

Distributed Generation Technical Form

Note: This is **not** an application for electricity. Allow five working days (from receipt of the completed form by Firstlight Network) for processing for a standard application. Applications are valid for a period of **six months** from the date of approval.

	AFS
	Reference

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Distributed Generator details (per generator)

Unit Designation (e.g. G1)	
Nominal KVA rating	
Synchronous / Asynchronous:	
Primary Energy Source	
Prime Mover Description	
Nominal Generator Voltage:	
Rated Terminal Voltage	

Terminal Voltage Range	
Turbine / Generator Inertia Constant	
Active Aux. Load at rated Power	
Reactive Aux. Load at Rated Power	
Does Aux. Load Trip with Generator	
Short Circuit Ratio (Synchronous)	

Synchronous Machine Unsaturated Impedance (in per unit, on generator base)

Armature or Stator Resistance (R_a)	
Direct Axis Synchronous Reactance (X_d)	
Quadrature Axis Synchronous Reactance	
Direct Axis Transient Reactance (X'_d)	
Leakage Reactance (X_l)	
Quadrature Axis Transient Reactance for RR Machines (X'_{q})	
Direct Axis Sub-Transient Reactance (X''_d)	
Quadrature Axis Transient Reactance for RR Machines (X''_q)	
Direct Axis Transient Open Circuit Time Constant ($T_{do'}$)	

Negative Sequence Reactance (X_2)	
Zero Sequence Reactance (X_0)	
Earthing Resistance (R_e)	
Earthing Reactance (X_e)	
Earthing Transformer Ratio	
Quadrature Axis Transient Time Constant for Round Rotor Machines ($T_{q0'}$)	
Direct Axis Sub-Transient Open Circuit Time Constant ($T_{do'}$)	
Quadrature Axis Sub-Transient Open Circuit Time Constant ($T_{q0''}$)	
Saturated Sub-Transient Reactance ($X''_{d\text{ Sat}}$)	

Asynchronous Machines

Attach detailed functional description	
Reactive Power Range (kVAR)	

Current Ratio on Excitation (p.u.)	
Pole Pair Number	

Asynchronous Machine Impedances (In per unit on generator MVA Base)

Stator Resistance (R_1)	
Stator Leakage Reactance (X_1)	
Magnetising Reactance (X_m)	

Rotor Resistance (R_2)	
Rotor Leakage reactance (X_2)	

Power Factor Correction Capacitors

Capacitor Total (kVAR)	
Capacitor Step Sizes	

Capacitor Dielectric Losses (kW)	
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Reactive Power and Voltage Control Systems

Attach detailed description	[]
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Settings and parameters	[]
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Governor or Frequency Control Systems

Attach detailed description []	Settings and parameters []
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- Attach single line diagram showing CB's, Disconnectors, VT's, CT's, Capacitors, Transformers.

Connection Circuit Breakers (for each CB)

Equipment Label (eg. CB1)	Nominal Current Rating
Rated Voltage	Short Circuit Rating (3 - Second)

Network Connection Disconnectors

Equipment Label (eg. CB1)	Nominal Current Rating
Rated Voltage	Short Circuit Rating (3 - Second)

Protection Settings

Attach Single Line Diagram showing protection system []	List Protective Devices and Settings []
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Restrictions

Attach details of any special islanding, protection, or synchronising requirements []

Generator Transformer General Details

Nominal Voltage Ratio including any tertiary windings	Rating of LV Winding
Number of Windings per Phase	Rating of any Tertiary Windings
Rating of HV Winding	Vector Group
	Iron Losses

Generator Transformer Resistance and Reactance

Positive Sequence Resistance (HV to LV)	Zero Sequence Reactance (HV to LV)
Positive Sequence Reactance (HV to LV)	Earthing Resistance
Zero Sequence Resistance (HV to LV)	Earthing Reactance

Generator Transformer Tap Changer

Attach description of Tap Changer []	Number of Taps
Which Winding is Tapped (HV or LV)	High to Low Voltage Range (HI% to LO%)
Step Size (%)	No. and Voltage of Nominal Tap Position

HV Lines and Cables

Name and Conductor Type	Zero Sequence Resistance (Ohm/km)
Conductor Size	Zero Sequence Reactance (Ohm/km)
Length (km)	Capacitance (nF/km)
Positive Sequence Resistance (Ohm/km)	Attach Route Drawing []
Positive Sequence Reactance (Ohm/km)	

Operational Data

Attach Details of any Low Load Restrictions	Hot Start Time to achieve Minimum Load (Thermal Plant)
Cold Start Time to achieve Minimum Load (All Plant Types)	Typical time from Cold Start to Maximum Load (All Plant Types)
Warm Start Time to achieve Minimum Load (Thermal Plant)	Typical Power Ramping Rate from minimum Load to maximum Load

Operational Profiles

Attach Estimated Generation / Demand Profile (in enough []
