

▶ Distributed Generation Owner/Operator Forum

Bristol, 26 April 2018



Distribution generation owner/operator forum dates - 19 July 2018

[19 June 2018](#) - Smart Energy Marketplace

[20 June 2018](#) - Balancing Act conference





Connections

New connections

Generation

- > G59 Applications
- > G59 Fast track applications
- > G83 Applications
- > Energy Storage
- > Generator application / commissioning forms
- > Study and offer quote
- > Community Energy Schemes
- > Payments for generated energy
- > Generation Infrastructure Schemes
- > Facilitating sharing of information for potential generation connections consortiums

Distribution Generation owner/operator forum

We have set up a forum in partnership with Regen aimed at owners and operators of MW scale renewables connected to a WPD network to provide an opportunity for WPD and Distributed Generation (DG) owners/operators to improve communication on issues including:

- WPD work to address grid constraints;
- Improving communication with generators on outages and constraints;
- Potential approaches for forecasting and mitigating outages.

The next meetings of the forum will take place on:

26 April 2018
19 July 2018

Meeting notes from previous events:

- [25 January 2018](#)
- [15 July 2016](#)
- [28 Sept 2016](#)
- [24 Jan 2017](#)
- [27 April 2017](#) [Power factor and maintenance frequency slides](#)
- [11 Jul 2017](#)
- [20 Sept 2017](#)

If you or a colleague would like to join the forum then please contact Olly at Regen on ofrankland@regensw.co.uk for further details.



Contact us

Emergency information

0800 6783 105

General contact enquiries

0800 096 3080

- 13.30 **Arrival, registration and buffet lunch**
- 14.00 **Welcome, introduction and objective setting from the chair and WPD**
- 14.15 **Improving industry and WPD communication to address outages/constraints**
- Single point of contact
 - Early notification of planned outages
 - Update on outage portal
- 14.30 **Progress on the trial consortium approach to reducing the impacts of outage**
- 15.00 **Outage impact assessment update**
Joe Davey, operations support engineer, WPD
- 15.30 **Loss of mains protection: Vector Shift to Rate of Change of Frequency (RoCoF)**
Tony Berndes, primary system design manager, WPD
- 16.30 **Networking and close**

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WPD DG Forum

*Consortium approach to
reduce the impacts of
outages*

Monday, 30 April 2018

Establishing Additional Points Of Isolation

Nine 33kV connected sites Investigated :

- 6 South Wales area
- 1 South West area (suggested by asset owner)
- 2 East Midlands area (suggested by asset owner)

- 6 Different asset owners

In one case :

- Two sites will benefit from the installation of one isolator (different asset owners)
- Two sites will benefit from the installation of one isolator (the same asset owner)

All have expressed an interest in progressing proposal further.

“Saved” Generation Export

Two different aspects employed:

- Bespoke Load Flow Studies
- Alternative Ways of Working

Over 2014-2018 period for the South West area

- 365 Days of generation export allowed
- Equating to 2755 MW Days of export



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WPD DG Forum

Outage Impact Assessment

Monday, 30 April 2018

Lost Generation Model

- Uses the sum of half-hour averages of generation within a Grid Group to calculate the percentage output for a half-hour period (i.e. the output per MW installed):

$$\% \text{ Generation} = \frac{\sum \text{Half Hour Average Generator Export}}{\sum \text{Maximum Export of Unconstrained Generators}}$$

- For each generator that is constrained for a half hour period their lost generation is assumed to be:

