 | 0.53 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | North Rockhampton | Solar PV | LV | SolarEdge SE82.8K, SE66K | LV | 232 | 0.33 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Ayr | Solar PV and Battery | LV | Various SMA inverters, Tesla Powerpack | LV | 225 | 0.32 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Mackay | Solar PV | LV | Solar Edge 66.6K, SE82.8K | LV | 232 | 0.33 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Urangan | Solar PV | LV | Sungrow SG110CX x 2 | LV | 220 | 0.32 | 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Tully | Synchronous Machine | 22kV | SIEMENS, 1DU2049-8AE0 | 11 | 18000 | 3.31 | 12.5MVA 22/11kV | As per Figure 3 | As per Figure 5 | Reactive power control | Non-Export |
| 2022/23 | Tully | Synchronous Machine | 22kV | Leroy Somer, SR4BHV | 6.6 | 1600 | 0.29 | 2MVA 11/6.6kV | As per Figure 3 | As per Figure 5 | Reactive power control | Non-Export |
| 2022/23 | Bargara | Solar PV | LV | SMA STP110-60x2, Sungrow SG50CX | LV | 270 | 0.39 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Dulacca | Wind | 132kV | Vestas Wind turbine, V150 | 33kV | 173000 | 1 | 2x 132/33kV 125MVA | As per Figure 2 | As per Figure 5 | Voltage control | Full Export |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022/23 | Rockhampton | Solar PV | LV | SMA STP110-60 x2 | LV | 220 | 0.32 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Tinana | Solar PV | LV | Sungrow SG110CX x2 | LV | 220 | 0.32 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2022/23 | Rasmussen | Solar PV | LV | Sungrow SG110CX x3 | LV | 330 | 0.48 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2022/23 | Pialba | Solar PV | LV | Sungow SG110CX x4 | LV | 440 | 0.64 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Gordonvale | Solar PV | LV | Sungrow SC 110CX | LV | 220 | 0.32 | 1000kVA 22/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Kearney Springs | Solar PV | LV | Fronius Australia Eco 25.0-3-S, Fronius Australia Eco 27.0-3-S | LV | 208 | 0.30 | 1000kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Pialba | Solar PV | LV | Sungrow SG110CX | LV | 220 | 0.32 | 1000kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Ayr | Synchronous Machine | LV | Caterpilla C13 DE400E0 | LV | 400 | 0.58 | 500kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Fixed power factor | Non-Export |
| 2023/24 | Yeppoon | Solar | LV | Sungrow SG110CX | LV | 220 | 0.32 | 750kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Annandale | Solar | LV | Sungrow SG110CX | LV | 550 | 0.79 | 1500kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Charters Towers | Solar PV and Battery | LV | Fronius Australia Eco 100-3-P, Fronius Australia Symo 15.0.3.M, Sungrow SC50HV, SMA Australia STP 25000TL, SMA Australia STO 20000TL | LV | 550 | 0.79 | 500kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Mareeba | Solar | LV | Fronius Australia Eco 100-3-D, Fronius Australia Symo 15 0-3-M | LV | 215 | 0.31 | 1000kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Ayr | Solar | LV | Sungrow SG110CX | LV | 220 | 0.32 | 1000kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Garbutt | Solar | LV | Sungrow SG110CX, Sungrow SG50CX | LV | 210 | 0.30 | 1000kVA 11/0.433kV | As per Figure 6 | As per figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | ARRIGA | Synchronous Machine | 66kV | Shinko 7MW unit | 11 | 31000 | 44.74 | 20000kVA66/11kV | As per Figure 3 | As per figure 5 | Voltage Control | Partial Export |
| 2023/24 | ARRIGA | Synchronous Machine | 66kV | Perkins 4016-61TRG3 | 11 | 2000 | 2.89 | 20000kVA66/11kV | As per Figure 3 | As per figure 5 | Fixed power factor | Partial Export |
| 2023/24 | Toowoomba | Solar | 11kV | SungrowCG110CX | LV | 1430 | 2.06 | 2x1500kVA 11/0.433kV | As per Figure 3 | As per Figure 5 | Volt-var and volt-watt | Full Export |
| 2023/24 | Paget | Solar | LV | Solaredge Technologies SE82.8K | LV | 82.8 | 0.12 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Mount Louisa | Solar | LV | Fronius Symo 20.0-3-M | LV | 80 | 0.12 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Smithfield | Solar | LV | Solar edge ( SE27.6K, SE25K, SE10K-AUS), Sungrow SG110CX, Delta Electronics PCS100HV | LV | 300.2 | 0.43 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Mossman | Solar | LV | Sungrow SG110CX | LV | 330 | 0.48 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |

