

Moyle Interconnector between Northern Ireland and Great Britain
Methodology Statement for Determination of System-to-System Flow

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 Interconnector instructions issued by the System Operator (NGESO) or the Externally Interconnected System Operator (SONI – System Operator of Northern Ireland), or issued automatically by equipment armed by SONI 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 SONI. For information purposes an outline of the current plans 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 Moyle Interconnector (from April 2015)

A1 Calculate the Interconnector Scheduled Transfer (IST)

The Interconnector Scheduled Transfer is based on Moyle Nomination (MN) submitted by Interconnector Users in accordance with the Moyle Interconnector related sections of the Single Electricity Market (SEM) Trading and Settlement Code. MN data will be consistent with Physical Notifications submitted to NGESO by SONI acting on behalf of Interconnector Users under the Moyle Interconnector Framework Deed, and must be within the Interconnector Capacity Entitlement (ICE) assigned to the Interconnector Users and the Net Transfer Capacity (NTC) as defined in the Operating Protocol.

A2 Calculate the Scheduled Moyle Reference Program (MRP)

The Scheduled Moyle Reference Program is based on the same MN data that is used to determine the IST, subject to any Intraday Trading Limit(s) (ITL). The SEM facilitates multiple Users on the Interconnector, for this reason the dynamic characteristic of the Interconnector is not fully included in the MN data submitted. The SMRP will, as far as possible, give the same energy transfer in each trading period as the MN data used to determine the IST, within the agreed dynamic characteristic for the Interconnector.

The MRP is delivered to NGESO by 1200 day ahead and revised FSMRP's received at 1809 day ahead and on the day by 0940, after market closures.

The MRP will become firm 2 ½ hours before real time, becoming the Firm Moyle Reference Program (FMRP).

A3 Variations to the FMRP

After the FMRP has been agreed it may be necessary to vary it. 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 (which may for example be recorded as Emergency Assistance, Emergency Instruction, or Constraint, or Cross Border Balancing).

A4 Volume of System-to-System Changes

Where the instruction to change the FMRP has been given for a reason that will give rise to a system-to system flow then the change to the FMRP will be a system-to-system change. The volume associated with a system-to-system change will be calculated from the previous FMRP as described below:

Consider the simple FMRP shown in figure 1.

