

ENTSO-E Requirements for Generators
JESG Workshop – 2/3 August 2012
Saxon Mill - Warwick



RfG Application in GB

What do we hope to get out of this **nationalgrid** session?

Putting aside “issues” with RFG:

- Share thinking and work on the GB Grid Code comparison documents
 - Discuss any comments
- Highlight “types” of provision (with examples)
- Discuss complexities of application in GB
- Share thinking and discuss options for application
- Share thinking and discuss options for governance

High Level Comparison of ENTSO-E RfG against previous version

- General Comments comparing the ENTSO-E RfG dated 24 January 2012 against ENTSO-E RfG dated 26 June 2012
 - Less prescriptive with fewer mandatory requirements and greater scope for National variation
 - A small number of technical queries
 - A few areas of repetition
 - Significant changes to Offshore configurations removing reference to HVDC

General comments on the ENTSO-E RfG Comparison

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- The comparison only examines the requirements in the GB Grid Code and RfG it does not include other requirements such as the D-Code or other Regulations / Engineering Recommendations
 - The GB Grid Code only captures Large, Medium and Small Power Stations with the majority of requirements (particularly the Connection Conditions) applying only to Large and Medium.
 - The ENTSO-E RfG applies to Power Generating Modules down to 800W and the difference in thresholds against GB Grid Code could create quite a challenge for GB application
 - There is likely to be a significant need for co-ordination between the G - Code and D - Code.

Analysis Undertaken (1)

- Comparisons have been made between the GB Grid Code and ENTSO-E RfG in both directions (ie GB to RfG and RfG to GB)
- Table 1 is a high level summary comparing the requirements of the ENTSO-E RfG with the GB Grid Code and identifying where the requirements between both codes are more or less onerous
- Table 1 is considered as the more important in providing an initial overview of the implications of the RfG on GB but the implications of Generation size thresholds need to be considered
- Table 2 is a fully detailed comparison which compares the GB Grid Code with the ENTSO-E RfG
- Table 3 is a fully detailed comparison which compares the GB Grid Code with the Offshore elements of the ENTSO-E RfG
- Comparison Tables do not include in detail the Compliance requirements as such provisions are subject to decision on Consultation A10 – decision now received so can be updated

Analysis Undertaken (2)

- Each of the Tables contain a key seeking to identify category of change
- NOTE:- The tables/ analysis have been prepared in good faith to promote discussion and begin to understand the implications of the ENTSO-E RfG.
 - The Tables have not been subject to internal NGET review as it was felt important to give JESG members as much time as possible to assess the analysis
 - Some review of the tables (in particular the key) will be required in the future
 - Track change marking has been included to compare differences between the ENTSO-E RfG dated 24 January 2012 and the ENTSO-E RfG dated 26 June 2012

Key Used in Tables

- For each Table the following key was used
 - N/A – Not specified in GB Code but other requirements may apply eg D Code, Engineering Recommendations etc
 - N/S – Not Specified in ENTSO-E Code
 - Article 4(3) – As defined in the ENTSO-E Code
 - 1 – Directly applicable (no Scope for Member State specificity)
 - 2 – Member State specificity can be applied
 - 3 – A member state CBA or consultation is required to determine applicability
 - 4 – Further detail is required to implement ENC obligations – need to confirm that governance processes would constitute the necessary NRA Consultation
 - 5 – No change needed to the GB framework (we already meet the requirements)
 - 6 - Completely new to the GB Framework
 - 7 –Where different obligations are introduced at interconnection points to deeper into the system – with dual references required to the 2 co-existing obligations
 - [currently applicable for gas Capacity Allocation Mechanism Code]*
 - 8 - Where different obligations are introduced for new as opposed to existing parties
 - 9 – GB arrangements go beyond those stipulated in the ENC

