

Joint European Stakeholder Group



Thursday 20 July 2017
Meeting 22

ELEXON, London

Agenda

ID	Title	Lead	Time
1.	Welcome & Introductions	Barbara Vest (Chair)	10:00-10:05
2.	CACM Day ahead and intraday capacity calculation methodology consultation	Rob Selbie (National Grid)	10:05-10:35
3.	Assignment of TSO responsibilities under TSOG	Leonardo Costa (Ofgem)	10:35-11:00
4.	TSOG update	Fergus Healy & James Bradley) (National Grid)	11:00-11:20
5.	Review of Actions log	Heena Chauhan (JESG Technical Secretary)	11:20-11:30
6.	Future Meeting Dates & Agenda Items	Heena Chauhan (JESG Technical Secretary)	11:30-11:35
7.	Stakeholder Representation	Chair	11:35-11:40
8.	Any Other Business	All	11:40-12:00

1. Welcome & Introductions

Barbara Vest

Independent Chair

2. CACM Day ahead and intraday capacity calculation methodology consultation

Rob Selbie

National Grid

European Network Codes National Grid Update – July 17



20 July 2017
Rob Selbie

Channel DA/ID CCM concepts in a nutshell

CACM CAPACITY CALCULATION METHODOLOGY

CACM Capacity Calculation Methodology

- Consultation period
- DA/ID capacity calculation methodology concepts
- DA/ID capacity calculation process overview
- Feedback and questions



Consultation Hub Find Consultations



Capacity Calculation Methodology Proposal for the Channel CCR

Overview

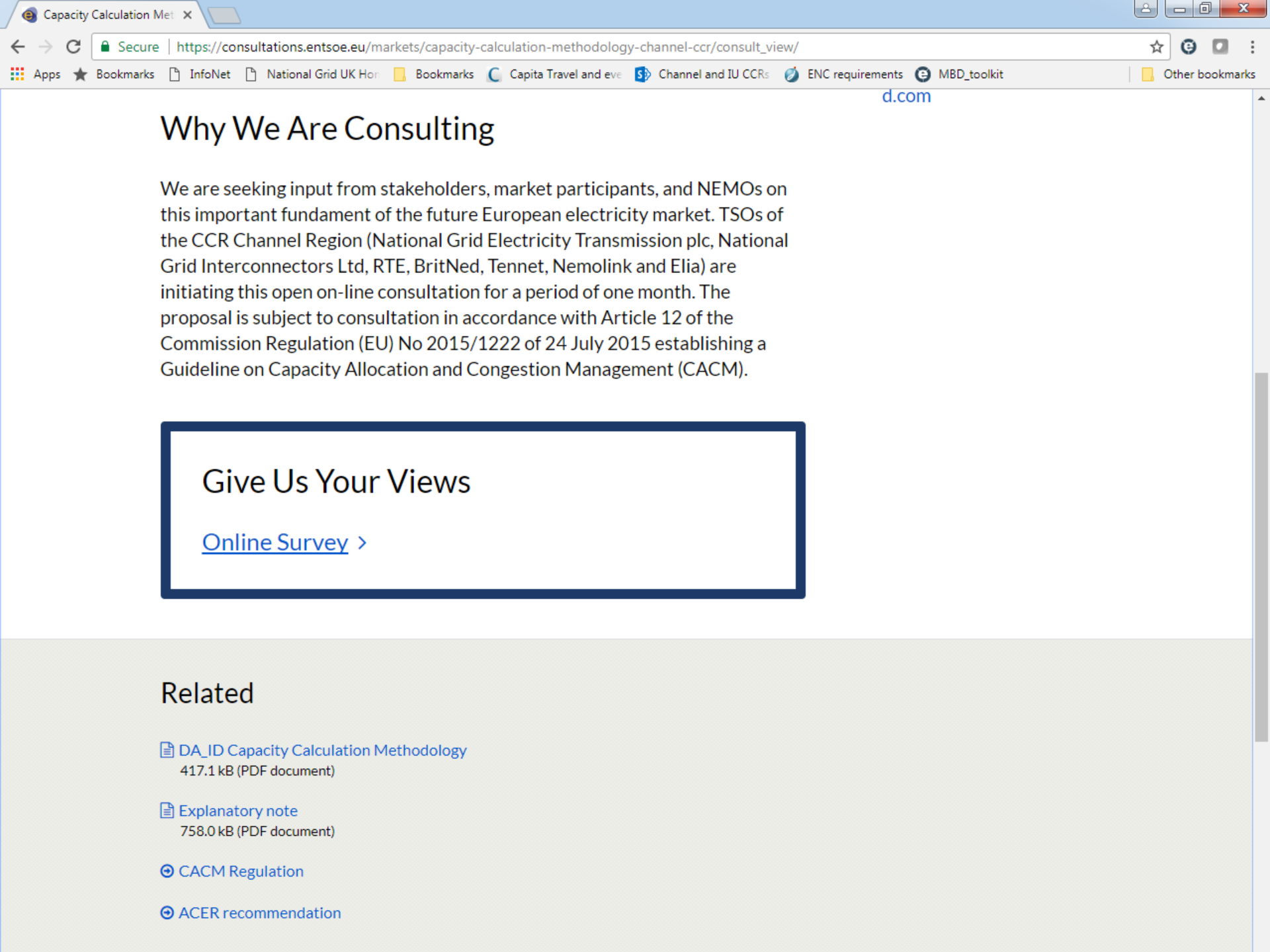
This consultation concerns the regional TSO proposal for the Capacity Calculation Methodology for the Channel Capacity Calculation Regions (CCR), in accordance with Article 20 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management. This proposal covers the Capacity Calculation Methodology for both the Day-ahead and Intraday timeframes for the Channel CCR.