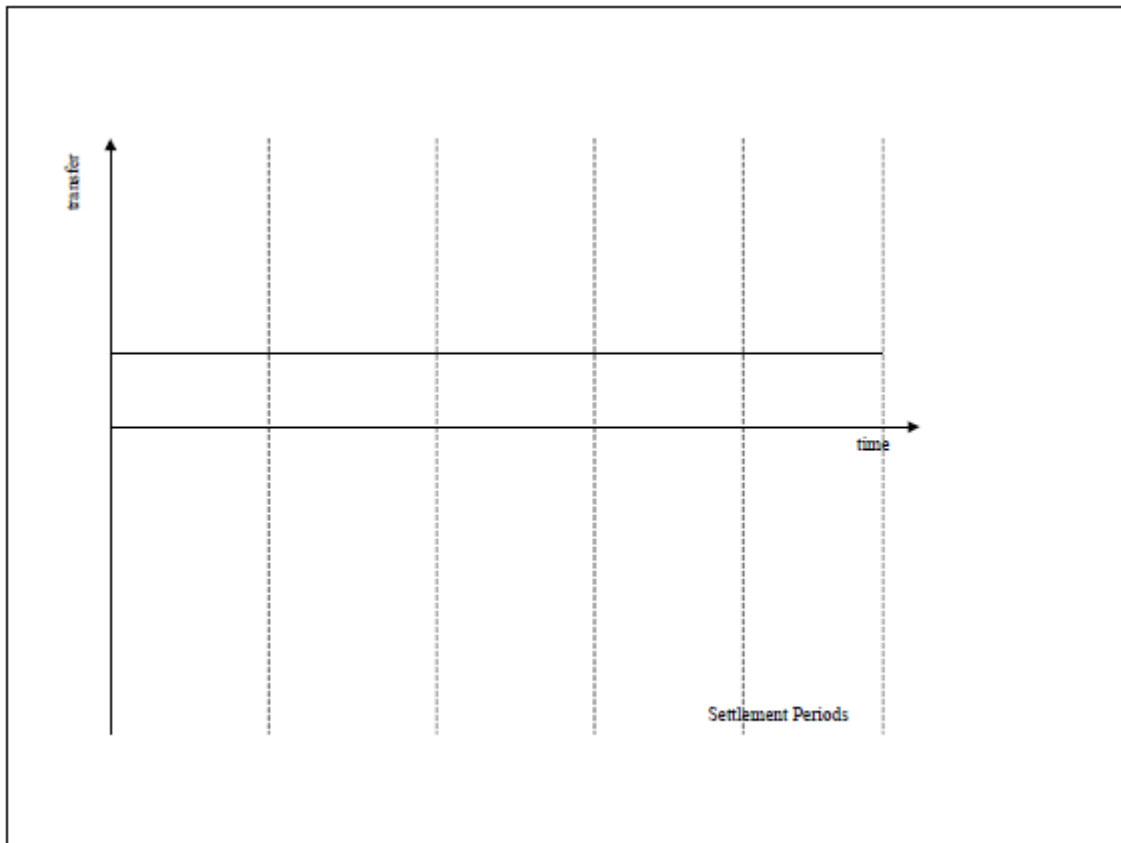


Figure 1 Firm Moyle Reference Programme

NGESO or SONI makes a request to vary the FMRP (this request being accepted by the other party) or issued automatically by equipment armed by SONI to respond to events on the Total System or the External System.

