| NETA Change Form | ELEXON Reference |
| --- | --- |
| | P109 |

| Title | Version No. |
| --- | --- |
| A Hedging Scheme for changes to TLF in Section T of the code | 0.1 |
| | **Logica Reference** |
| | ICR473 |

| Type of Assessment | Date CP Received | Date IA Issued |
| --- | --- | --- |
| HLIA | 24/1/03 | 31/1/03 |

## Brief Summary of Change

This change is to modify the way Transmission Loss Multipliers are calculated by introducing some new BM Unit factors into the equations.

There are 2 options:

1. The new factors are provided by BSSCo in all cases.
2. The new factors are provided by BSSCo in some cases and calculated by NETA CS in others.

Within each option there are 2 aspects:

- Initial data population exercise for existing BM Units.
- Ongoing process for new BM Units.

## Logica's Proposed Solution

This change is complicated and extensive conversations have occurred between the Logica design authority and the ELEXON lead analyst. These have been encapsulated in the P109 Design Notes attached.

Option 1
*Initial*

1. A script will be written to reformat QMHA data provided by BSSCo and load it into CRA for existing CVA BM Units, GSP Groups and Interconnectors.
2. The BM Unit Details Form will be amended to include HED : Boolean indicating whether this BMU is taking part in F phasing. Can only be set for Type T (direct connect) BM Units. Can only be set BEFORE later of BM Unit's effective from date and F phasing start date. Once set, cannot normally be changed. [breaches of these rules will require pop-up to alert operator and trigger confirmation process]
3. The BM Unit Details Form will be amended to include ALF. Will only be set for BM Units registered after 1 March 2003 (and before 31 March 2019).
4. New system parameters (CRA/SAA, BMRA)
   - first date to which F phasing applies (= 1 April 2004)
   - last date on which F phasing applies (= 31 March 2019)
5. New dated system parameter (SAA, BMRA)
   - value of Gamma (1 for 1 April 2004 to 31 March 2005, 14/15 for next year and so on)

*Ongoing*

1. New Oracle Form to allow entry and modification of QMHA data for CVA BM Units registered after 1 March 2003.
   - choose between CVA BMU, GSP Group and Interconnector
   - for BMU, only allow those of type "T" (direct connect)
2. QMHA, HED, ALF and trigger date are published from CRA to SAA via the shared database in the normal way.
3. Amend CRA to BMRA flow to report QMHA data.
4. Amend BMRA loader to accept QMHA data.
5. Amend BMRA to report QMHA, ALF, HED.
6. Amend SAA-F006 to compute $ALF^+_j$ and $ALF^-_j$
7. Amend SAA-F006 to establish the value of F for each BM Unit:
   - Determine current BSC season
   - Determine current value of Gamma ($\gamma$)
   - For each GSP Group, determine
     $GI_{gj} = \sum QM_{ij}$ (summed over all SVA BM Units associated with GSP Group g, having $QM_{ij} < 0$)
     $GE_{gj} = \sum QM_{ij}$ (summed over all SVA BM Units associated with GSP Group g, having $QM_{ij} > 0$)
   - For each Interconnector, determine
     $II_{Ij} = \sum QM_{ij}$ (summed over all BM Units associated with Interconnector I, having $QM_{ij} < 0$)
     $IE_{Ij} = \sum QM_{ij}$ (summed over all BM Units associated with Interconnector I, having $QM_{ij} > 0$)
   - For each BM Unit, determine whether considered as CVA, SVA or Interconnector and apply appropriate rule:
   - For direct connect CVA BM Units:
     If $HED_i = 0$ then $F_{ij} = 0$
     If $QM_{ij} > 0$ then $F_{ij} = QMHA^+_{ij'}$ (where j' = period/season)
     If $QM_{ij} <= 0$ then $F_{ij} = QMHA^-_{ij'}$ (where j' = period/season)
   - For SVA BM Units:
     If $QM_{ij} > 0$ then $F = QMHA^+_{gj'} * \gamma * QM_{ij} / GE_{gj}$
     If $QM_{ij} < 0$ then $F = QMHA^-_{gj'} * \gamma * QM_{ij} / GI_{gj}$
     If $QM_{ij} = 0$ then $F = 0$
   - For Interconnector BM Units:
     If $HED_i = 0$ then $F_{ij} = 0$
     If $QM_{ij} > 0$ then $F = QMHA^+_{Ij'} * QM_{ij} / IE_{Ij}$
     If $QM_{ij} < 0$ then $F = QMHA^-_{Ij'} * QM_{ij} / II_{Ij}$
8. Amend TLMO computation [SAA only] to reflect new formula
9. Amend TLM computation

Notes:

Performance of this function is important as it forms part of both the SAA settlement calculation and the BMRA indicative price calculation.

Most intermediate values will have to be added to Settlement Actuals (etc) so that they can be reported in the SAA-I014.