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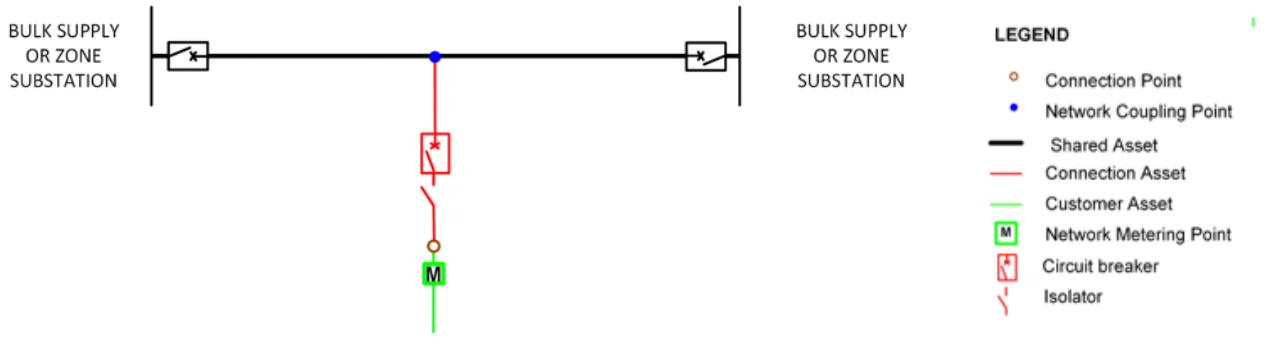
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2023/24 | Hewitt | Solar | LV | Sungrow SG110CX | LV | 220 | 0.32 | 315kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Yarwun | Solar | LV | Solaredge Technologies SE82.8K | LV | 331.2 | 0.48 | 1500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2023/24 | Parkhurst | Solar | LV | Sungrow SG110CX, Sungrow SG50CX | LV | 270 | 0.39 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | Svensson Heights | Solar | LV | Solaredge SE30K, Sungrow CG110CX, Sungrow CG50CX | LV | 250 | 0.36 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | ACACIA RIDGE | Solar | LV | Sungrow CG110CX | LV | 330 | 0.48 | 1500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | ANNANDALE | Solar | LV | ABB Trio-27.6-TL, SMA Australia STP 110-60 | LV | 275.2 | 0.40 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2023/24 | ELI WATERS | Solar | LV | Sungrow CG110CX | LV | 220 | 0.32 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2023/24 | Bundaberg | Solar | LV | Sungrow SG110CX | LV | 440 | 0.64 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | St George | Synchronous Machine and Solar | LV | Viking T-HAWK300-C, Fronius ECO 25.0-3-S | LV | 350 | 3.54 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Fixed power factor / Volt-var and volt-watt | Partial Export |
| 2024/25 | Toowoomba | Solar | LV | SMA Australia STP 110-60 | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Mt Isa City | Solar | LV | Sungrow SG110CX | LV | 380 | 0.66 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Maryborough West | Solar | LV | Sungrow SG110CX | LV | 330 | 0.57 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Ingham | Solar | LV | Sungrow SG110CX | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | North Rockhampton | Solar | LV | SMA Australia STP 110-60 | LV | 330 | 0.57 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Bargara | Solar | LV | Sungrow SG3K-S, Sungrow SG20RT | LV | 460 | 0.80 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |
| 2024/25 | North Rockhampton | Solar | 11kV | Sungrow SG50CX, SG30CX, SG2RT | 11kV | 619.9 | 0.04 | 11kV RMU | As per Figure 2 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | North Rockhampton | Solar | 11kV | Sungrow100CX | 11kV | 880 | 0.06 | 11kV RMU | As per Figure 2 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Injune | Solar | LV | Power-One Italy PVS-100-TL, Fronius Tauro Eco 50-3-D | LV | 250 | 0.43 | 1000kVA 33/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Lakeland | Solar | LV | Sungrow SG110CX | LV | 330 | 0.57 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Thuringowa | Solar | LV | Sungrow SG110CX | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Thuringowa | Solar | LV | Sungrow SG110CX | LV | 110 | 0.19 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Non-Export |

