

Interconnector between France and Great Britain  
Methodology Statement for Determination of System-to-System Flow

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**1. Requirement for Methodology Statement**

- 1.1 This Methodology Statement is produced for the purposes of paragraph 7.5 of Section R of the Balancing and Settlement Code (BSC).

**2. Objective of Methodology**

- 2.1 The methodology given in section 3 below describes the basis on which the system-to-system flow will be determined for the purposes of paragraph 7.5.3 of Section R of the BSC. This description is supported by the information on implementation of the methodology set out in section 4.

**3. Methodology**

- 3.1 The system-to-system flow will be determined from instructions issued by the System Operator (NGESO) or the Externally Interconnected System Operator (RTE SA), or issued automatically by equipment armed by National Grid Interconnectors Ltd (NGIL) or RTE SA to respond to events on the Total System or the External System. The acceptance by the Transmission Company of any Bid or Offer submitted by an Interconnector User in respect of an Interconnector BM Unit does not constitute an Interconnector instruction in this Methodology.
- 3.2 The system-to-system flow will be determined in manner consistent with paragraph 7.5 of Section R of the BSC. Accordingly any system-to-system flow on the Interconnector will not affect, or form part of, the Interconnector Scheduled Transfer (IST). If the difference between the IST and the physical capability of the Interconnector is reduced after an Interconnector instruction has been issued the system-to-system flow may be reduced as necessary.

**4. Implementation**

- 4.1 The implementation of this methodology is agreed between NGESO and RTE SA. For information purposes an outline of the processes used to implement this methodology is given in Appendix A. However NGESO recognises that any material changes to the way in which the methodology is implemented (as described in Appendix A) will require a revised Statement to be resubmitted to the Authority for further approval.

**5. Definitions**

- 5.1 Unless stated otherwise, terms and expressions used in this methodology statement shall have the same meanings given to them in the BSC.

## **Appendix A**

### **Operational Process for Determining the System-System Flow on the France-England Interconnector (from 29 March 2004)**

#### ***A1 Calculate the Interconnector Scheduled Transfer (IST)***

The Interconnector Scheduled Transfer is based on Mid Channel Nominations (MCN) submitted by Interconnector Users in accordance with the IFA Access Rules and associated IFA User Agreements. Each user's aggregate MCN data will be consistent with Physical Notifications submitted to NGESO and must be within the Net Transfer Capacity (NTC) as defined in the Operating Protocol.

#### ***A2 Calculate the Scheduled Mid-Channel Reference Program (SMCRP)***

The Scheduled Mid Channel Reference Program is based on the same MCN data that is used to determine the IST. The IFA facilitates multiple Users on the Interconnector, for this reason the dynamic characteristic of the Interconnector is not fully included in the MCN data submitted. The SMCRP will, as far as possible, give the same energy transfer in each trading period as the MCN data used to determine the IST, within the agreed dynamic characteristic for the Interconnector. The effect on System-System Flows caused by intraday capability on the IFA is included in Section A7 of this Appendix. Section A7 refers to day-ahead Scheduled Mid Channel Reference Programme (SMCRP), intraday SMCRPs and the Final Scheduled Mid Channel Reference Programme (FSMCRP).

#### ***A3 Variations to the FSMCRP***

After the FSMCRP has been agreed it may be necessary to vary the Mid-Channel Reference Program (MCRP). When this occurs for reasons other than those specified in paragraph 7 of section R of the BSC this will constitute a system-to-system flow. These services include; 1) Cross Border Balancing which allows both NGESO and RTE SA to vary the flow of active power on the link in either direction, 2) Emergency Assistance service, is procured close to real time (within 15 minutes) and allows NGESO and RTE SA to increase flow onto their respective systems or reduce flow away their respective systems, 3) Bi-pole Intertrip which facilitate instant reduction in delivery or removal of energy to NGESO and 4) High Frequency Relay which results in an instantaneous removal of power when flow is toward England, 5) Ramp Management variations which may be used to minimise the impact of MCRP ramps on frequency control.

#### ***A4 Volume of System-to-System Changes***

Where the instruction to change the MCRP has been given for a reason that will give rise to a system-to system flow then the change to the MCRP will be a system-to-

system change. The volume associated with a system-to-system change will be calculated from the previous MCRP as described below:

Consider the simple FSMCRP shown in figure 1.