Option 2

*Initial*

1. Write SQL script to determine $QMHA^+$ and $QMHA^-$ for a single BM Unit
   - input: BM Unit, transaction sid
   - output: 48 x $QMHA^+$ and $QMHA^-$ x 4 seasons, written direct to QMHA reference table
2. Write SQL script to determine all CVA BM Units for which the data is needed
   - invoke above script for each such BM Unit
3. Write SQL script to determine $QMHA^+$ and $QMHA^-$ for a single GSP Group
   - input: GSP Group, transaction sid
   - output: 48 x $QMHA^+$ and $QMHA^-$ x 4 seasons, written direct to QMHA reference table
4. Write SQL script to determine all GSP Groups for which the data is needed
   - invoke above script for each such BM Unit
5. Write SQL script to determine $QMHA^+$ and $QMHA^-$ for a single Interconnector
   - input: Interconnector, transaction sid
   - output: 48 x $QMHA^+$ and $QMHA^-$ x 4 seasons, written direct to QMHA reference table
6. Write SQL script to determine all Interconnectors for which the data is needed
   - invoke above script for each such BM Unit
7. The BM Unit Details Form will be amended to include HED : Boolean indicating whether this BMU is taking part in F phasing. Can only be set for Type T (direct connect) BM Units. Can only be set BEFORE later of BM Unit's effective from date and F phasing start date. Once set, cannot normally be changed. [breaches of these rules will require pop-up to alert operator and trigger confirmation process.
8. The BM Unit Details Form will be amended to include ALF. Will only be set for BM Units registered after 1 March 2003 (and before 31 March 2019).
9. New system parameters (CRA/SAA, BMRA)
   - first date to which F phasing applies (= 1 April 2004)
   - last date on which F phasing applies (= 31 March 2019)
10. New Dated system parameter (SAA, BMRA)
    - Value of Gamma (1 for 1 April 2004 to 31 March 2005, 14/15 for next year and so on)

*Ongoing*

1. QMHA for new GSP Groups and Interconnectors cannot be calculated as the methodology has not been specified.
2. ALF for new CVA BM Units will be set to the value of the initial TLF.
3. Oracle form to allow entry & modification of QMHA data for CVA BM Units registered after 1 March 2003.
   - choose between CVA BMU, GSP Group and Interconnector
   - for BMU, only allow those of type "T" (direct connect)
4. QMHA, HED, ALF and trigger date are published from CRA to SAA via the shared database in the normal way.
5. Amend CRA to BMRA flow to report QMHA data.
6. Amend BMRA loader to accept QMHA data.
7. Amend BMRA to report QMHA, ALF, HED.
8. Amend SAA-F006 to compute $ALF^+_j$ and $ALF^-_j$
9. Amend SAA-F006 to establish the value of F for each BM Unit:

- Determine current BSC season
- Determine current value of Gamma ($\gamma$)
- For each GSP Group, determine

  $GI_{gj} = \sum QM_{ij}$ (summed over all SVA BM Units associated with GSP Group g, having $QM_{ij} < 0$)

  $GE_{gj} = \sum QM_{ij}$ (summed over all SVA BM Units associated with GSP Group g, having $QM_{ij} > 0$)
- For each Interconnector, determine

  $II_{Ij} = \sum QM_{ij}$ (summed over all BM Units associated with Interconnector I, having $QM_{ij} < 0$)

  $IE_{Ii} = \sum QM_{ii}$ (summed over all BM Units associated with Interconnector I, having $QM_{ij} > 0$)
- For each BM Unit, determine whether considered as CVA, SVA or Interconnector and apply appropriate rule:
- For direct connect CVA BM Units:

  If $HED_I = 0$ then $F_{ij} = 0$

  If $QM_{ij} > 0$ then $F_{ij} = QMHA^{+}_{ij'}$ (where j' = period/season)

  If $QM_{ij} <= 0$ then $F_{ij} = QMHA^{-}_{ij'}$ (where j' = period/season)
- For SVA BM Units:

  If $QM_{ij} > 0$ then $F = QMHA^{+}_{gj'} * \gamma * QM_{ij} / GE_{gj}$

  If $QM_{ij} < 0$ then $F = QMHA^{-}_{gj'} * \gamma * QM_{ij} / GI_{gj}$

  If $QM_{ij} = 0$ then $F = 0$
- For Interconnector BM Units:

  If $HED_I = 0$ then $F_{ij} = 0$

  If $QM_{ij} > 0$ then $F = QMHA^{+}_{Ij'} * QM_{ij} / IE_{Ij}$

  If $QM_{ij} < 0$ then $F = QMHA^{-}_{Ij'} * QM_{ij} / II_{Ij}$

10. Amend TLMO computation [SAA only] to reflect new formula
11. Amend TLM computation

Notes:

Performance of this function is important as it forms part of both the SAA settlement calculation and the BMRA indicative price calculation.

Most intermediate values will have to be added to Settlement Actuals (etc) so that they can be reported in the SAA-I014.

## Deviation from ELEXON's Solution / Requirements

As noted in the proposed solution.

