

Moyle Interconnector between Northern Ireland and Scotland

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 Transmission Company (NGET) 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 NGET and SONI. For information purposes an outline of the current plans to implement this methodology is given in Appendix A. However NGET 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 NGET 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 (SMRP)

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.

There will be one day-ahead Scheduled Moyle Reference Programme (SMRP), intraday revisions to which can be submitted up until 12 hours before real time at which point the SMRP is defined as the Final Scheduled Moyle Reference Programme (FSMRP) and is the base against which System-System Flows (SSF) will be calculated.

The FSMRP is delivered to NGET by 1200 day ahead, but can be varied up to 2 ½ hours ahead of real time by actions taken by SONI undertaking Power Exchange Trades in GB market.

A3 Variations to the FSMRP

After the FSMRP has been agreed it may be necessary to vary the Moyle Reference Program (MRP). 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 MRP has been given for a reason that will give rise to a system-to system flow then the change to the MRP will be a system-to-system change. The volume associated with a system-to-system change will be calculated from the previous MRP as described below:

Consider the simple FSMRP shown in figure 1.

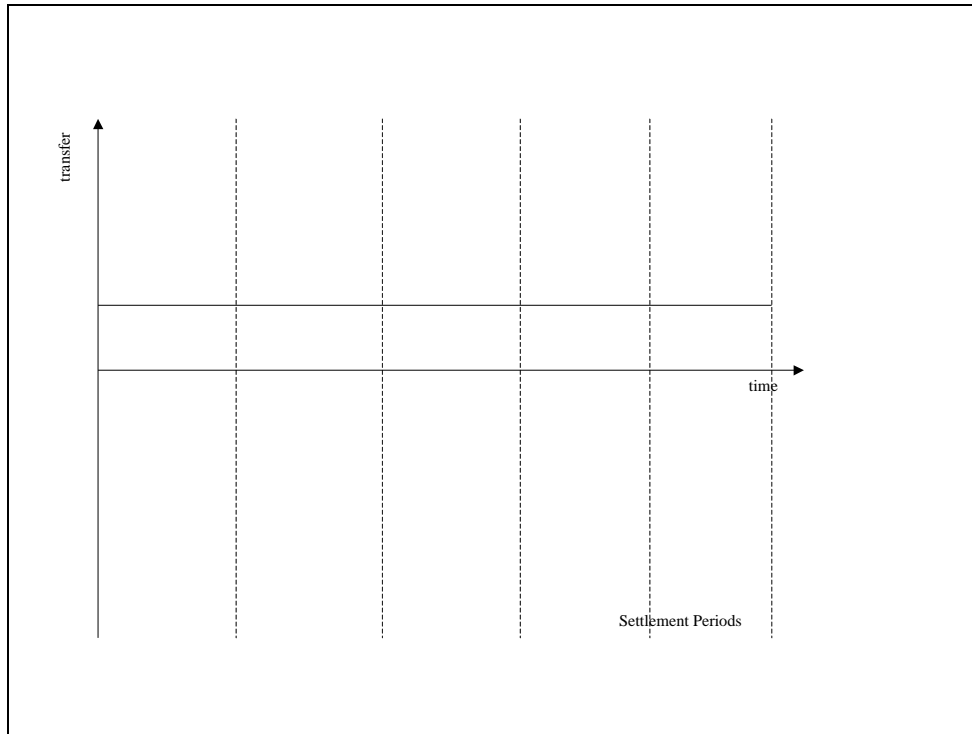


Figure 1 Final Moyle Reference Programme

NGET or SONI makes a request to vary the MRP (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.

