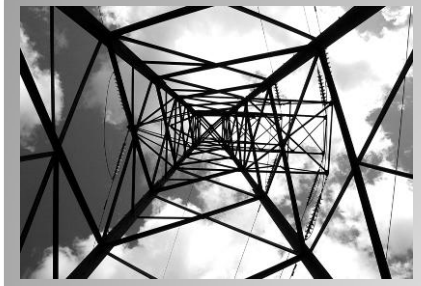


G59 Generation over 50kW

Breakout Sessions

What is G59 generation?

- G59 is an industry standard for generators greater than 16A per phase
  - Energy Networks Association Engineering Recommendation G59/2-1 *"Recommendations for the connection of generating plant to the Distribution System of Licensed Distribution Network Operators - Amendment 1"*
- Up to 50kW there is a provision for type tested equipment similar to G83; however
- Applications greater than 17kW per phase must use G59 approved relays unless G59 type tested inverters are available
- G59 applications must be submitted for system studies and associated network reinforcement where necessary prior to connection.

There are a number of basic issues associated with connecting distributed generation to the wider electricity network

Electrical Issues

–Voltage
- Rise & Step

–Protection
- Interface protection is not sufficient to prevent overvoltages – it should protect the generator.
- RoCoF can not always discriminate between loss of mains and system disturbances. For safety it should be slightly trip happy. This becomes an issue with increasing generation penetration.

–Harmonics, Distortion and Unbalance

–Fault level
- Varies by technology and location, but customer has a significant control over their contribution to the issue

–Reverse power flow

–Thermal ratings
- We are now seeing 11kV connected generation exporting to NGET.

Contextual Issues

–Clustering
- Where it is good to develop one renewable generator, due to resources, ease of planning etc, it is normally good to develop others.
- Generator applications cluster, overloading one area, leaving others untouched and leading to commercial queuing issues.

–Planning consents
- Particularly for overhead lines but also for connection point substations

–Land rights
- Wayleaves, easements and statutory rights

–Existing network
- Single phase lines may not be suitable for your generator

Questions?