Closes 31 Jul 2017
Opened 23 Jun 2017

Contact
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Why We Are Consulting

We are seeking input from stakeholders, market participants, and NEMOs on this important fundament of the future European electricity market. TSOs of the CCR Channel Region (National Grid Electricity Transmission plc, National Grid Interconnectors Ltd, RTE, BritNed, Tennet, Nemolink and Elia) are initiating this open on-line consultation for a period of one month. The



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Give Us Your Views

[Online Survey >](#)

Related

- [DA_ID Capacity Calculation Methodology](#)
417.1 kB (PDF document)
- [Explanatory note](#)
758.0 kB (PDF document)
- [CACM Regulation](#)
- [ACER recommendation](#)

Consultation period

- Opened 23 Jun 2017
- **Closes 31 Jul 2017**

https://consultations.entsoe.eu/markets/capacity-calculation-methodology-channel-ccr/consult_view/

Give Us Your Views

[Online Survey >](#)

Channel DA/ID CCM concepts in a nutshell

General :

- Coordinated net transmission capacity (**CNTC**) approach
 - NTC shall be computed for each interconnector and for each hour of the day
- Processes in 3 phases
 - Input gathering phase
 - Qualification
 - Validation
- Role & Responsibilities
 - **TSOs** to provide inputs , validate the results and send the NTCs for allocation
 - **RSCs** shall operate as **CCC** to merge the CGMs, perform qualification and consolidate results after validation

Channel DA/ID CCM concepts in a nutshell

- Rules for the provision of inputs shall be fully consistent with the other regions where Channel TSOs are involved
 - **IGMs/CGMs and CRAC** file developed and exchanged according to **ENTSOE CGMES/CGMA principles**
 - CNEC selection, Fmax, FRM, GSK fully **consistent with principles** in other **CCR regions** where some Channel TSOs are involved (CORE,...)
 - **External constraint** may be used to cover system **limitations other than flow congestions** (voltage, frequency stability)
 - **Remedial actions** allow considering preventive and/or curative application and may consist of topology change, PST tap change and generation shift
 - **Maximum Permanent Technical Capacity (MPTC)** shall be provided for each interconnector

Channel DA/ID CCM concepts in a nutshell

- Qualification phase
 - Assessment of **full channel import and full channel export** (i.e. all channel interconnectors are either operated at their MPTC simultaneously in export or simultaneously in import)
 - Based on **Remedial Action Optimizer** (RAO) aiming at securing the system
 - **Dichotomy** shall be applied to determine the maximum full channel import/export with system secured after RAO
 - Dichotomy shall apply **reduction** only on interconnectors connected to the bidding zone where is located the limiting CNEC
 - **Firmness principle** : final NTCs shall always be at minimum equal to the already allocated capacity on each interconnector
 - Assessment shall be performed on a predefined **maximum number of timestamps with a minimum of 2**. The day shall be split in periods equal to the number of computed timestamp and result of reference timestamp of a period shall be applied on non-computed timestamps of the same period

Channel DA/ID CCM concepts in a nutshell

- Validation
 - **Deemed acceptance** principle
 - TSOs may reject proposed NTCs in case of **unforeseen event**. The reduction of the proposed capacities has to be monitored, based at minimum with an identification of the limiting CNEC and the explanation of the unforeseen event
- Fallback
 - In case the CCC cannot compute NTCs, the **MPTC** of each interconnector shall be used, subject to TSOs' validation

Channel DA/ID CCM concepts in a nutshell

- DA specificities

- Interconnector maximum capacity (MPTC) shall only be potentially reduced in case **specific outage in a bidding zone** to which the interconnector is connected, **with significant impact on that interconnector**
- **Standard Hybrid Coupling:** advanced hybrid coupling will be investigated as potential target solution in the second stage
- Provision of data and merging of IGMs shall be done in **D-2** in a consistent way and time with other regions
- Provision of final NTCs shall be done prior to the **DAFD (DA Firmness Deadline)**