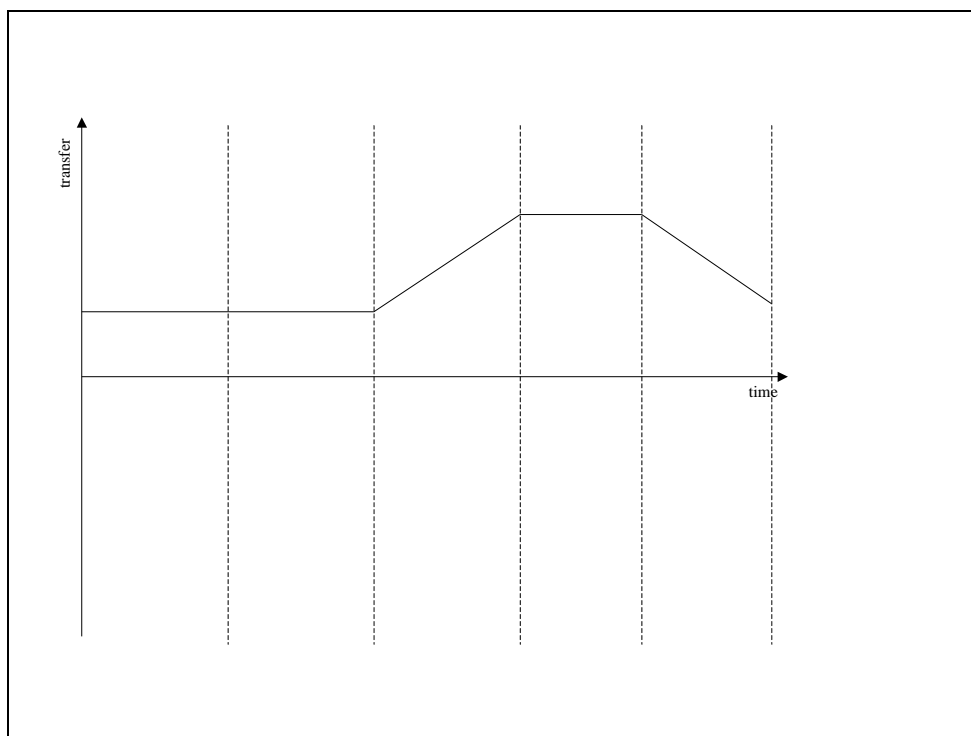


Figure 2 MRP revised for system-to-system flow

Labelling the FSMRP as MRP_0 , and the revised MRP as MRP_1 and any subsequent revisions to the MRP are numbered in sequence then the change in instructed transfer volume is calculated as the difference between the previous and revised programmes (MRP_{n-1} and MRP_n) for the changes to the MRP.

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

$$\Delta T_{n,j} = \left(\int_0^{30} \text{capcollar} \left(MRP_{n,j}(t), IC_{WEST,j}(t), IC_{EAST,j}(t) \right) - MRP_{n-1,j}(t) dt \right)$$

where

- $MCP_{n,j}(t)$ Is the instantaneous transfer t minutes from the start of settlement period j for Moyle 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
- $IC_{EAST,j}(t)$ Is the actual instantaneous interconnector capability for active power flowing from Northern Ireland to Scotland, t minutes from the start of settlement period j . Such that the actual transfer is in the range 0 MW to $IC_{EAST,j}(t)$.
- $IC_{WEST,j}(t)$ Is the actual instantaneous interconnector capability for active power flowing from Scotland to Northern Ireland, t minutes from the start of settlement period j . Such that the actual transfer is in the range 0 MW to $-IC_{WEST,j}(t)$.

This is shown graphically below:

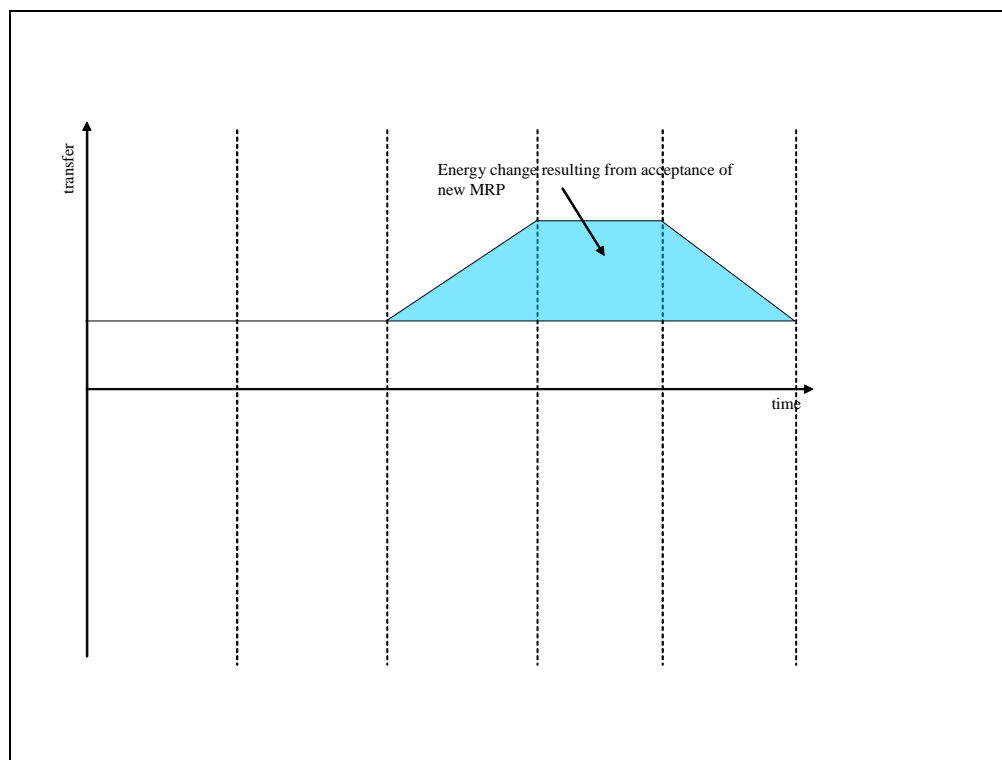


Figure 3: Change in instructed transfer volume arising from change in MRP

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 $SSF = T_j$

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

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

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

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 NGET (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 N.o. 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.