

# Grid Code Development Forum

10:00 Wednesday 5<sup>th</sup> February 2020

Meeting number: 594 894 338

Password: QfjPwEq7

<https://uknationalgrid.webex.com/uknationalgrid/j.php?MTID=md72d9ab87de43af63a520d5a4e201b9d>

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# Agenda

1. Introductions
2. Presentation: Enhanced Planning Data Exchange  
(***Ian Povey***, Electricity North West Limited)
3. Presentation: Adding 220kV Equipment to the Codes  
(***Louise Trodden***, National Grid ESO)
4. Code Administrator Update  
(***Nisar Ahmed***, National Grid ESO)
5. Any other business
6. Close

# Energy Networks Association

## Grid Code Modification Proposal: Enhanced Planning Data Exchange

Grid Code Development Forum Meeting: 5 February 2020

# Open Networks – Delivering a Smart Grid



ENA's The Open Networks Project is a major industry initiative that is powering Britain forward to Net Zero by enabling homes, businesses, and communities to provide clean energy back to the networks. Open Networks is delivering a smart grid by opening up new markets, and building an all inclusive energy system



The Open Networks Project will help customers connect and break down barriers, enabling customers to access multiple markets to provide services; all the while reducing cost for consumers through more cost effective planning



Making a positive difference  
for energy consumers



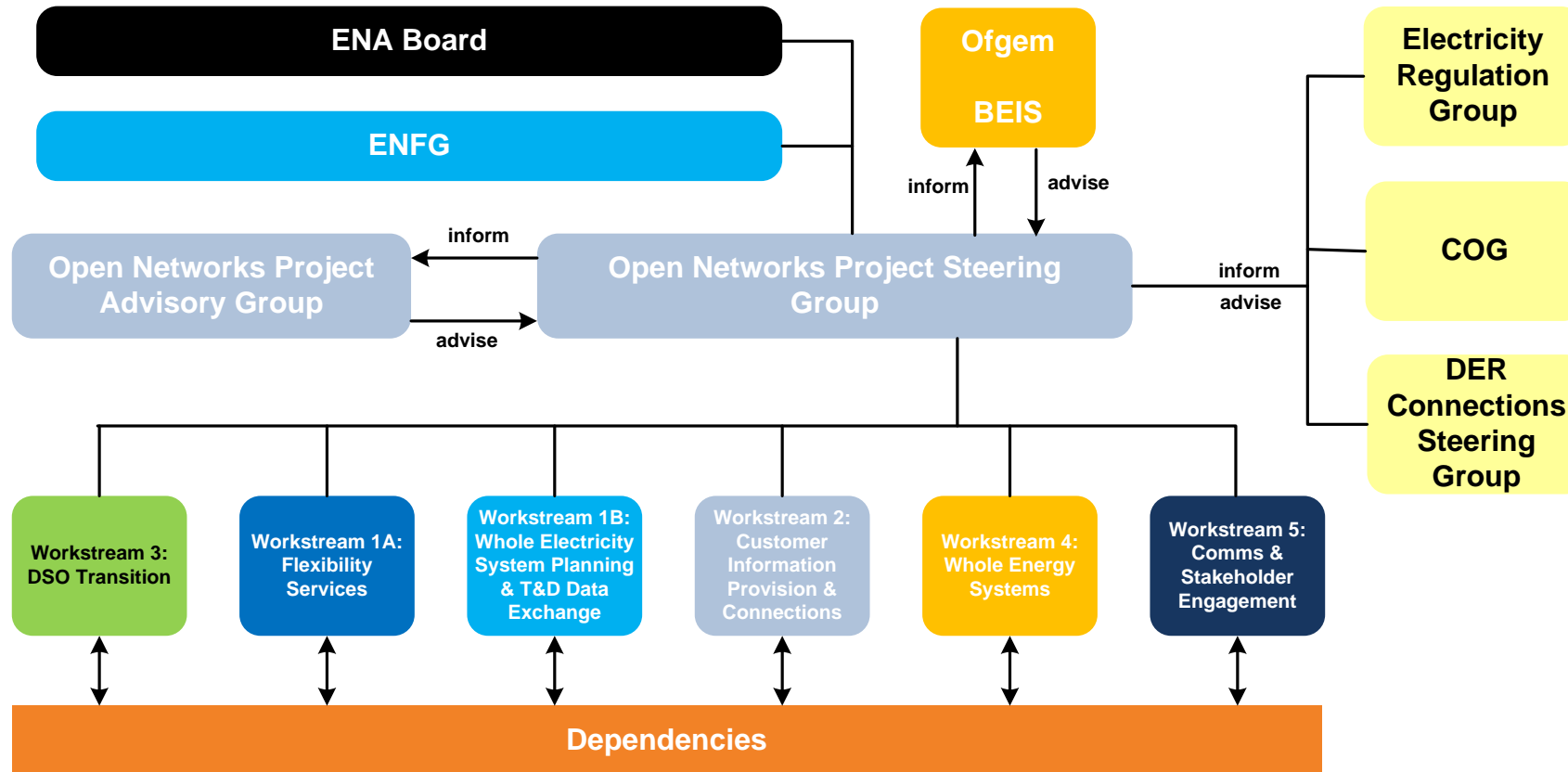
HM Government

The Open Networks Project is a key initiative to deliver Government policy set out in the Ofgem and BEIS Smart Systems and Flexibility Plan, the Government's Industrial Strategy and the Clean Growth Plan



We are taking a 'learn-by-doing' approach; we are using innovation funding to trial and test aspects of the various future electricity system options

# Open Networks – Project Governance



# ON WS1B P4 - Data Exchange in Planning Timescales

Product 4 deliverables:

## 1. T-D Data Exchange Requirements

- Review current data exchange requirements; Week 24, Week 42, Statement of Works
- Develop templates for an enhanced data exchange
- Propose an implementation process for enhanced data exchange

## 2. Data Exchange Mechanisms

- Review existing mechanisms for data exchange and electronic exchange capability
- Identify an appropriate electronic data exchange standard to cater for increased volume & frequency
- Report recommending exchange standard and detailing implementation costs & timescales

## 3. Industry Code Modifications

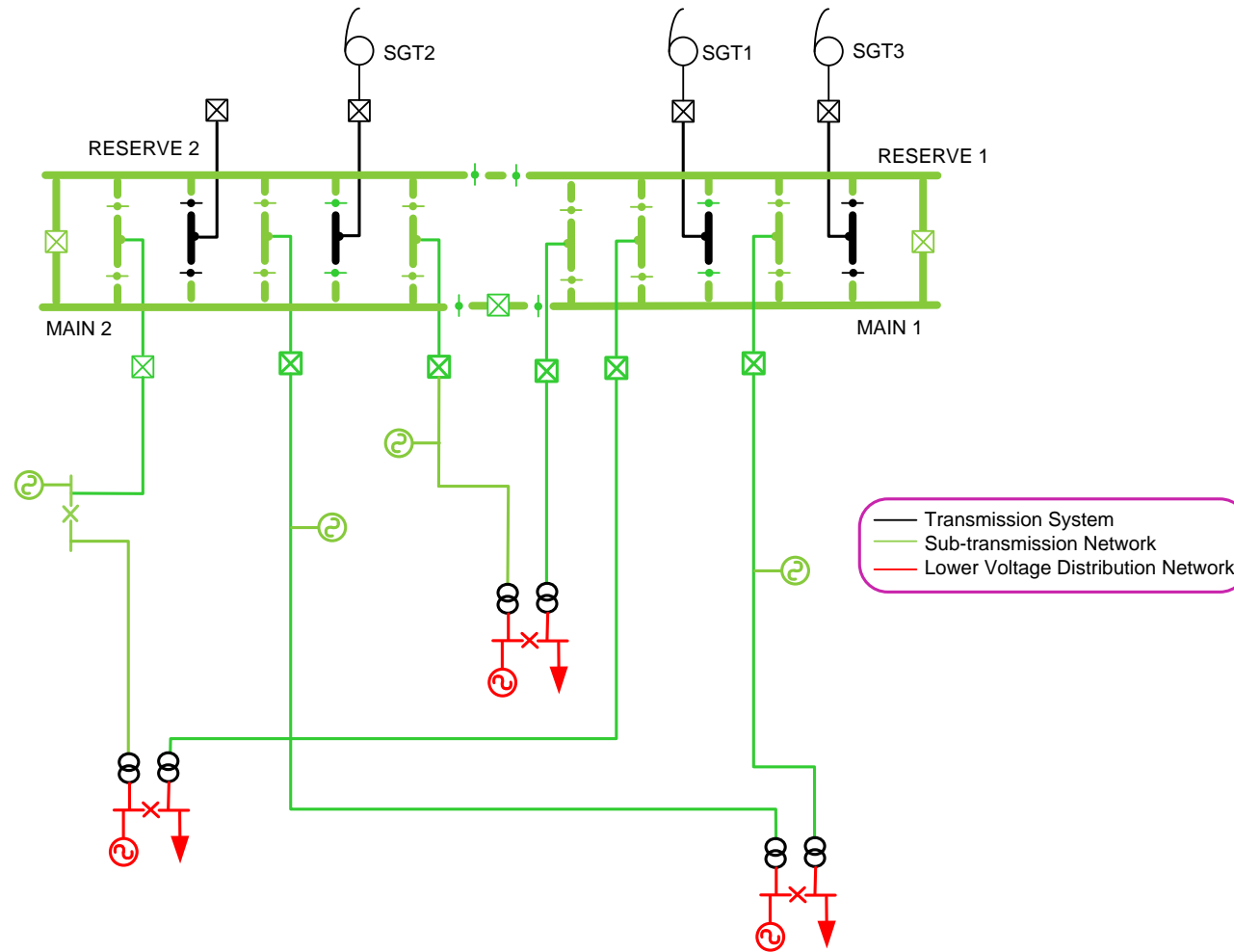
- Progress Gird Code Modification for enhanced data exchange requirements
- Progress Distribution Code Modification for Enhanced data exchange requirements

