

# Preliminary Enquiry Form



## Non-Registered Embedded Generator (Capacity less than 5 MW – Chapter 5A)

**This Preliminary Enquiry Form will form the basis of the Application to Connect.**

### 1. Connection Applicant (Embedded Generating Unit Owner/Proponent)

1.1	Business name:	
1.2	ABN:	
1.3	Contact name:	
1.4	Address:	
1.5	Telephone number:	
1.6	E-mail address:	

### 2. Connection Applicant acting and working on behalf of the above Proponent (Agent)

2.1	Business name:	
2.2	ABN:	
2.3	Contact name:	
2.4	Address:	
2.5	Telephone number:	
2.6	E-mail address:	
2.7	Connection Applicant's (Owner) confirmation the nominated agent is acting on their behalf for the connection process. (Submit the owner's confirmation statement, letter or email to UE).	

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### 3. Installation Miscellaneous Information

3.1	Does the Generating unit seek to provide non-network support for published network constraints? (Y/N) <i>(Please consult UE DAPR for additional information)</i>	
3.2	Is the Generating unit exempt from AEMO registration (less than 5MW)? (Y/N) <i>(If unsure, please consult the AEMO website)</i>	
3.3	Connection Applicant is to be aware of generator license obligation as part of the Essential Services Commission compliance (This is independent from AEMO)? (Y/N) <i>(All Connection Applicant's must be aware of this obligation. If not aware, please see the ESC website for further information prior to submitting the Preliminary Enquiry Form)</i>	
3.4	Is the Generating unit to be: Market or Non-Market <i>(If unsure, please consult the AEMO website)</i>	
3.5	Is the Generating unit to be (please note SGA framework): Scheduled, Semi-Scheduled or Non-Scheduled dispatch. <i>(If unsure, please consult the AEMO website)</i>	
3.6	Expected operating hours: (Hours and days of operation: Mon – Fri, 7am to 11pm etc...)	
3.7	Expected energy production per annum (MWh).	
3.8	Calculated or measured facility load demand during normal working hours (kW or kVA).	
3.9	Estimated facility load to be offset via embedded generator during facility normal working hours (kW or KVA).	
3.10	Export of excess generated power (Y/N).	
3.11	Maximum net power exported over meter measuring interval based on calculated or measured. This needs to reflect the maximum generator export during facility minimum self-consumption period. (kW or kVA).	

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3.12	Confirm presence (Y/N) of any other disturbing load/system with potential to disturb the voltage waveform and or power quality, such as: PFC, DOL motor, rectifier, other generator etc... If Yes, specify the nature of equipment and capacity.	
3.13	Purpose of Generating unit and envisaged operating date? (What is the functional intent of the Generating unit: demand off-set, power export, district power system, etc...)	
3.14	The Connection Applicant has/shall address all environmental compliance requirements applicable for the embedded generator installation? (Y/N)	

### 4. Small Generator Aggregator Framework

4.1	Is the installation to be registered with AEMO as a Small Generator Aggregator (SGA)? (Y/N) <i>(If unsure, please consult the AEMC and AEMO website)</i>	
4.2	If yes to SGA, does metering comply? (Y/N). Submit supporting documentation.	
4.3	If registered SGA, provide generator NMI	
4.4	If registered SGA, provide load NMI	

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Section 5 is primarily applicable for inverter based generation systems such as: Solar PV, wind, fuel cell, micro turbines, etc.

### 5. Inverter Generating Plant

5.1	Address of generator installation:	
5.2	Proposed connection point and NMI number:	
5.3	Energy source / fuel (e.g. Solar, Wind, Fuel Cell, Natural Gas etc).	
5.4	Energy storage (battery) to be included? Y/N	
5.5	Generating plant or technology type proposed (i.e. inverter based generation such as: Solar Photovoltaic, Wind Turbine, Stand Alone Battery Storage System, Hydro Turbine, Fossil Fuel based Micro Turbine etc).	
5.6	Inverter AS4777 compliant (Y/N).	
5.7	Number of generating units/inverters (including any battery inverter):	
5.8	Nominal voltage of generating unit/inverter (V).	
5.9	Rating of each unit/inverter (kW or kVA).	
5.10	Power factor of generating unit/inverter to be operated:	
5.11	Number of panels or turbines (if applicable).	
5.12	Max rating of each panel or turbine (W/kW).	
5.13	Maximum total power generation of installation (kW or kVA).	
5.14	Inverter Over/Under voltage (V) protection settings and trip time	
5.15	Inverter Over/Under frequency (Hz) protection settings and trip time	
5.16	Additional protection in the form of inverter independent protection such as: overcurrent, anti-islanding (ROCOF & Vector Shift), phase failure detection and or negative sequence protection could be warranted or specified by United Energy. (refer to UE ST 2008)	

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The following sections are applicable to all forms of generation technology and to be completed by all Connection Applicants.