# Register of completed distribution connected resource projects - July 2020 to June 2025

| Year Completed = Connected | Location | Technology of each distribution connected unit | Network Connection Voltage (kV) | System details (Make and Model) | Generator Voltage Level (kV) | maximum power generation capacity of all distribution connected units comprised in the system (kw) | Contribution to fault levels (kA) at connection point | The size and rating of the relevant transformer (Voltages & kVA) | A single line diagram of the connection arrangement | Protection systems and communication systems | Voltage control, power factor control and/or reactive power capability | Details specific to the location of a facility connected to the network, that are relevant to any of the details. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2024/25 | Kalkie | Solar and Battery | LV | Solaredge SE15K, SE17K, SE27.6K, SE82.8K, SE66.6K, Sungrow samsuncg SC100 BESS | LV | 544.2 | 0.94 | 500kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Cairns | Solar | LV | Sungrow SG110CX, SG20RT | LV | 240 | 0.42 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Westcourt | Solar | LV | ENPHASE ENERGY IQ7A-72-2-INT | LV | 517.567 | 0.90 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Glenvale | Solar | LV | Goodwe GW2000-NS, GW2000-XS, Sungrow SG2K-S, SG2KTL-S, SG3KTL-D, SG5KTL-D | LV | 236 | 0.41 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Dalby | Solar | LV | SolarEdge SE27.6, SE100K | LV | 282.8 | 0.49 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Urangan | Solar | LV | Sungrow SG110CX | LV | 220 | 0.38 | 750kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Harlaxton | Solar and Synchronous Machine | LV | Fronius Symo 15.0-3-M, Caterpillar C13 | LV | 480 | 0.83 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Fixed power factor / Volt-var and volt-watt | Non-Export |
| 2024/25 | Westcourt | Solar | LV | Sungrow SG110CX | LV | 270 | 0.47 | 500kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Emerald | Solar | LV | Sungrow SG110CX | LV | 220 | 0.38 | 500kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Bowen | Solar | LV | Sungrow SG110CX, SG50CX, SG30CX, SG50HV | LV | 479.8 | 0.83 | 2x 315kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Emerald | Solar | LV | Sungrow SG110CX | LV | 330 | 0.57 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Avoca | Solar | LV | Sungrow SG110CX | LV | 220 | 0.38 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Cairns | Solar | LV | GoodWe Technologies GW110KT-HT | LV | 440 | 0.76 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Annandale | Solar | LV | Sungrow SG50CX, SG30CX | LV | 374 | 0.65 | 1000kVA 11/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Partial Export |
| 2024/25 | Port Douglas | Solar | LV | Sungrow SG50CX, SG30CX | LV | 378 | 0.65 | 1000kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Volt-var and volt-watt | Full Export |
| 2024/25 | Blackwater | Synchronous Machine | LV | Caterpillar C9 Diesel Generator | LV | 300 | 3.03 | 500kVA 22/0.433kV | As per Figure 6 | As per Figure 7 | Fixed power factor | Non-Export |

# 6. Single Line Diagram Types

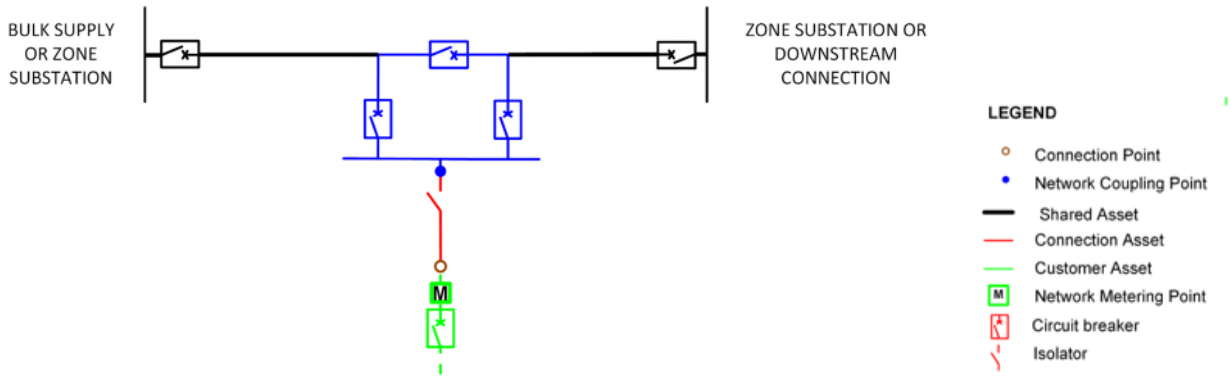
**Figure 1: HV DER System Connected to Subtransmission via T-Off Connection**