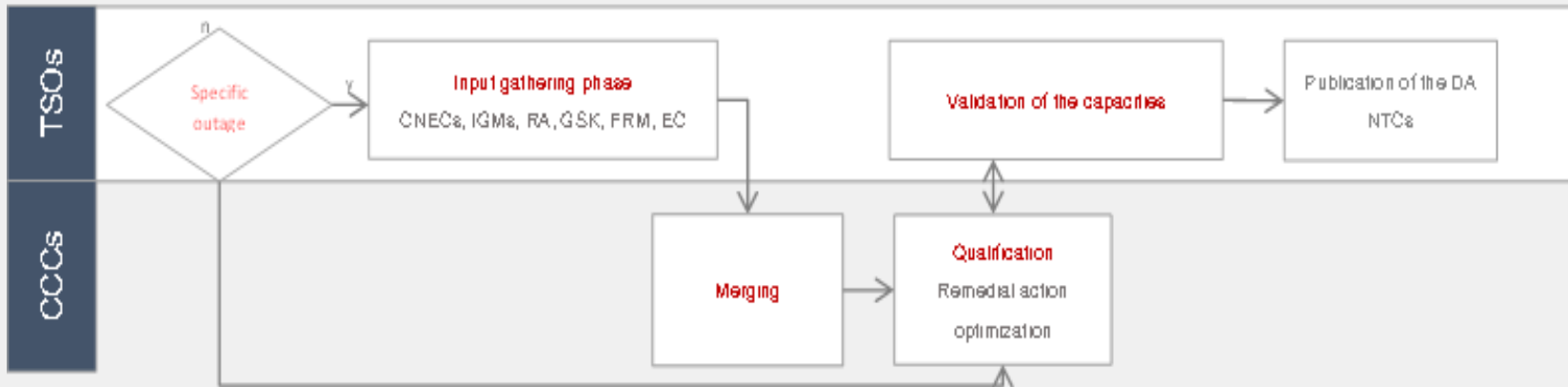
- ID specificities

- **One computation** will be done based on **DA CGMs**. Additional re-computation will be assessed later based on availability and quality of ID IGMs

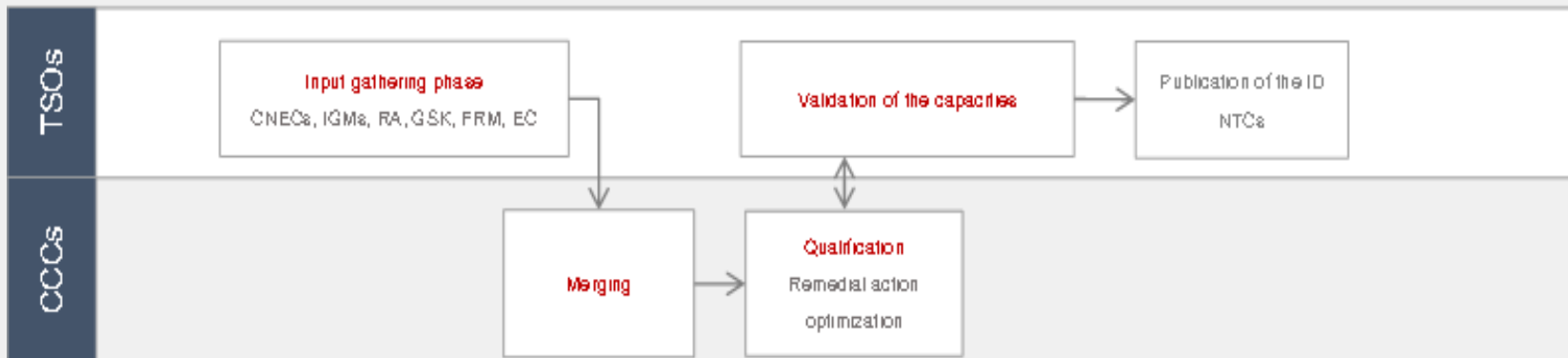
Day-ahead & Intraday cross-zonal capacity calculation