Examples

	Mandatory Requirement (Directly applicable)	Non Mandatory - Principles defined	Non Mandatory – Parameters defined
New Requirement	Article 10 (2) (b) – Limited Frequency Sensitive Mode – Under Frequency applies to all Type C Power Generating Modules	Article 16 (2)(a) – Provision of a Synthetic Inertia Facility	Article 10 (2) (b) – Limited Frequency Sensitive Mode – Underfrequency: TSO can define the frequency threshold and Droop.
Existing Requirement – currently met	Article 11 (2)(a) - Voltage Range	Article 10 (6)(f) - Earthing Arrangements of the Neutral Point at the Network Side of a Step Up Transformer	Article 8 (1)(e) - Output Power with falling frequency – TSO to define requirements within range (currently met for Medium and Large in GB)
Existing Requirement - amendment required	Article 9 (3) – Fault Ride Through – Voltage duration profile and shape fully specified and different from GB Grid Code	Article 10 (6) (c) – Simulation Models – TSO can request electromagnetic transient simulations where justified.	Article 9 (3) – Fault Ride Through – Parameters to be used are to be defined by TSO (voltage duration length and range different to GB Grid Code)
New for Category of User*	Article 8 (1) (c) - Type A Units are required to satisfy the Limited Frequency Sensitive Mode – Overfrequency of operation requirements for over frequencies (currently does not apply to all categories of generator)	Article 9 (5)(d)(2) – The Relevant Network Operator in co-ordination with the Relevant TSO shall define the contents of information exchange and the precise list and time of the data to be facilitated (RFG also applicable to Small and embedded)	Article 8 (1) (e) – Type A units are required to satisfy power output with falling frequency with the parameters being defined by the TSO (not currently met for Small in GB)

* Not covered by GB Grid Code

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- The comparison Tables have been prepared in order to give JESG Members an overview of the differences between the ENTSO-E RfG and GB Grid Code
 - The comparison Tables are an initial view of the ENTSO-E RfG and have not been subject to internal National Grid assessment in particular the key
 - The analysis does not compare the ENTSO-E RfG with any other documents other than the GB Grid Code
 - The ENTSO-E RfG thresholds are very different to the current GB Grid Code and greater co-ordination between the GB Grid Code and GB Distribution Code / industry framework is likely to be required in the future.

Considering the Approach to GB Application

- Why is GB application of RFG complex?
- What has been considered regarding governance to take forward GB application?
- What options exist for applying changes to the GB framework?

Why is GB application of RFG complex?

The following needs to be considered for all European Network Codes (ENCs):

- Length of the implementation period;
- Potential requirement to coordinate with adjoining TSOs (and NRAs) to ensure consistent or complimentary rules are applied at each interconnection point and the time associated with delivering this;
- The extent to which the ENCs are high level so require conversion or interpretation into the GB context;
- How much of the ENC is subject to discretion at a Member State level;
- Whether there is a provision within the ENC for a cost benefit analysis (CBA) to be undertaken and whether one needs to be undertaken or not;
- Consideration where GB already has more stringent rules in place;
- Consideration where the application requires subsequent ENCs to be implemented in order to facilitate full enforcement (e.g. the interaction of the gas Tariffs and gas Capacity Allocation Mechanism ENCs);
- Cost recovery mechanisms and time scales;
- Range of legal instruments which require amendment.