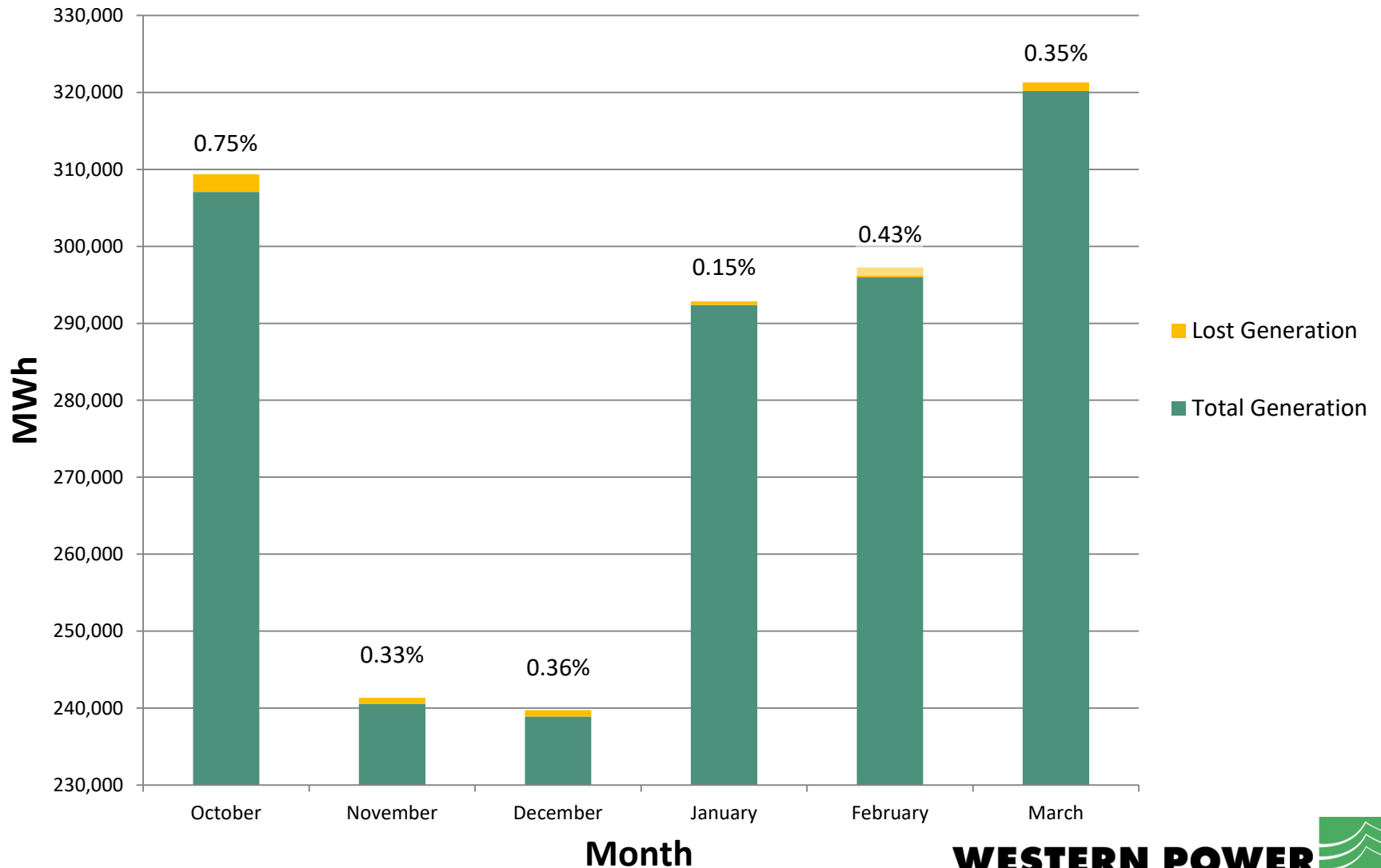
$$\% \text{ Generation} \times \text{Maximum Export of Site}$$

Lost Generation Model - Results

- Model Has been run for October 2017 – March 2018
 - Results so far show that as a percentage lost generation is $< 1\%$ and is typically $< 0.5\%$
- Model will continue to be run at the end of each month and the results published on the WPD website

Lost Generation Model - Results

Lost Generation by Month



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Loss Of Mains Protection

26th April 2018

Tony Berndes – Primary System Design Manager

Outline

- What is Loss of Mains Protection?
- What has/is changing?
- What this may mean for site owners/operators

Loss of Mains Protection

- **What is it?**
 - A form of protection to ensure the generator plant disconnects from the system when incoming supply is lost
 - Detects a change in a suitable parameter (rate of change frequency, phase angle, unbalanced voltages)
 - Disconnects the generating plant (trips the customer's G59 breaker)

Loss of Mains Protection

- **Why do we have it?**
 - To ensure that the Generating Plant is disconnected so that, the requirements for Distribution System earthing, and out-of-Synchronism closure are complied with and that Customers are not supplied with voltage and frequencies outside statutory limits

 - IE To avoid islanding

- **Where is the requirement?**
 - National Engineering Recommendation G59 (currently G59/3-3)

Loss of Mains Protection

- **What has changed?**

- Historically implemented by RoCoF or Vector Shift relay (for 'Small' <50MW sites).
- G59/3-3:
 - removed Vector Shift as an allowed loss of mains (LoM) technique (from 1st Feb 2018),
 - and to applies new (less sensitive) settings for RoCoF protection.

- **Why the change?**

- Change in generation mix: large central to Distributed
- GB System more sensitive to disturbances
- NGET System events (400kV faults) have seen widespread LoM operation across south coast of England in particular.

Loss of Mains Protection

- **Grid Stability**
 - Risk that a NGET system event/fault that involves loss of a 400kV cct(s) and a Large 400kV generator during period of high DG output will cause widespread disturbance that will inadvertently trigger Vector Shift relay operation leading further loss of significant DG

- **What may change?**
 - National group considering changes to codes to require retrospective change of LOM from VS to RoCoF
 - Target Invitation (larger PV south coast) to change LoM from VS to RoCoF

Loss of Mains Protection

- **What does this mean for Site Owners/Operators?**
 - Possible/likely there will be a future Code requirement to change to RoCoF
 - May receive an invitation to change to RoCoF under an accelerated programme (in next few weeks)
 - What does this mean on site:
 - Some LoM relays are dual function VS/RoCoF hence could be a relay re-programme/configuration
 - Else a relay change will be required
 - G59 protection (inc LoM) will need re-commissioning/testing
 - DNO may wish to witness this or receive signed tests
 - Change to Connection Agreement to record this change



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20 June 2018 - Balancing Act conference

IET, London

9.30 – 15.50





Smart Energy Marketplace 2018

Smart Energy Marketplace is a unique showcase of the emerging smart, decentralised energy system of the future – a radical shift in the way we power our lives that is creating huge opportunities.

Date: 19 June, 2018

Location: Sandy Park, Exeter