High level processes

Day-ahead

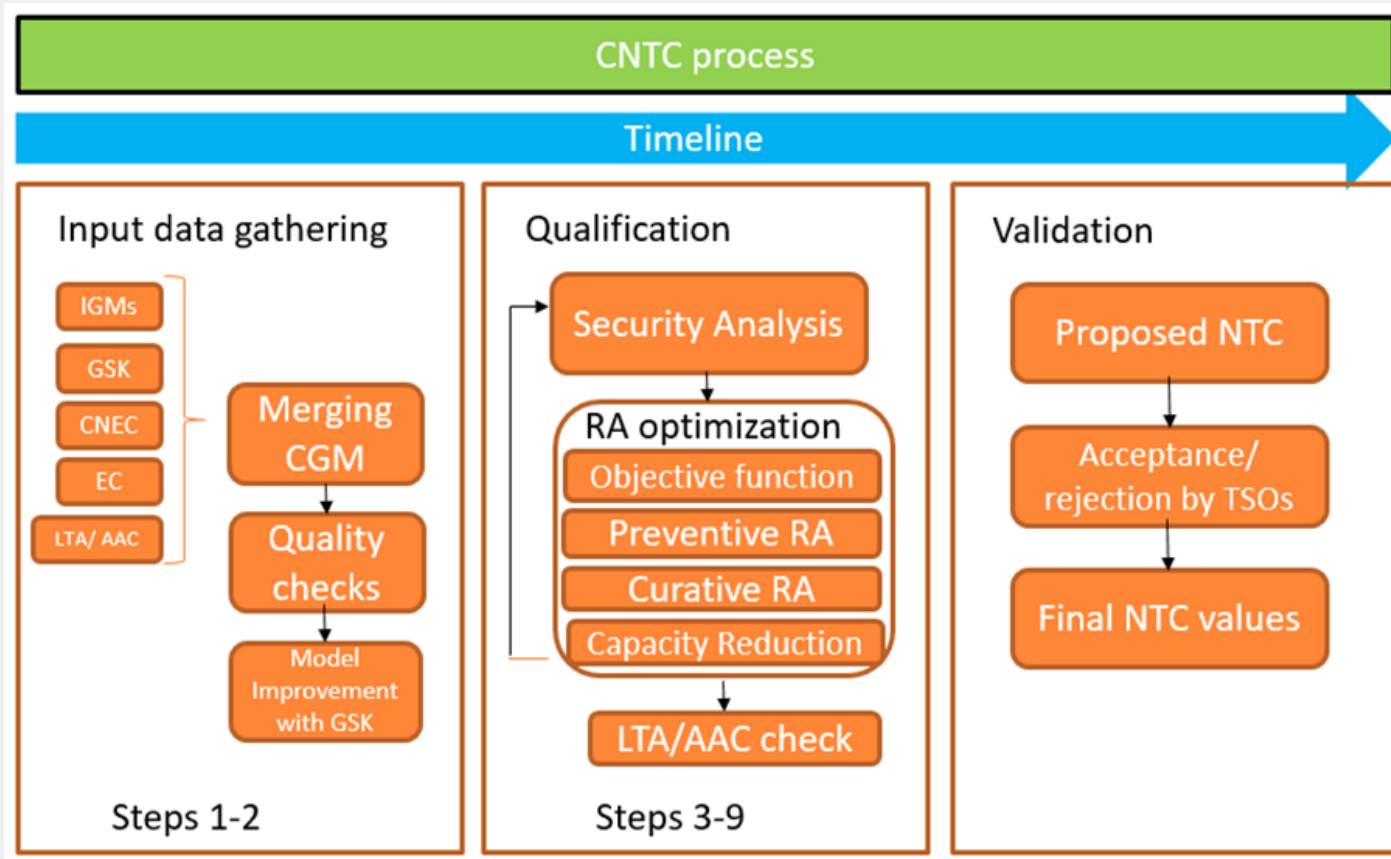


Intraday

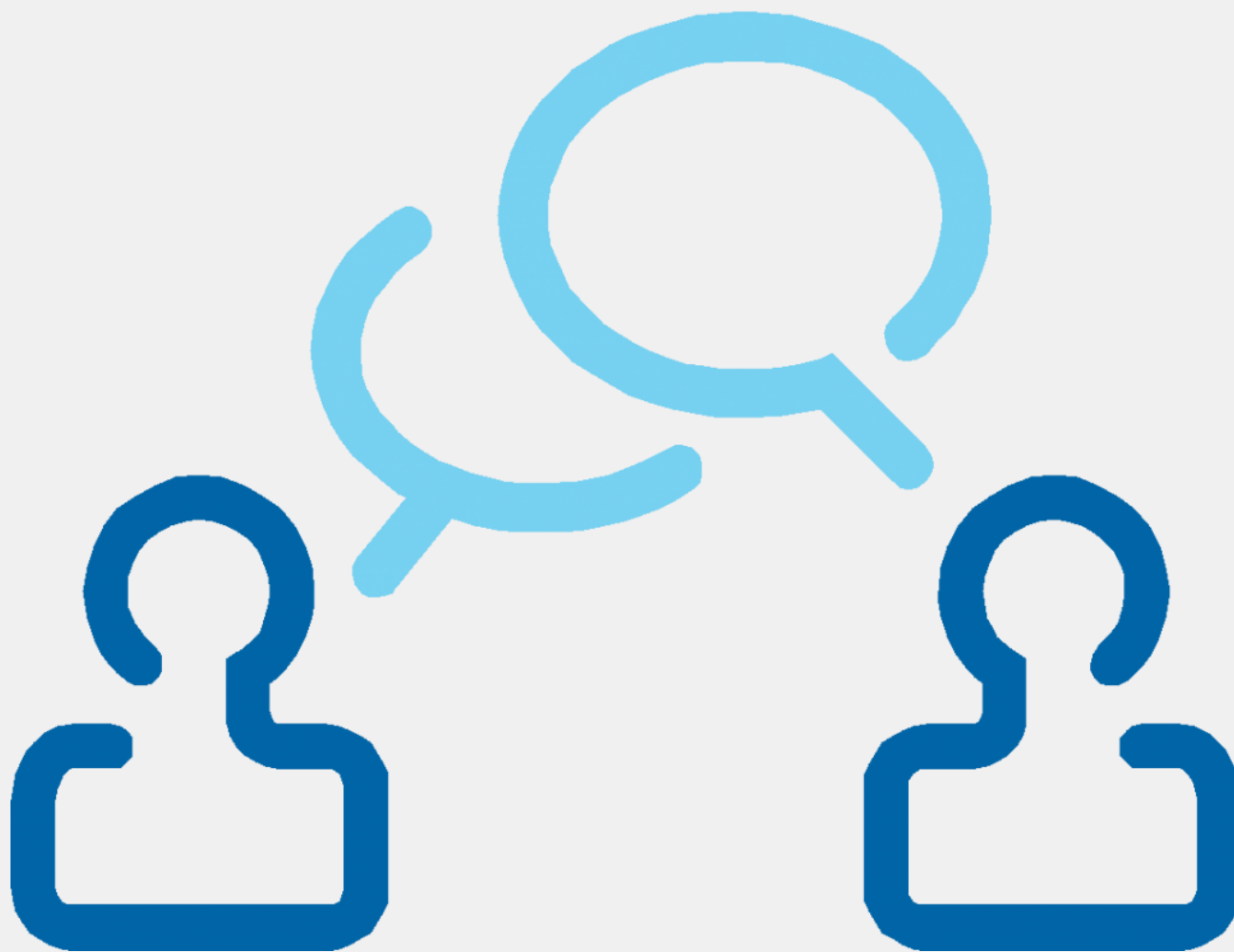


Day-ahead & Intraday cross-zonal capacity calculation

CNTC process overview

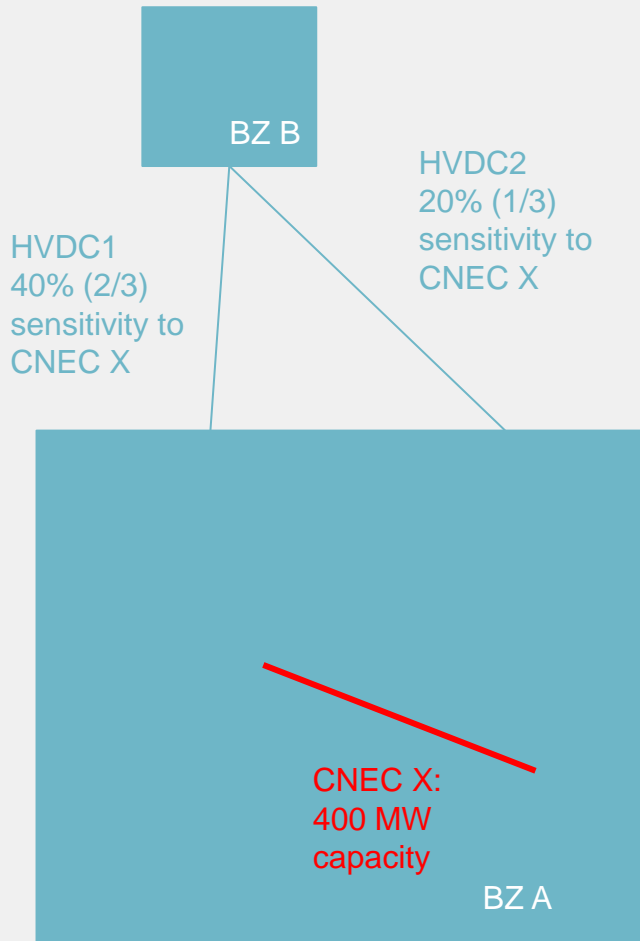


Feedback & questions



Annex

Reduction if multiple interco's on BZ border



Suppose two 1000 MW HVDC interconnectors on the bidding zone border between BZ A and BZ B

CNEC X having 400 MW capacity

The influence of 100 MW export over resp HVDC1 and HVDC2 on flows on the CNEC X is as follows:

- HVDC1: +40 MW of flow over CNEC X (40% sensitivity)
- HVDC2: +20 MW of flow over CNEC X (20% sensitivity)

2000 MW of export between BZ A and BZ B would create 600 MW flow over CNEC X, whereas only 400 MW is available

The DA/ID CCM then foresees following reduction proportional to the sensitivities of HVDC1 and HVDC2 to CNEC X:

- Proportion of reduction HVDC1 = $\frac{\%HVDC1}{\%HVDC1 + \%HVDC2} = \frac{1}{3} \rightarrow$ restriction to 600 MW export (400 MW reduction)
- Proportion of reduction HVDC2 = $\frac{\%HVDC2}{\%HVDC1 + \%HVDC2} = \frac{2}{3} \rightarrow$ restriction to 800 MW export (200 MW reduction)

Hence the reduction on HVDC1 is double as high as the reduction on HVDC2 given the double as high sensitivity to CNEC X

Please note that for the day-ahead timeframe a reduction could only occur in case of a planned or unplanned outage in the grid

3. Assignment of TSO responsibilities under TSOG

Leonardo Costa

Ofgem

Multiple TSO clause on SO Guideline

Leonardo Costa
20/07/17

ofgem

Background

- The [guideline on electricity transmission system operation](#) (SOGL/TSOOG) is expected to be published by the European Commission and come into force shortly
- It sets out binding rules on the secure operation of the interconnected transmission system in real time across the EU

Multiple TSO clause

- Article 2(3) of SOGL allows a Member State to assign TSO responsibilities between them if one does not have a function relevant to one or more of the obligations
- Ofgem is leading this assessment for GB
 - In September 2016, we consulted stakeholders on our [minded to position](#) assignment of TSO
 - We received six responses to our consultation