**NOTES**

- The DNSP shall own the T-substation primary and secondary plant for all Large Customer types.
- Addition of generation may increase protection and communications requirements.
- Installations with more than 1.5 MVA DER system capacity shall have a grid disconnection device and a grid isolation device installed as per 4.6.1. Consideration should be given to long-term site needs to avoid costly retrofits.

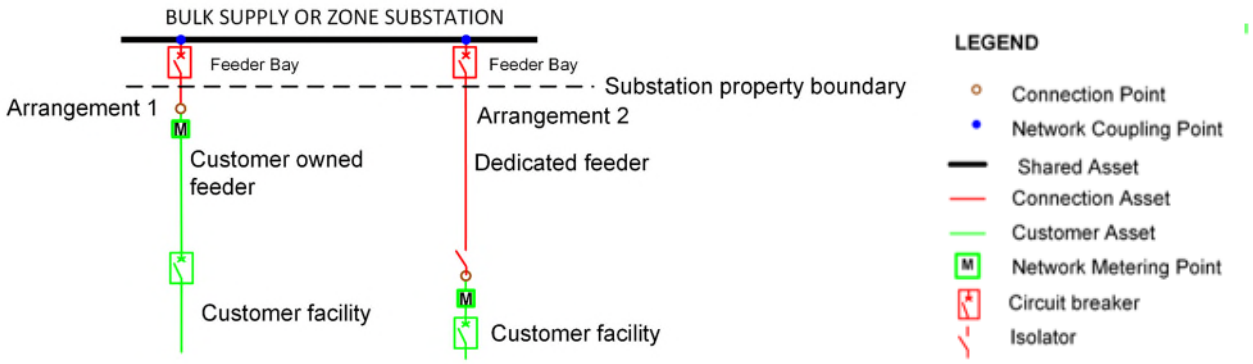
**Figure 2: HV DER System Connected to Sub transmission via Switching Station**




**NOTES**

- The DNSP shall own the switching substation.
- This arrangement is used to cut into radial lines where power flows are uni-directional.
- This arrangement would be required based on the Large Customers' need for high reliability (compared to T-substation or 3 bay tee), etc.

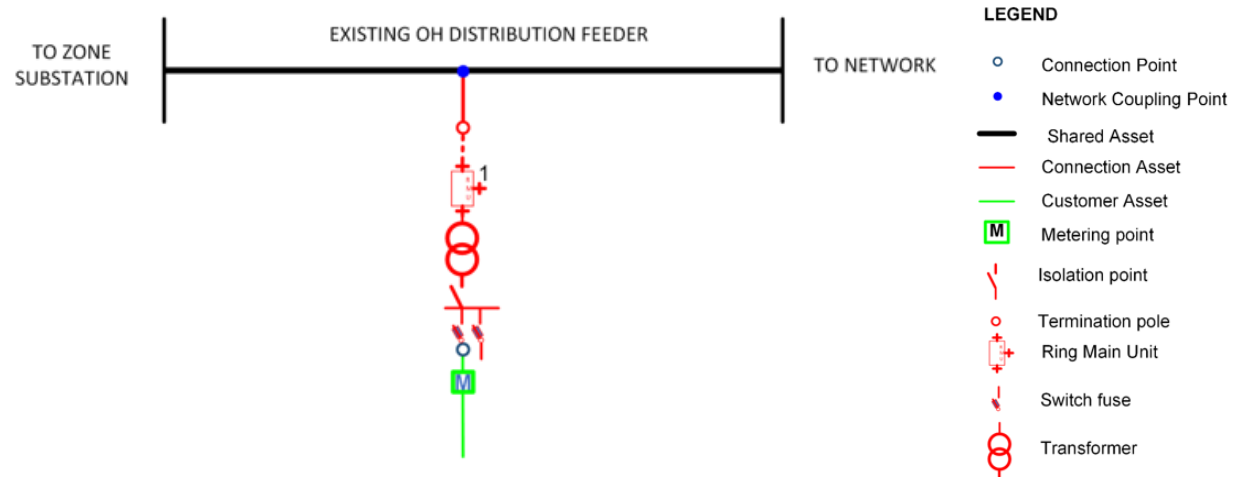
## Figure 3: HV Connected DER System Via Direct Feed From Substation