## Operational Solution and Impact

Option 1 initial - Manually input HED for approximately 1100 existing BM Units.

Option 1 ongoing - Manual input of QMHA, ALF, HED for new BM Units (expected to be 100 per year)

Option 2 initial - Manually input HED for approximately 1100 existing BM Units.

Option 2 ongoing - Manual input of QMHA, ALF, HED for new BM Units (expected to be 100 per year)

## Testing Strategy

| Unit | ✓ | Change Specific | ✓ | End to End | |
|---|---|---|---|---|---|
| Module | ✓ | Operational Acceptance | | Participant Testing | ✓ |
| System | ✓ | Performance | | Parallel Running | |
| Regression | | Volume | | Deployment/ Backout | |

Other:

Further analysis of testing will be performed as part of the Detailed Level Impact Assessment (DLIA) process.

## Validated Assumptions

See attached P109 Design Notes.

## Outstanding Issues

None.

| Changes to Service | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Services Impacted** *[Tick boxes to show impacted systems and associated documentation]* | | | | | | | |
| | BMRA | CDCA | CRA | ECVAA | SAA | TAA | Other |
| Software | ✓ | | ✓ | | ✓ | | |
| IDD Part 1 (Docs) | | | | | | | ✓ |
| IDD Part 1 (S'Sheet) | | | | | | | ✓ |
| IDD Part 2 (Docs) | | | | | | | ✓ |
| IDD Part 2 (S'Sheet) | | | | | | | ✓ |
| URS | ✓ | | ✓ | ✓ | ✓ | | |
| SS | ✓ | | ✓ | ✓ | ✓ | | |
| DS | ✓ | | ✓ | ✓ | ✓ | | |
| MSS | | | | ✓ | | | |
| OSM | | | ✓ | ✓ | | | |
| LWIs | | | ✓ | ✓ | | | |
| RTP | (Will be investigated in detail in the DLIA.) | | | | | | |
| Comms | None | | | | | | |
| Other | None | | | | | | |
| **Nature of Documentation Changes** | | | | | | | |
| Amend documentation to reflect changes in proposed solution. | | | | | | | |
| **Nature / Size of System Changes** | | | | | | | |
| Large | | | | | | | |
| **Type of Release Costed:** | Standalone patch | | | | | | |
| **Deployment Issues, eg Outage Requirements:** | Outage required | | | | | | |
| **Impact on Service Levels:** | None | | | | | | |
| **Impact on System Performance:** | None | | | | | | |

| Responsibilities of ELEXON |
| --- |
| <ul><li>For all DCRs which are subject to review, Logica shall provide one draft issue and a maximum of 5 working days has been allowed for ELEXON to review and comment on the updates. Comments will be addressed and the final issue will be provided. A maximum of 2 working days has been allowed for review confirmation and signoff by ELEXON.</li><li>Within reasonable levels, ELEXON will make available appropriate staff to assist Logica during the development of this change.</li></ul> |

| Acceptance Criteria |
| --- |
| N/A to HLIA |

| Any Other Information |
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| None. |

| Attachments |
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| P109<br>P109 Design Notes<br>Price Presentation Option 1<br>Price Presentation Option 2 |

## PRICING

**Price Breakdown**

| Item description | Remarks | Price (ex VAT) |
| --- | --- | --- |
| Change Specific Cost | Option 1 Initial<br>Option 1 Ongoing<br>Option 2 Initial<br>Option 2 Ongoing | £122,937<br>£317,906<br>£188,356<br>£317,906 |
| Project Overhead | Option 1<br>Option 2 | £441,538<br>£509,186 |
| **Total Price** **(+/-50% in accordance with HLIA criteria)** | | Option 1 - £882,381<br>Option 2 - £1,015,448 |
| **Project Duration** | | Option 1 – 24 weeks<br>Option 2 – 28 weeks |

| Operational Price | Option 1 or 2 Initial - £0 |
| | Option 1 or 2 Ongoing – £455 per annum |

| Rationale |
| --- |
| Initial – None. |
| Ongoing – 1 day of Delivery Assistant grade per annum |

| Annual Maintenance Price | Option 1 - £123,533 |
| | Option 2 - £142,163 |

| Rationale |
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| The Annual Maintenance Price is derived as 14% of the Total Price. |

| Validity Constraints |
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- Price excludes provision for indexation of daily rates from 1st April 2003.
- Price and duration assume that this change is developed in isolation and the effects of other changes are excluded.
- No allowance is included in the price for Service Descriptions being different from the CP.
- Price is for creating DCRs, not a formal documentation issue.
- No allowance has been included for supporting PwC activities.

The validity period for this quote is 30 days and the offer is based on the following payment schedule:

- Logica will invoice 30% on receipt of Purchase Order or authorised start of work, 50% on completion of acceptance tests, 20% on deployment or one month after completion of acceptance tests, whichever is sooner.
- Operate and maintain charges will be invoiced monthly in arrears.

| Authorised Signature | Date Signed |
| --- | --- |
| | |