Changes to our minded to position

Obligations removed from SO

- A.112 (5,6) - Coherence of schedules
- A.110(2, 3, 4) - Establishment of scheduling processes
- A.113(1).a - Provision of information to other TSOs

Obligations added to the TOs

- A.58(1).b - TSO to establish a training program for its employees in charge of operational planning

Obligations added to the IC TOs

- A.67(1) - Year-ahead common grid models
- A.110(1, 5, 6) - Establishment of scheduling processes
- A.110(1) - Establishment of scheduling processes
- A.112 (1-3) - Coherence of schedules
- A.113 (1).a - Provision of information to other TSOs

Next steps

Publish decision once
Guideline enters into
force

Amend TSOs licences
throughout 2017/18
to make enforcement
clear and transparent

Ofgem is the Office of Gas and Electricity Markets.

Our priority is to protect and to make a positive difference for all energy consumers. We work to promote value for money, security of supply and sustainability for present and future generations. We do this through the supervision and development of markets, regulation and the delivery of government schemes.

We work effectively with, but independently of, government, the energy industry and other stakeholders. We do so within a legal framework determined by the UK government and the European Union.

4. TSOG Update

Fergus Healy and James Bradley
National Grid

TSOG actions
National Grid Update – July17



20th July 2017
James Bradley

- During the June JESG meeting a number of questions and queries were put to National Grid concerning the interpretation of articles 2, 28, 56 and 57 of TSOG (also known as SOGL) with regards Entry-into-Force and whether the obligations differ from those in the existing GB network codes. The query sought clarity in terms of who the articles apply to (Significant Grid Users), and what is required to be undertaken.
- We will explore this more fully in the proceeding slides but in summary:
 - It is National Grid's interpretation that the SOGL does not require any action or change of process or any specific action at EIF relating to these articles in order for parties to be compliant.
 - Article 28 obligations to provide equipment performance data is already fulfilled by the connection and compliance testing obligations of the Grid Code and Distribution Code.
 - Articles 56 and 57 place the same obligations on the same parties as do the Grid Code and Distribution Code today.
 - The connection and compliance testing procedures in GB are clearly laid-out on the websites of TSOs and DSOs (with dedicated customer liaison teams), which meets the 57(2)&(3) obligations.

TSOG Article 2

Article 2 - Scope

1. The rules and requirements set out in this Regulation shall apply to the following SGUs:

- (a) existing and new power generating modules that are, or would be, classified as type B, C and D in accordance with the criteria set out in Article 5 of Commission Regulation No (EU) 2016/631;3
- (b) existing and new transmission-connected demand facilities;
- (c) existing and new transmission-connected closed distribution systems;
- (d) existing and new demand facilities, closed distribution systems and third parties if they provide demand response directly to the TSO in accordance with the criteria in Article 27 of Commission Regulation No (EU) 2016/1388;4
- (e) providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve in accordance with Title 8 of Part IV of this Regulation; and
- (f) existing and new high voltage direct current ('HVDC') systems in accordance with the criteria in Article 3(1) of Commission Regulation No (EU)2016/1447.5

- Article 2 sets out the definition of a [Significant Grid User](#) from the perspective of the SOGL relative to the context of this regulation. It does not set forth any obligations or specify any actions on its own, but rather is referenced and used by other articles throughout SOGL. Articles referencing this one, often restrict or further hone the definition of the SGU as applicable to the obligation being set for there, (e.g. article 28 on the next slide). SOGL Article 2 builds upon referenced definitions found in the European connection codes RfG; DCC and HVDC.
- The SGU obligations relate to the parties with equipment connected at the transmission level and all parties which provide despatchable services whether at distribution or transmission level.
- An SGU in SOGL includes existing connections and new connections (relative to when RfG, DCC and HVDC regulations came into force) and covers Generation bands from B to D as defined by RfG obligations; Demand and HVDC. *Sub-item (e) covers aggregated units as well as services provided by units across an interconnector via exchange agreements with other TSOs. The technical delivery into GB via sharing and exchange is from the connected HVDC system, which may for active power services and depending on the design and nature of the exchange agreement require the SGU to mirror and align with services being delivered over the interconnector.*

TSOG – Article 28

Article 28

Obligations of SGUs concerning voltage control and reactive power management in system operation

1. By 3 months after entry into force of this Regulation, all SGUs which are transmission-connected power generating modules not subject to Article 16 of Commission Regulation No (EU) 2016/631, or which are HVDC systems not subject to Article 18 of Commission Regulation No (EU) 2016/1447, shall inform their TSO about their capabilities compared to the voltage requirements in Article 16 of Commission Regulation No (EU) 2016/631 or in Article 18 of Commission Regulation No (EU) 2016/1447, declaring their voltage capabilities and the time they can withstand without disconnection.

2. SGUs which are demand facilities subject to the requirements of Article 3 of Commission Regulation No (EU) 2016/1388 shall not disconnect due to a disturbance within the voltage ranges referred to in Article 27. By 3 months after entry into force of this Regulation, SGUs which are transmission-connected demand facilities and which are not subject to Article 3 of Commission Regulation No (EU)

2016/1388 shall inform their TSO about their capabilities in relation to the voltage requirements defined in Annex II of Commission Regulation No (EU) 2016/1388 declaring their voltage capabilities and the time they can withstand without disconnection.

