



**DISTRIBUTED GENERATION (DG)  
FINAL APPLICATION FORM FOR GENERATORS OF MORE THAN 10KW**

*Please print a copy of the entire form, complete and sign it and send by post to:*

The Network Manager  
Alpine Energy Limited  
P O Box 530  
TIMARU 7940

**A. Proposed DG Facility Identification Information** – also please provide if available a copy of a recent electricity retailer's invoice for this ICP.

<b>Name on Electricity Account</b>	
<b>ICP Number (from your electricity invoice)</b>	
<b>Electricity Retailer</b>	
<b>Electricity Retailer Account Number</b>	
<b>Meter Number</b>	
<b>Street Address</b>	
<b>Suburb</b>	
<b>City or Town</b>	
<b>Telephone Number</b>	

**B. Contact Information** – who should be contacted for any necessary additional information?

<b>Contact Person</b>	
<b>Company Name</b>	
<b>Phone</b>	
<b>Fax</b>	
<b>Email</b>	
<b>Mailing Address</b>	
<b>City / Town</b>	

**C. Proposed Start Date** – What date do you expect the generator to begin operation?

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**D. Basic Technical Information** – please attach a copy of the technical specifications of the generator and associated equipment together with supplier contact details for the equipment that you propose to install.

<b>Generator Manufacturer</b>	
<b>Generator Model</b>	
<b>Generator Supplier</b>	
<b>Primary Energy Source</b>	<p>Indicate below:</p> <ul style="list-style-type: none"> <li><input type="radio"/> Internal Combustion Engine – Natural Gas/Propane</li> <li><input type="radio"/> Internal Combustion Engine – Diesel</li> <li><input type="radio"/> Internal Combustion Engine – Other</li> <li><input type="radio"/> Gas Turbine – Natural Gas/Propane</li> <li><input type="radio"/> Steam Turbine</li> <li><input type="radio"/> Photovoltaic Panels</li> <li><input type="radio"/> Solar-thermal Engine</li> <li><input type="radio"/> Fuel Cell – Natural Gas/Propane Fuel</li> <li><input type="radio"/> Fuel Cell – Other Fuel</li> <li><input type="radio"/> Hydro-electric Turbine</li> <li><input type="radio"/> Other Type (specify) _____</li> </ul>
<b>Inverter Manufacturer</b>	
<b>Inverter Model</b>	
<b>Inverter Supplier</b>	
<b>Mains Failure Protection (non-islanding) Type</b>	
<b>Maximum Rated Power Output (kW)</b>	
<b>Rated AC Voltage Output (kV)</b>	
<b>Proposed Point of Connection to AEL's Network (e.g. pole number)</b>	

**E. Other Required Technical Information:**

**E.1 Required for All Generators Over 10kW**

**E.1.1 *Generating Plant Data***

- i. Terminal volts (kV);
- ii. Rated kVA;
- iii. Rated kW;
- iv. Maximum active power sent out (kW max) reactive power requirements (kVAr), if any;
- v. Type of generating plant – synchronous, asynchronous, etc;
- vi. Type of prime mover;
- vii. Anticipated operating regime of generation, e.g. continuous, intermittent, peak lopping;
- viii. Fault level contribution;
- ix. Method of voltage control;
- x. Generator transformer details;
- xi. Requirements for top-up supplies or standby supplies;
- xii. Proposed point of connection to AEL's Network.

**E.1.2 *Interface Arrangements***

- i. The means of synchronisation between the distribution network and the generator;
- ii. Details of arrangements for connecting with earth that part of the generator's system directly connected to the distribution system;
- iii. The means of connection and disconnection to be employed;
- iv. Ability of plant to back-feed the external system;
- v. Protection equipment and protection setting; and
- vi. Precautions to be taken to ensure the continuance of safe conditions should any earthed neutral point of the generator's system operated at HV become disconnected from earth.

**E.2 Required for Large Generators**

This required additional information applies to generators connected at voltages equal to or greater than 6.6kV, or of capacity greater than 1MW.

### *E.2.1 Technical Data*

Generating plant information:

- Type of prime mover
- Rated MVA
- Rated MW
- Generator MW/MVAr capability chart (at terminals)
- Type of excitation system
- Inertia constant MW secs/MVA (whole machine)
- Stator resistance
- Direct axis reactances sub-transient
- Transient
- Synchronous
- Quadrature axis reactances sub-transient
- Synchronous
- Time constants direct axis
- Sub-Transient & transient
- Quadrature axis
- Open or short sub-transient (stating either circuit time constant)
- Zero sequence resistance
- Reactance
- Negative sequence resistance
- Reactance
- Generator transformer resistance
- Reactance
- MVA Rating
- Tap arrangement
- Earthing

Together with:

- i. Automatic voltage regulator (AVR) specifications;
- ii. A block diagram for the model of the AVR system including the data on the forward and feedback gains, time constants and voltage control limits;
- iii. Speed governor and prime mover data; and
- iv. A block diagram for the model of the generating plant governor detailing the governor fly-ball (if applicable), system control and turbine time constants; together with the turbine rating and maximum power.

### *E.2.2 Interface Arrangements*

- i. The means of synchronisation between the distribution network and the generator.
- ii. Details of arrangements for connecting with earth that part of the generator's system directly connected to the distribution system;
- iii. The means of connection and disconnection that are to be employed;
- iv. Ability of plant to back-feed external system;
- v. Protection equipment and protection setting; and

- vi. Precautions to be taken to ensure the continuance of safe conditions should any earthed neutral point of the generator's system operated at HV become disconnected from earth.

**E.2.3 Capacity and Standby Requirements**

- i. Registered capacity and minimum generation of each generating unit and power station in MW;
- ii. Generating unit and power station auxiliary demand (active power and reactive power) in MW and MVA<sub>r</sub>, at registered capacity conditions. For users with their own generation, this should include top-up requirements;
- iii. Generating unit and power station auxiliary demand (active power and reactive power) in MW and MVA<sub>r</sub>, under minimum generation conditions. For users with their own generation, this should include top-up and standby requirements.

**F. Further Information Required by Transpower**

Large generators which are capable of export into a Grid Export Point (Injection) may be subject to the Transpower connection code and central dispatch. Where this applies, any information supplied to AEL by the generator will be passed onto Transpower. It will be the responsibility of the generator to provide the appropriate information to AEL.

There may also be information required under the terms of a Transpower contract that applies to the transfer of energy from the generator to the generator's customers.

**Applicant's Declaration:**

The undersigned certifies that to the best of his or her knowledge, the information provided on and with this form is complete and accurate.

Signed: \_\_\_\_\_ Name: \_\_\_\_\_ Date: \_\_\_\_\_