# D to T Data Exchange (1)

DNOs to provide NG:

- Full details of the sub-transmission network and any connections directly connected to the sub-transmission network
- Details of all distributed energy resource connections greater than 1MW to the distribution network and their impact on energy flows at cardinal demand points; peak demand, summer minimum demand and solar-peak/daytime-minimum demand.
- Details of all distributed energy resource greater than 1MW 'accepted' to be connected to the distribution network and their anticipated impact on energy flows at cardinal demand points; peak demand, summer minimum demand and solar-peak/daytime-minimum demand.
- Details of all distributed energy resource connections less than 1MW to the distribution network, aggregated by fuel type and disaggregated by substations connecting to the sub-transmission network.

# D to T Data Exchange (2)



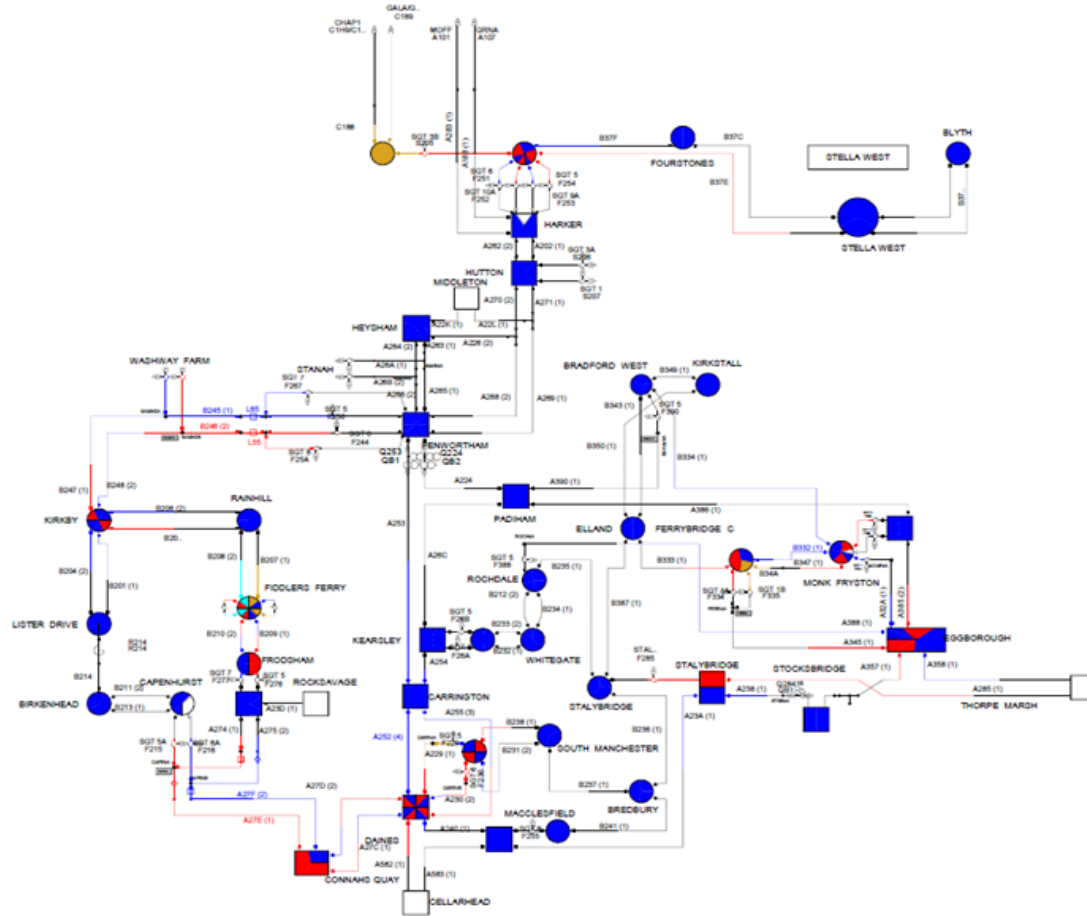


# T to D Data Exchange (1)

NG to provide DNOs:

- A set of models of the transmission system that represent the generation dispatch and demand at the following cardinal points:
  - Maximum fault level
  - Peak demand,
  - Summer minimum demand,
  - Solar-peak/daytime-minimum demand,
  - National high power transfer dispatch scenario, and
  - National low power transfer dispatch scenario.
- These models will be switch level models in a single boundary format and, detailing transmission asset ratings,

# T to D Data Exchange (2)



# Processes & Next Steps

- Alignment of the Statement of Works and Week 24 data provision to NG utilising expanded schedule 5 and 11 data tables.
- Through D-Code requirement (or other) IDNOs provide data to ensure data provision is complete.
- Enhanced data exchanges triggered for a Licence area when an Appendix G to the BCA is established – straight away in many cases!
- At this time NG to exchange its enhanced level of data at Week 42
- It is believed that this is to be the first on many GC Modifications as the industry moves towards a Smart, decarbonised future.
- It is recommended that a GC working group is established to codify these proposals in a manner that will facilitate future modifications.



# Adding 220kV Equipment to the Codes

Louise Trodden  
National Grid ESO

# Introduction

## History

GSR0021 was raised in 2015 to look at reviewing incorporating 220kV transmission assets into the SQSS.

This was subsequently rejected by Ofgem as it did not offer a solution to further nominal voltages potentially requiring review and addition to both the SQSS and the network.

Future proof- additional equip  
Not urgent no customers- limited potential

[Decision Letter from Ofgem](#)  
[GSR0021 Industry Consultation Paper](#)

## Proposal

Raise a new modification in response to Ofgem's decision letter dated July 2016.

The objective of this modification will be to capture any future equipment with varying nominal voltages – therefore avoiding frequent amendments to the SQSS and also the Grid Code. The aim will be to do this using defined terms where possible and creating a table of voltages similar to that in the EU codes in both the SQSS and the Grid Code.



# Where are these cables?

## Current Locations

The Kintyre-Hunterston subsea AC link has two subsea cables between Crossaig on the Kintyre peninsula and Hunterston.

These are connected to the Onshore Transmission System via two 400/220kV supergrid transformers at Hunterston and via two 220/132 kV transformers at Crossaig.

## Future

220kV is common EU transmission voltage. It is possible that further equipment of other common voltages (E.g.: 380kV, 110kV) could be connected to the GB system in the future.

### Overview of Transmission projects

- Existing infrastructure
- Under construction
- Advanced planning
- Potential development



# Why should we review?

## Clarity of Requirements

- Unclear what specification or performance is required from equipment at voltages not currently specified within the codes.

## Consistency

- SQSS and Grid Code need to be aligned.

## Specification

- In including specifications for equipment at voltage not currently covered by the codes.

# What Areas of Code are to be Reviewed?

<b>Section of the Grid Code</b>	<b>Grid Code Reference Points</b>
Single Point of Connection	PC.A.8.1 and PC.A.8.3
Grid Voltage Variations	CC.6.1.4
Fault Clearance	CC.6.2.2.2.2 and CC.6.2.3.1.1
General Generating Unit	CC.6.3.2 and CC.6.3.4
Steady State Voltage	CC.A.7.2.2.1.2.4
Reactive Capability Table	CC.6.3.2

<b>Section of SQSS</b>	<b>SQSS Reference Points</b>
Voltage Limits in Planning and Operating the Onshore Transmission System	Tables 6.1, 6.2, 6.3 and 6.4



# Current Version

National Electricity Transmission System Nominal Voltage	Normal Operating Range	Fault Clearance Times
400kV	+/- 5%	80ms
275kV	+/- 10%	100ms
132kV	+/- 10%	120ms

## Proposed New Version

National Electricity Transmission System Nominal Voltage	Normal Operating Range	Pu	Fault Clearance Times
300kV- 400kV	+/_ 5%	0.95pu-1.05pu***	80ms
200kV-300kV	+/_ 10%	0.90pu-1.10pu**	100ms
200kV and below	+/_ 10%	0.90pu-1.10pu*	120ms

# Code Administrator General Updates



# Dates for your diary

	February	March	April	May
<b>GCDF</b>	05/02/2020	04/03/2020	31/03/2020	06/05/2020
<b>New Modification Proposal Submission Date</b>	12/02/2020	11/03/2020	07/04/2020	13/05/2020
<b>Papers Day</b>	19/02/2020	18/03/2020	14/04/2020	20/05/2020
<b>Grid Code Review Panel</b>	27/02/2020	26/03/2020	22/04/2020	28/05/2020



# Any Other Business (AOB)



[nationalgrideso.com](http://nationalgrideso.com)

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