Network and plant technical data of equipment at or near the network connection point

### 6. Overall Generation Operation

6.1	Are the main and individual generator isolators/switches lockable?	
6.2	Is there a single or a common point of isolation for all generation? <b>(This is preferred by UE).</b>  If not, please provide the Generator Isolation Procedure with the Preliminary Enquiry Form.	
6.3	What remote monitoring of the generation system will be implemented?  Please expand on how in the Generator Functional Statement.	

### 7. Installation main switchgear and components

7.1	Manufacturer and model number.	
7.2	Main circuit breaker nominal current rating (A).	
7.3	Rated short time withstand current rating (kA).	
7.4	Rated short time withstand current maximum time (sec).	

### 8. Power Quality

8.1	Inverter THD level and installation design of load balancing complies with Australian Standards, Electrical Distribution Code, Victorian Services and Installation Rule. (Y/N).	
8.2	Submit installation voltage rise report	

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### 9. Metering

9.1	Bi-directional metering required to be upgraded to facilitate the generator connection? (Y/N)	
9.2	Who is the Customer's Retailer?	
9.3	Has the Retailer been notified of the new generation? (Y/N)	
9.4	Meter class / classification:	

### 10. Installation and Earthing Standards

10.1	Embedded generator installation will comply with all current and relevant Australian Standards and the Victorian SIR (Y/N).	
10.2	State the earthing standards to be employed for embedded generator installation (e.g. AS3000, AS5033, AS2067 and any other applicable standards).	

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### 11. Document Submission to UE

11.1	<p><b>Single Line Diagrams (SLD)</b> to emphasize:</p> <ul style="list-style-type: none"><li>• Demarcation of existing and new equipment</li><li>• Circuit voltages</li><li>• Protection systems</li><li>• Facility main isolation point with respect to United Energy</li><li>• Embedded generator main lockable isolation point with respect to facility setup</li><li>• Meter location and details</li><li>• Embedded generator system layout</li><li>• Installation individual collection section/string isolation points</li><li>• Include all isolation device ratings where possible</li><li>• Earthing system</li></ul> <p><b>Note: Only formally CAD drafted drawings and documents can be accepted</b></p>	
11.2	<p><b>Aerial View Site Layout</b> showing:</p> <ul style="list-style-type: none"><li>• Aerial view of site</li><li>• Location:<ul style="list-style-type: none"><li>○ Meter</li><li>○ Point of Connection</li><li>○ MSB</li><li>○ Other relevant distribution boards</li><li>○ Inverters</li><li>○ Approximate cable routes</li></ul></li></ul>	
11.3	<p><b>Protection, control design and operating report</b> (detailed report). This detailed report shall contain:</p> <ul style="list-style-type: none"><li>• Description of the generating plant and how it operates;</li><li>• Electrical schematics; protection and control schemes;</li><li>• Devices the protection and control schemes are implemented in;</li><li>• Description of each fault scenario and the protection that shall be used to detect and clear the fault;</li><li>• Risk assessment of equipment failure and the failsafe features, backup equipment, or alarms and monitoring or other methods used to reduce the risk;</li><li>• Data sheets providing full specifications for all AC circuit and related major plant.</li></ul>	

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11.4	<p><b>Voltage Rise Calculation</b> which articulates as a minimum:</p> <ul style="list-style-type: none"><li>• Must show voltage rise from point of connection to inverter terminals are less than 2%</li><li>• The calculations must be for the total generation installed on site (including any existing generation)</li><li>• The cable lengths, sizes and voltage rise must be shown for each segment ie consumer mains, submains, etc.</li><li>• These segments must align with the Aerial Layout document to be provided with the Connection Application.</li></ul>	
11.5	<p><b>Generation System Functional Statement</b> which articulates as a minimum:</p> <ul style="list-style-type: none"><li>• How the generation system normally and abnormally operates and interacts with the whole facility.</li><li>• Critical protection/control/generation system remote monitoring.</li><li>• Any implemented interlocks.</li><li>• Protection/control system failsafe provision (i.e. system response upon the control/protection UPS system failure).</li><li>• Generator protection/control, trip device (CB) and critical system UPS maintenance frequency proposal (particular emphasis should be made with equipment protection systems and UPS).</li><li>• Emergency and operational contact details (customer or otherwise).</li></ul>	