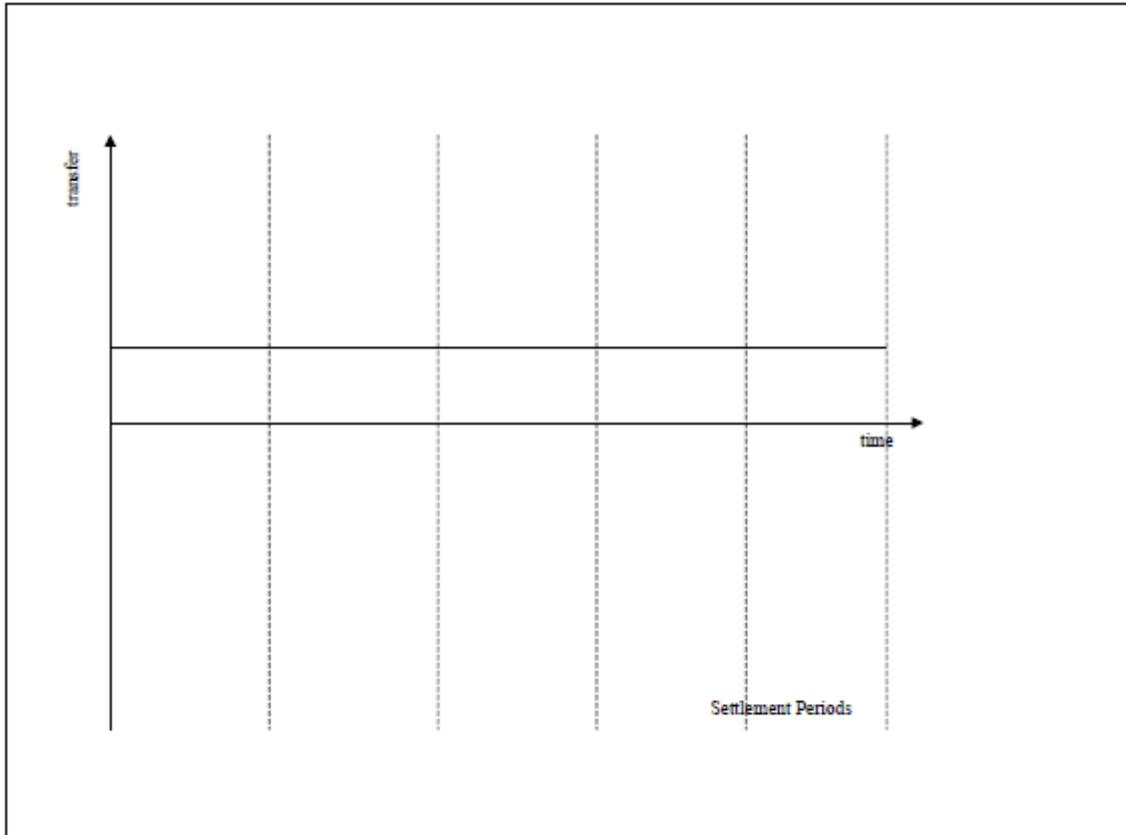
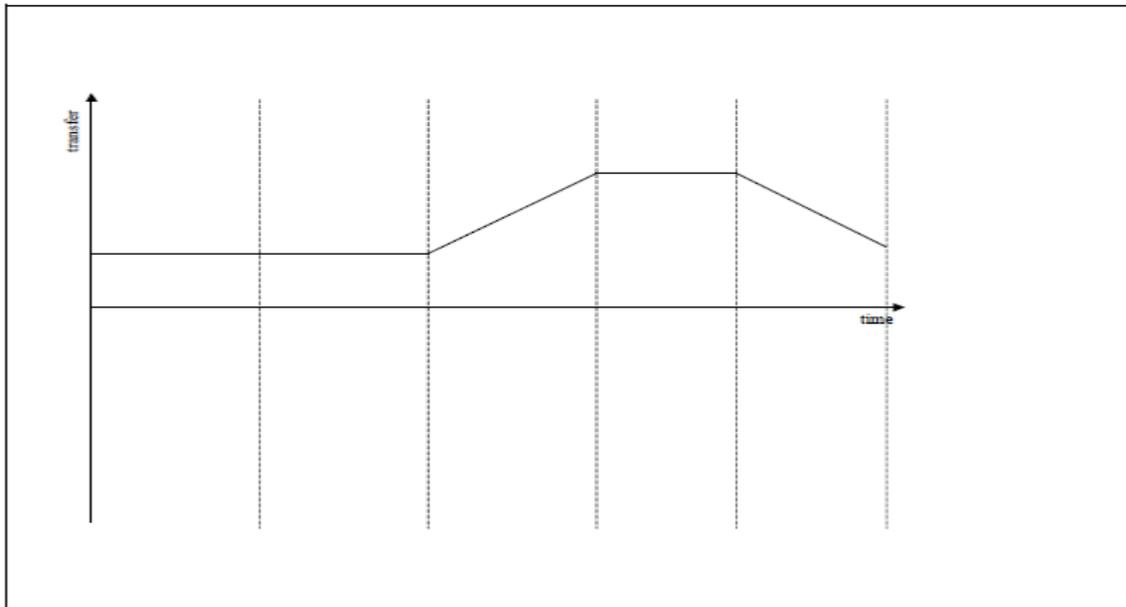


Figure 1 Final Mid Channel Reference Programme

NGESO or RTE SA makes a request to vary the MCRP (this request being accepted by the other party) or consequential to the automatic initiation of equipment armed by NGIL and/or RTE SA to respond to events on the Total System or the External

System.