3. Each SGU which is a transmission-connected demand facility shall maintain the reactive power setpoints, power factor ranges and voltage setpoints for voltage control in the range agreed with its TSO in accordance with Article 27.

- Grid Voltage Variation plant obligations
- Article 28 is an obligation for existing SGUs and DSOs connected to a Transmission system. The obligation set out in the code is for these parties to inform their connecting Transmission company of their plants' behaviour relative to Grid Voltage Variations (see also Grid Code CC.6.1.4) if the behaviour differs from those set out in the referenced articles of the connection codes (RfG; DCC; HVDC).
- **This article is an Entry into Force + 3 month obligation. National Grid interprets that the obligation to 'inform their TSOs' of plant's behaviour under varying grid voltage conditions as already being fulfilled by the existing Grid Code and Distribution Code procedures pertaining to connection and compliance. Provision of data under these existing code obligations in GB fulfils this requirement for existing certified plant, at the EIF+3months point. Where plant and equipment changes are made or after failure the process of informing, retesting and certification needs to take place as laid out in GB codes.**
- Specific to the question raised by JESG – this obligation does apply to HVDC and Demand installations but this is not a change from the present situation.

TSOG – Article 56

Chapter 2

Operational testing

Article 56

Purpose and responsibilities

1. Each TSO and each transmission-connected DSO or SGU may perform operational testing respectively of its transmission system elements and of their facilities under simulated operational conditions and for a limited period of time. When doing so, they shall provide notification in due time and prior to the test launch and shall minimise the effect on real-time system operation. The operational testing shall aim at providing:
 - (a) proof of compliance with all relevant technical and organisational operational provisions of this Regulation for a new transmission system element at its first entry into operation;
 - (b) proof of compliance with all relevant technical and organisational operational provisions of this Regulation for a new facility of the SGU or of DSO at its first entry into operation;
 - (c) proof of compliance with all relevant technical and organisational operational provisions of this Regulation upon any change of a transmission system element or a facility of the SGU or of the DSO, which is relevant for system operation;
 - (d) assessment of possible negative effects of a failure, short-circuit or other unplanned and unexpected incident in system operation, on the transmission system element, or on the facility of the SGU or of the DSO.

2. The results of the operational testing referred to in paragraph 1 shall be used by a TSO, DSO or a SGU, in order for:
 - (a) the TSO to ensure correct functioning of transmission system elements;
 - (b) the DSO and SGUs to ensure correct functioning of distribution systems and of the SGUs' facilities;
 - (c) the TSO, DSO or SGU to maintain existing and develop new operational practices;
 - (d) the TSO to ensure fulfilment of ancillary services;
 - (e) the TSO, DSO or SGU to acquire information about performance of transmission system elements and facilities of the SGUs and DSOs under any conditions and in compliance with all relevant operational provisions of this Regulation, in terms of:
 - (i) controlled application of frequency or voltage variations aimed at gathering information on transmission system and elements' behaviour; and
 - (ii) tests of operational practices in emergency state and restoration state.

[continued over the page]

TSOG – Article 56

Article 56 continued...

3. Each TSO shall ensure that operational testing does not endanger the operational security of its transmission system. Any operational testing may be postponed or interrupted due to unplanned system conditions, or due to safety of personnel, of the general public, of the plant or apparatus being tested, or of transmission system elements or of the facilities of the DSO or SGU.
4. In the event of degradation of the state of the transmission system in which the operational testing is performed, the TSO of that transmission system shall be entitled to interrupt the operational testing. If conducting a test affects another TSO and its system state is also degraded, the TSO or SGU or DSO conducting the test shall, upon being informed by the TSO concerned, immediately cease the operational test.
5. Each TSO shall ensure that the results of relevant operational tests carried out together with all related analyses are:
 - (a) incorporated into the training and certification process of the employees in charge of real-time operation;
 - (b) used as inputs to the research and development process of ENTSO for Electricity; and
 - (c) used to improve operational practices including also those in emergency and restoration state.

■ Compliance testing

- Article 56 relates to compliance and connection testing of transmission elements and can be requested by the TSO (SO or TO), DSO or SGU. The processes relate primarily to the CC and CP elements in the grid code but also to OC5. The obligations apply to Transmission Connected Generation, Demand Connections and HVDC.
- **NGET does not see any requirement for the GB network codes to be amended in order to meet this requirement, therefore existing GB processes compliant with the Grid Code and the results from these tests remain the principle means of discharging this obligation. NGET is satisfied that its compliance and connection processes align with this obligation. Other procedures in relation to connections between other network operators and SGUs that are compliant with existing GB codes should also remain so under SOGL.**
- Specific to the question raised by JESG – this obligation does apply to HVDC and Demand installations but this is not a change from the present situation.

TSOG – Article 57 (1)

Article 57

Performing operational tests and analysis

1. Each TSO or DSO to which the SGU has a connection point retains the right to test a SGU's compliance with the requirements of this Regulation, the SGU's expected input or output and the SGU's contracted provision of ancillary services at any time throughout the lifetime of the facility. The procedure for those operational tests shall be notified to the SGU by the TSO or DSO in due time prior to the launch of the operational test.