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### 12. Commissioning

12.1	<p><b>Commissioning Plan:</b></p> <p>The generator commissioning procedure must be provided and reflect the requirements of UE ST 2008. The commissioning shall include as a minimum:</p> <ul style="list-style-type: none"><li>• Any control scheme functionality tests</li><li>• Protection trip functional tests</li><li>• Remote monitoring and communications testing</li><li>• Generator failsafe reaction</li></ul> <p>UE reserves the right to witness commissioning of the all critical protection/control scheme and where determined, tripping of the main generator CB (trip test).</p>	
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### 13. Information to be published on UE website

United Energy has a regulatory obligation to comply with the National Electricity Rules (NER). Chapter 5A.D.1A requires United Energy to publish on its website a Register of Completed Embedded Generation projects (above 30kW). The information United Energy is required to provide is listed in the table below.

For further information regarding the register, please see the UE website and NER Chapter 5A.

Required Information	
13.1	Technology of generating unit (eg synchronous generation unit, induction generator, photovoltaic array, etc) and its make and model
13.2	Maximum power generation capacity of all embedded generation units comprised in the relevant generating system
13.3	Contribution to fault levels
13.4	The size and rating of the relevant transformer
13.5	A single line diagram of the connection arrangement (UE will delete any references to the customer/consultant name and addresses)
13.6	Protection systems and communication systems
13.7	Voltage control, power factor control and/or reactive power capability (where relevant)
13.8	Details specific to the location of a facility connected to the network that are relevant to Section 13.1 to 13.7 above

***The customer is not required to provide commercially sensitive or confidential information as per the NER 5A.D.1A(c).***

***As part of the Connection Offer, the customer will be required to provide and sign off for publication the above information.***

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Checklist of items to be sent to UE with Completed Preliminary Enquiry Form:

- Single Line Diagram
- Aerial Layout of Site
- Voltage Rise Calculations
- Generator System Control and Functional Description
- Protection Study
- Inverter Datasheet
- Panel Datasheet
- Commissioning Procedure

**Note:** For inverter based projects, which are committed projects, it is requested all the above documents be submitted with the 'Preliminary Enquiry Form' to expedite the process.

***UE will not accept incomplete applications. All items in the checklist above must be provide.***

Documents to be submitted after commissioning:

- UE Sanction to Connect Form (completed customer section only)
- Generator Commissioning Results
- Electrical Work Request (EWR)
- End Customer Notification
- End Customer and Operational Contacts

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## Schedule 2

To be completed for all Inverter Based Generation Only (i.e. solar, wind, etc...)

**Generator (customer) and generating plant information**

1. Generator	Customer: ABN: Address: Telephone: E-mail: Attention:
2. Generating plant	Description/Type: Grid-Connected Photovoltaic Generator Generator Manufacturer (Inverter and Panel): Inverter Model: Total Inverter Rating (kW): Solar Panel Model: Maximum rating of each panel (W): Number of Panels:
3. 'Sub-transient' maximum fault contribution	(Inverter maximum fault current output during the first 1 - 2 cycles in kA) (Seek advice from manufacturer)
4. 'Steady state' maximum fault contribution	(kA) (Seek advice from manufacturer)
5. Number of generating plant	
6. Maximum export capacity	(kW)
7. Site disturbing load and capacity	(e.g. capacitor banks, PFC, DOL motors)
8. Expiry date	Five (5) years from distribution connected generator agreement execution.
9. Connection point with the network	
10. Connection point voltage	
12. Maximum import capacity	(site load consumption in kVA when generator is not in operation)
13. Installation Address	
14. National Meter Identifier	NMI =

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## Schedule 2

To be completed for all Non-Inverter Based Generation (i.e. synchronous/asynchronous machine)

### Generator (customer) and generating plant information

1. Generator	Customer: ABN: Address: Telephone: E-mail: Attention:																																																
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