**NOTES**

- **Arrangement 1** shows a Large Customer owned feeder. Protection scheme elements at customers end can be either Large Customer or DNSP owned.
- **Arrangement 2** shows a DNSP owned feeder. Secondary protection scheme elements (protection relays and associated communications equipment) at Large Customers end shall be owned by the DNSP. Other elements of the Protection Scheme (circuit breakers, CT, VT, DC supplies, etc.) can be either Large Customer or DNSP.

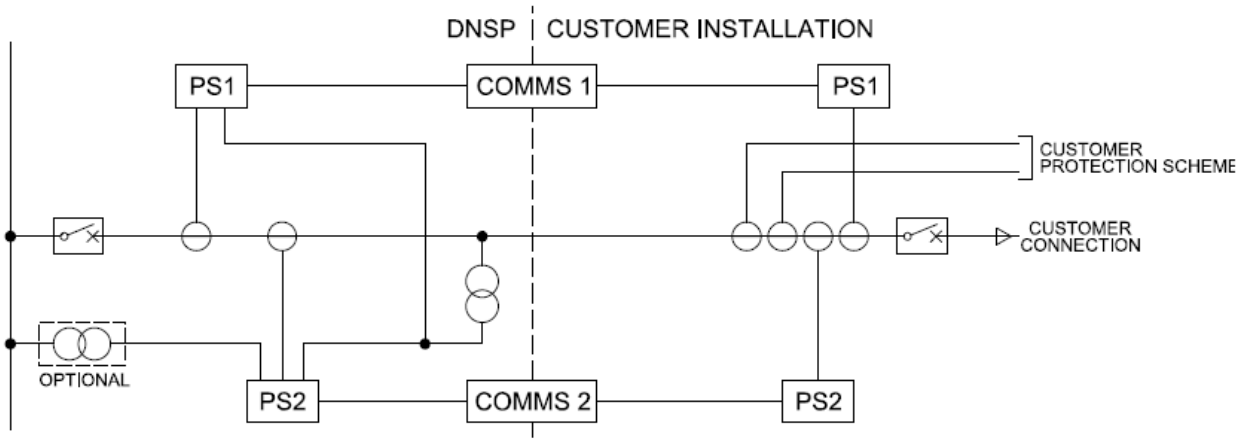
## Figure 4: HV DER System Connected via T-Off from Distribution Feeder