**Figure 2 MCRP revised for system-to-system flow**

Labelling the FSMCRP as  $MCRP_0$ , and the revised MCRP as  $MCRP_1$  and any subsequent revisions to the MCRP are numbered in sequence then the change in instructed transfer volume is calculated as the difference between the previous and revised programmes ( $MCRP_{n-1}$  and  $MCRP_n$ ) for the changes to the MCRP.

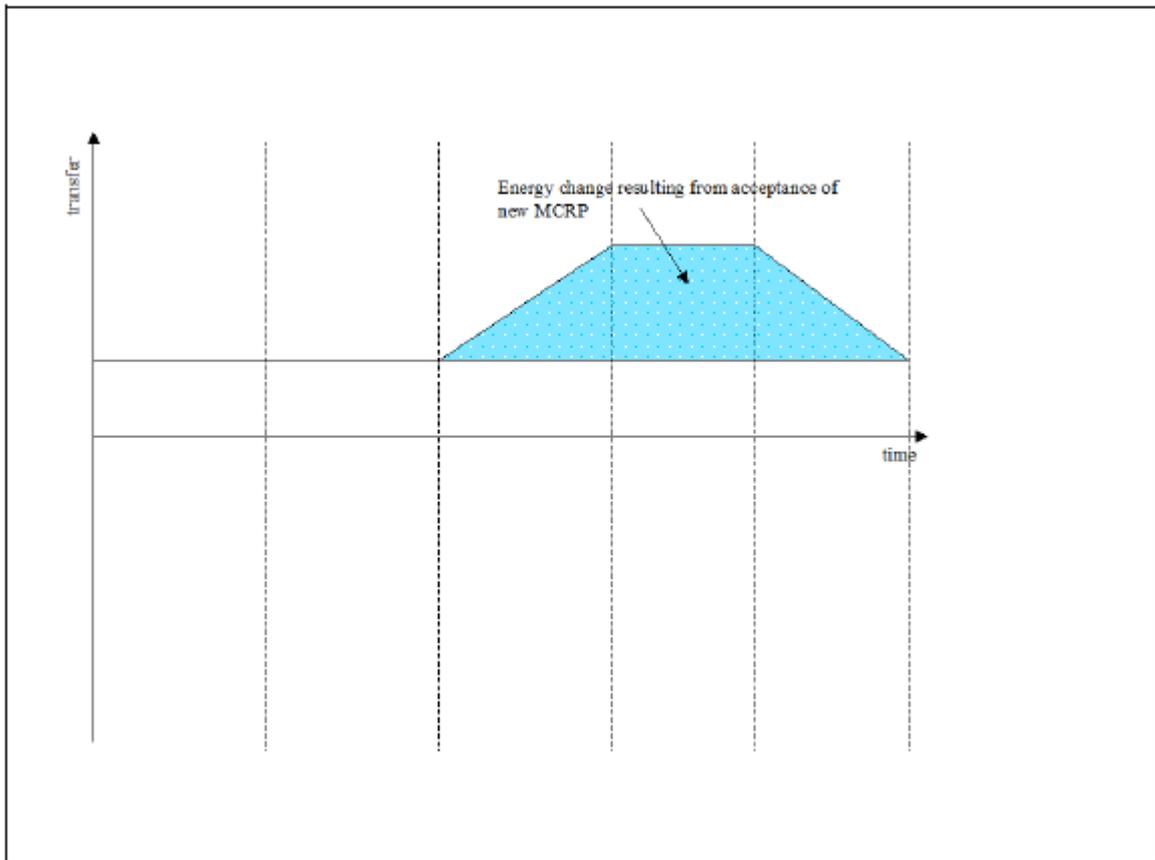
The change in the instructed transfer in settlement period  $j$ , caused by acceptance of the new Mid Channel Reference Programme  $n$  is given by:

$$\Delta T_{n,j} = \int_0^{30} \max(-IC_j(t), \min(IC_j(t), MCRP_{n,j}(t))) - \max(-IC_j(t), \min(IC_j(t), MCRP_{n-1,j}(t))) dt$$

where

- $MCRP_{n,j}(t)$  Is the instantaneous transfer  $t$  minutes from the start of settlement period  $j$  for Mid Channel Reference Programme  $n$
- $\Delta T_{n,j}$  Is the change in transfer volume resulting from the acceptance of the revised MCRP ( $MCRP_n$ ) in settlement period  $j$
- $IC_j(t)$  Is the actual instantaneous interconnector mid channel capacity  $t$  minutes from the start of settlement period  $j$ . Such that the actual transfer is in the range  $\pm IC_j(t)$ .