- Compliance testing
- **Article 57 (1)** relates to compliance testing concerning equipment performance and impact to distribution or transmission grid security and relative to dispatchable services provided to the SO outlined in this code. Tests may be requested by the TSO (SO or connecting TO) or connecting DSO of any SGU according to the definition in Article 2: any existing or new Generation/Demand/HVDC type at transmission level and providers of redispatching services via aggregation or via an exchange/sharing arrangement (note see the last bullet).
- Article 57 aligns with current GB regulatory obligations. These obligations form part of the Connection CC & CP as well as the OC5 aspects of the grid code and DOC5 of the UK Distribution Code
- **NGET does not see any requirement for the GB network codes to be amended in order to meet this requirement, therefore existing GB processes compliant with the Grid Code and the results from these tests remain the principle means of discharging this obligation. NGET is satisfied that its compliance and connection processes align with this obligation. Other procedures in relation to connections between other network operators and SGUs that are compliant with existing GB codes should also remain so under SOGL.**
- Specific to the question raised by JESG – this obligation does apply to HVDC and Demand installations but this is not a change from the present situation.
- *Note for Sharing/Exchange: No specific additional technical testing is today foreseen as part of delivery of RR exchange (TERRE) but where in future a service carries specific technical obligations these will be communicated and then discharged through existing compliance procedures*

TSOG – Article 57 (2)&(3)

Article 57

Performing operational tests and analysis

2. The TSO or DSO to which the SGU has a connection point shall publish the list of information and documents to be provided as well as the requirements to be fulfilled by the SGU for operational testing of compliance. Such list shall cover at least the following information:

- (a) all documentation and equipment certificates to be provided by the SGU;
- (b) details of the technical data of the SGU facility with relevance for the system operation;
- (c) requirements for models for dynamic stability assessment; and
- (d) studies by the SGU demonstrating expected outcome of the dynamic stability assessment, where applicable.

3. Where applicable, each TSO or DSO shall publish the allocation of responsibilities of the SGU and of the TSO or DSO for operational testing of compliance

- Compliance testing
- **Article 57 (2)** relates to obligations on the TSOs and DSOs to publish the process and information requirements associated with testing procedures
- **Article 57(3)** relates to the obligations on the TSOs and DSOs to publish the roles and responsibilities of various parties throughout the testing activities.
- **Procedures relative to connection testing and operational service testing are also clearly laid out on compliance areas of the TSO and DSO websites which fulfil the obligation to define and publish obligations.**
 - An examples being <http://www2.nationalgrid.com/UK/Services/Electricity-connections/Compliance/>
 - <http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=5627>

5. Actions log

Heena Chauhan

JESG Technical Secretary

JESG Standing items

ID	Topic	Lead Party
S1	Continue to review the membership of the JESG and engage additional industry parties where appropriate.	JESG Chair
S2	Prepare a commentary / comparison document between the Network Code and the existing GB arrangements at appropriate stages in the Code development for each Network Code.	NGET /Ofgem / DECC
S3	Share any intelligence about how other member states are approaching demonstrating compliance through information gained from other government departments, regulators or parent companies	DECC / Ofgem / Industry parties with European parent companies
S4	Stakeholders are requested to provide specific examples of inconsistent or problematic definitions in the Network Codes to Ofgem (natasha.z.smith@ofgem.gov.uk)	All Stakeholders
S5	Cross GB Codes ENC Changes Coordination. Step 1 engage Code Administrators, highlight to code leads	Code Administrators and JESG Technical Secretary

JESG Open Actions

ID	Topic	Lead Party	Status	Update
60	Add CACM methodologies to NGET website	National Grid – Code Administrator	In progress	Keep CACM related items in one area with useful links to other pages
63	NGET to speak with ENA around GB Implementation plan and validation of modification packages	NGET	Ongoing	Update will be provided at a future JESG
67	Confirm if the XBID User Group is still running and who the contact is for this group.	NGIC	Open	Go live will be Q1 2018.
68	HC to facilitate with EirGrid to attend a future meeting to provide an update on interconnectors	EirGrid	Open	
69	Ofgem to confirm what the enduring elements of HAR are at the next JESG, for example boiler plate conditions.	Ofgem	Open	
70	To send a link to the Code Administrators meeting minutes for inclusion in the weekly JESG update	Jemma Williams - ELEXON	Open	

6. Future Meeting Dates & Agenda Items

Heena Chauhan
JESG Technical Secretary

Future JESG Meetings (London)

- As always registration is required and will be opened through the JESG Weekly updates.
- Stakeholders are invited to put forward agenda items for the forthcoming JESG meetings:

Date	Proposed Agenda Items
Wednesday 23 August 2017 <i>(Edinburgh - venue TBC)</i>	
Thursday 21 September 2017	
Thursday 19 October 2017	
Thursday 23 November 2017	
Tuesday 12 December	

7. Stakeholder Representation

All

8. AOB

Lunch: 12:00

(Opportunity to network & further discussions)