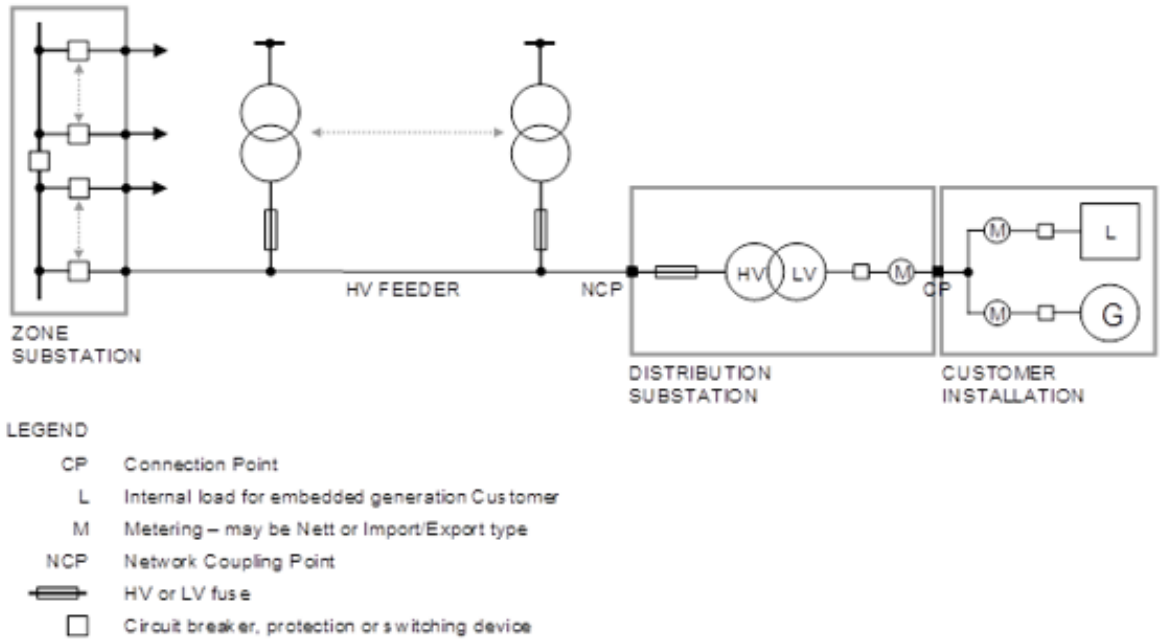

**NOTES**

- DER Systems requiring NVD protection shall require a HV VT measurement used by a DNSP relay to trip the Customer disconnection device. This design is currently not available in Energex Distribution Network.
- Installations with more than 1.5 MVA DER system capacity shall have a GDD installed. Consideration shall be given to have space provision for a GDD with long-term site needs.