This is shown graphically below:



**Figure 3: Change in instructed transfer volume arising from change in MCRP**

The total volume of system-to-system change ( $T_j$ ) will be the sum of all changes in instructed transfer volume arising due to system-to-system flows.

**A5 Volume of System-to-System Flow (SSF)**

The total volume of system-to-system change is calculated at Mid Channel. It is then adjusted for Interconnector Losses to determine the System-to-System Flow. This adjustment uses the Mid Channel Loss Factor (MCLF, currently 0.0117).

**A6 Metered Volume for Transmission Company Interconnector BM Units**

The system-to-system flow is calculated and the Metered Volume allocated to the Transmission Company Interconnector BM Units (TCIBMU) as shown below:

$$SSF = T_j * (1-x*MCLF)$$

Where  $x= 1$  if Net Flow across the Interconnector in the settlement period is France to England, else -1

If direction of SSF is from France to England

TCIBMU(Production) = SSF

TCIBMU(Consumption) = 0

If direction of SSF is from England to France

TCIBMU(Production) = 0

TCIBMU(Consumption) = SSF

## **A7 Revisions to Appendix A**

This appendix is provided for information purposes only. If material changes occur to the planned operational process for determining the system-to-system flow on the IFA Interconnector then this appendix will be revised accordingly.

### Revision No. 1 (effective from 29 March 2004)

Appendix A has been revised to take account of the introduction of intraday capability on the Anglo-French interconnector. With intraday capability on the IFA, there will be one day-ahead Scheduled Mid Channel Reference Programme (SMCRP) and between zero and five intraday SMCRPs. The most recent SMCRP produced which affects a particular settlement period is defined as the Final Scheduled Mid Channel Reference Programme (FSMCRP) and is the base against which System-System Flows (SSF) will be calculated.

### Revision No. 2 (effective from 1<sup>st</sup> April 2006)

Appendix A has been revised to take account of the name change of NGC to NGENSO (National Grid Electricity Transmission) with effect from 26<sup>th</sup> July 2005 and the name change of RTE to RTE SA (EDF Transport SA) with effect from 31<sup>st</sup> August 2005 when RTE was incorporated as a wholly owned subsidiary of Electricite de France and became a limited liability company.

### Revision No. 3 (effective from 14<sup>th</sup> August 2006)

Minor changes to reflect the new business separation arrangements introduced by the Energy Act 2004. In respect of the interconnector between England and France (IFA) a separate legal entity, NGIL is to be created to own and operate the IFA. This is effective from Monday 14<sup>th</sup> August 2006, where NGIL have received the Electricity Interconnector Licence to operate the IFA from this date.

### Revision No. 4 (effective from 1<sup>st</sup> April 2010)

The second paragraph under A1 Calculation of Interconnector Scheduled transfer (IST) from Appendix A has been removed. Since the implementation of the new Capacity Management System (CMS) there is now a single set of MCNs submitted to

both NGESO and RTE SA thereby negating the need for comparison between NGESO and RTE SA.

Revision No. 5 (effective from 22<sup>nd</sup> April 2010)

The paragraph under A3 has been modified to include a brief description of the services procured that fall within system-to-system flows.

Revision No. 6 (effective from 1<sup>st</sup> April 2011)

Insertion of the words “Each user’s aggregate...” and “..each MCN..” into the final sentence under A1 to add additional clarity and more accurately reflect IFA business processes.

Section A3 - replacement of the words “Constraint Management and Balancing” with “Cross Border Balancing” to reflect the service currently in place.

Revision No 7 (effective from 1st April 2019)

Section A6 - The inclusion of the impact of Net flow across the Interconnector on the volume calculation to add additional clarity and more accurately.

The acronyms of NGESO has been replaced with NGESO to reflect legal separation planned for 1 April 2019.

Revision No 8 (effective from 1st April 2020)

Section A1 - Removal of legacy term (‘Interconnector Capacity Entitlement’)

Section A7 - Minor revision of wording in preparation of multiple GB – France Interconnectors