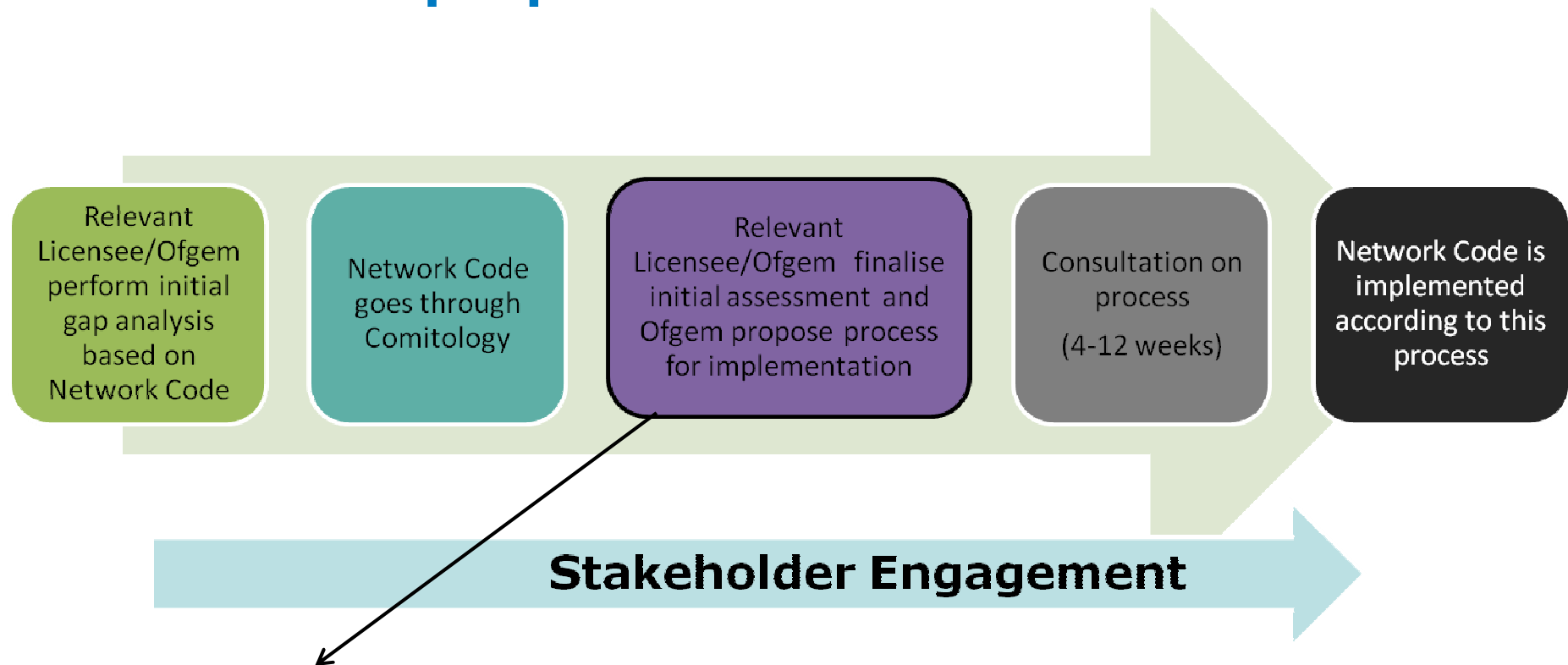
Why is GB application of RfG complex? (continued)

Specifically for RfG:

- Applies to Power Generating Modules down to 800W and introduces different thresholds of users to those in the GB Grid Code
- Unlike many of our European neighbours, we have detailed rules already in place

Governance – Ofgem slide

How do we propose to do this?



Here, we may decide to use our **Third Package Powers** to propose changes to industry codes, licences and other agreements.

Governance

- How do we treat different categories of provisions?
 - See handout

Options for Application

Using RfG as a case study and focusing on the Grid Code, these slides present some options that could be developed

1. Start a “new” Grid Code for European Codes
 - Would capture all “new” provisions from the ENC
 - Would be applicable to all those identified (new Users and identified existing Users)
 - Would replicate the other Grid Code requirements which the RfG does not touch
- Requires ongoing maintenance of 2 Grid Codes
- Requires clarity on who is captured by which
- Facilitates reflection of “new” thresholds

Options for Application

2. Amend Grid Code to replicate ENC requirements
 - Introduce dual references within the Grid Code
 - Capturing “new” and “existing” side by side within relevant articles
 - All parties will follow the same Grid Code and where different provisions apply to different users this will be stated
- Requires ongoing maintenance of 1 document
- Complications for different thresholds of Users
- Would need to be very clearly written to ensure comprehension

Options for Application

3. Strip out ENC related detail from Grid Code and make stand alone
 - Similar to (a), but only captures relevant provisions (for both “new” and “existing”, all other provisions remain in “old” Grid Code)
 - Would need to capture dual references within stand alone document as “old” provisions will still apply for some Users
- Requires maintenance of 2 documents
- All users would need to “use” the 2 documents

Options for Application

4. Completely rewrite the Grid Code to align with new thresholds
 - Would not change obligations on “existing” Users, but would change how they are referred to
 - Otherwise would be as per (2)
- Is it a lot more complication, without much gain?

Options for Application

5. Combine G Code and D Code

- Could be done using any of the options above
- To ensure all thresholds of Users are captured in the same place
- A big administrative exercise
- Brings benefit of all relevant provisions being captured in the one place

Next steps

- Take stock of today's discussion
- Capture and discuss with Ofgem and other Licensees
- Work up more detailed proposals for later discussion