## Figure 5: Dual Communications for DER Systems >5MW



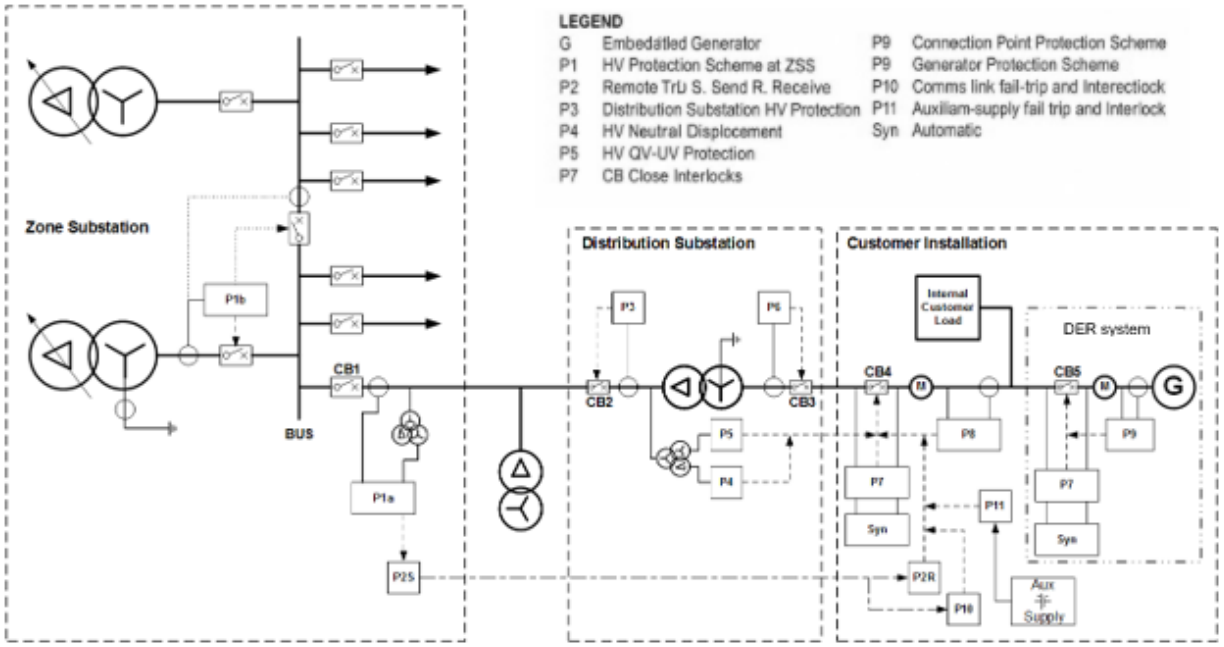

## Figure 6: Single Line – LV Connected DER System



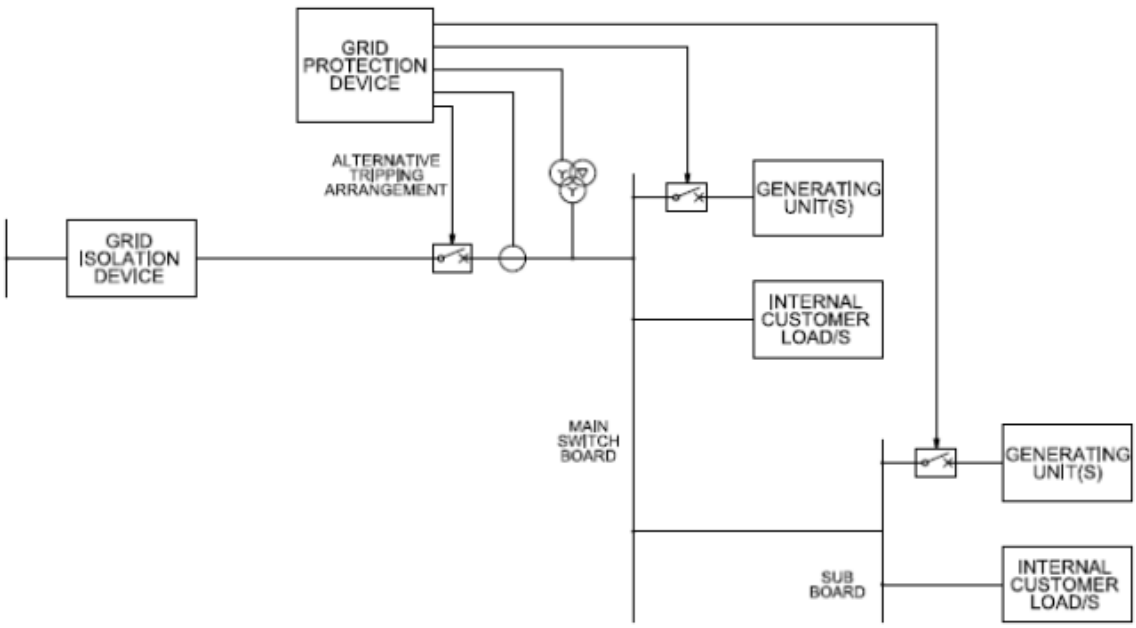

LOW VOLTAGE DER SYSTEMS AND DEDICATED LOW VOLTAGE CONNECTION

Low voltage DER system with parallel low voltage load – Dedicated low voltage connection – Shared HV feeder

## Figure 7: Protection Requirements for LV Connected DER System




## Figure 8: Protection for HV DER Systems <5MVA



# 7. Protection Schemes and Requirements

**Level 1 Backup Protection**

- Over and under voltage
- Over and under frequency
- Voltage vector shift and
- Rate of change of frequency
- Reverse Power

**Level 2 Backup Protection**

- Neutral voltage detection/unbalance, or
- Direct intertrip from network circuit breaker (for systems above 200kW).

| Protection Function | Shared LV Circuit Nil-Export | Dedicated LV Circuit Nil-Export | Dedicated Transformer Up to 200kW Nil Export | Dedicated Transformer Up to 200kW Export | Dedicated Transformer 200<x<1000kW Nil-Export | Dedicated Transformer 200<x<1000kW Export | Dedicated Transformer(s) Greater than 1000kW Export/Nil export |
|---|---|---|---|---|---|---|---|
| Over/under voltage | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Over/under frequency | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage vector shift | | | | | ✓ | ✓ | ✓ |
| Rate of change of frequency | | | | | ✓ | ✓ | ✓ |
| Reverse Power | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Neutral voltage displacement[2] | | | | | ✓ | ✓ | ✓ |
| Direct Intertrip | | | | | | | ✓ |
| CADA link | | | | | | | ✓ |

# 8. PQ Voltage and Power Factor Control

Ergon Energy Network has published connection standards that apply to all new and upgraded Distributed Energy Resource (DER) systems. These standards ensure compliance with technical and regulatory requirements. Applicable Standards: STNW1174, STNW3511, STNW1175.

For low voltage customers, under Electricity Regulation clause 36(2)(d), customers must ensure that inverters operate in accordance with Volt-Var and Volt-Watt settings specified in STNW1174 or STNW3511.

For high voltage customers, Power factor must reflect the agreed voltage or power factor control arrangement. Connections must comply with STNW1175 requirements.

All standards and supporting documents are available on the Ergon Energy Network website under: Standards, manuals & fact sheets | Ergon Energy.

# 9. Fault Level Contribution Factor

Indicative fault level contribution from DER Systems:

| Type | Fault level contribution factor |
|---|---|
| Synchronous distribution connected unit | 7 X Rating |
| Solar/Inverter distribution connected unit | 1.2 X Rating |

Note: It is assumed that bumpless systems do not contribute to fault levels.