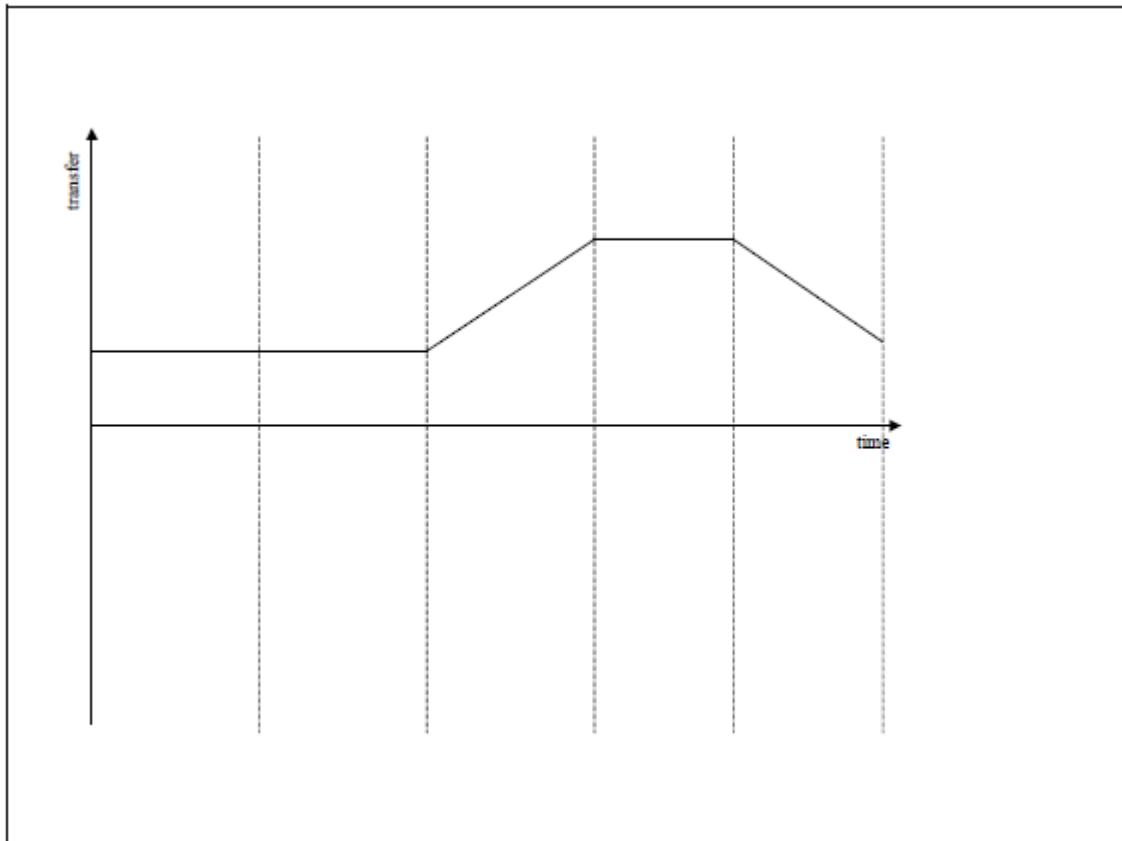


Figure 2 FMRP revised for system-to-system flow

Labelling the revised Reference Programme as $RP_{n,s}$ and the Reference Programme prior to revision as $RP_{(n-1),s}$ then the change in the instructed transfer per settlement period is calculated as the difference between the revised Reference Programme and the previous reference programme calculated each second /revision and summated over the settlement period as derived by the equation below:

$$T_{n,j} = \sum_{s,n,j} \left(\int_0^1 \max(ICMIN_s, \min(ICMAX_s, RP_{n,s})) - \max(ICMIN_s, \min(ICMAX_s, RP_{(n-1),s})) dt \right)$$

Where

$T_{n,j}$ Is the change in transfer volume resulting from the acceptance of the revised Reference programme in respect of settlement period j.

$ICMAX_s$ Is the import value in MW to Great Britain expressed as a positive value effective at second s.

$ICMIN_s$ Is the export value in MW from Great Britain expressed as a negative value effective at second s.

$RP_{n,s}$ Is the programmed instantaneous transfer as at second s for the reference programme n . A positive value denotes a flow from Ireland to Great Britain.

$RP_{(n-1),s}$ Is the programmed instantaneous transfer at second s for the reference programme immediately prior to reference programme n . A positive value denotes a flow from Ireland to Great Britain.

$\sum_{s,n,j}$ Sum over all seconds, and reference programme changes following the submission of the final reference programme, within settlement period j

This is shown graphically below:

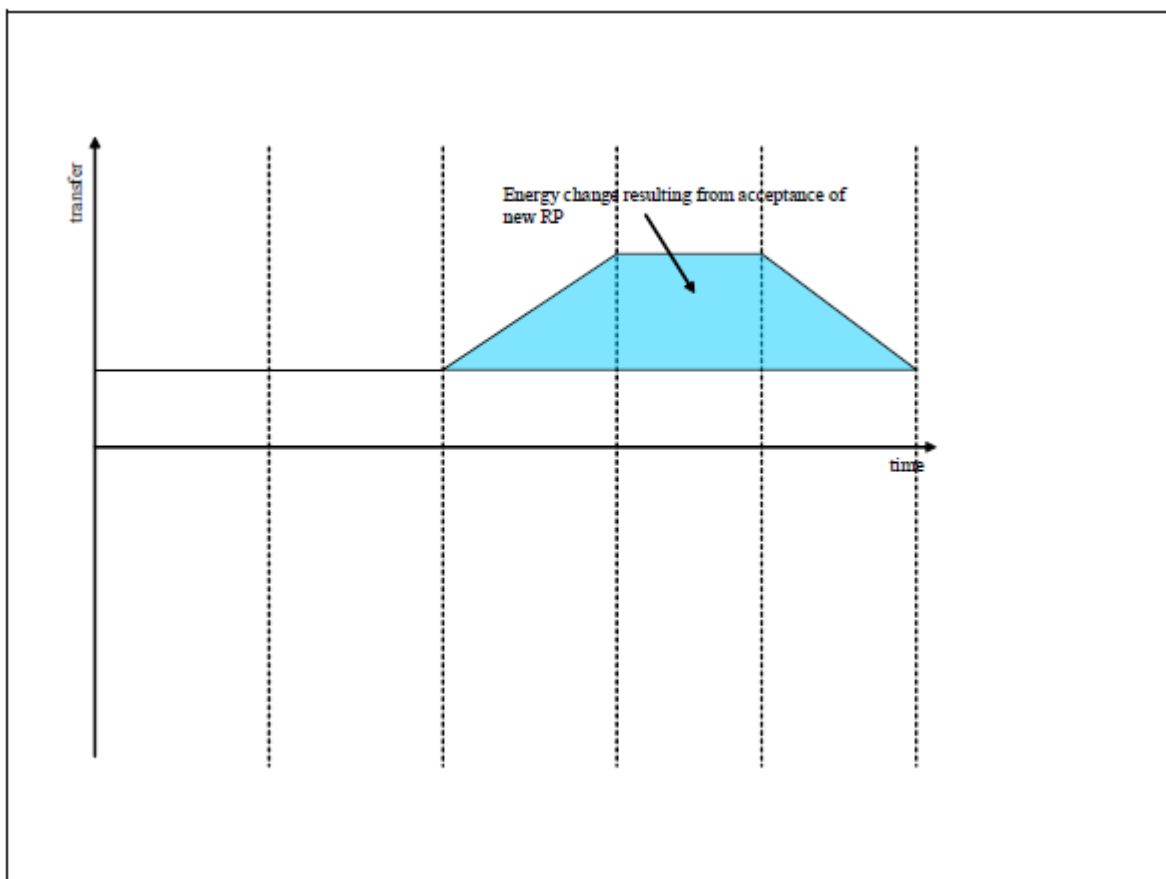


Figure 3: Change in instructed transfer volume arising from change in MRP

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 MRP and the total volume of system-to-system change are calculated at the Scottish end of the Moyle Interconnector. Hence interconnector losses have already

been accounted for in these values and no adjustments for interconnector losses are required.

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:

If direction of SSF is from NI to Scotland $SSF = T_j$

$TCIBMU(\text{Production}) = SSF$ $TCIBMU(\text{Consumption}) = 0$

If direction of SSF is from Scotland to NI $SSF = T_j$

$TCIBMU(\text{Production}) = 0$ $TCIBMU(\text{Consumption}) = SSF$

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 Moyle Interconnector then this appendix will be revised accordingly.

Revision No. 1 (effective from 1 April 2006)

Appendix A has been revised to take account of the name change of NGC to NGESO (National Grid Electricity Transmission) with effect from 26th July 2005.

Revision No. 2 (effective from 1st April 2007)

Minor change to reflect that Interconnector Instructions can also be initiated automatically by equipment armed by SONI.

Revision No. 3 (effective from 1st April 2009)

A minor change has been introduced to reflect the combined Northern Ireland and Republic of Ireland markets through the Single Electricity Market (SEM). A clarification paragraph on intraday capability has also been added to section A2, correcting the previous version that referenced IFA and section A7.

Revision No. 4 (effective from 1st April 2015)

Appendix A has been revised to take account of the alignment of the East West Interconnector and Moyle Interconnector contractual terms.

Revision No. 5 (effective from 1st April 2019)

Minor changes added to reflect Integrated Single Electricity Market changes that was undertaken on 01/10/18.

Section A4 - Standardised formulae to provide further clarity and more accurately.

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

Revision No. 6 (effective from 1st April 2020)

Minor change to title, to ensure consistency.