P305 Industry Information Day - Q&A

General queries

Q1 - Is there a single overall business process diagram that illustrates all Imbalance Price activities pre- and post-Settlement Period (SP)?

There isn't an all-encompassing diagram but there's a large amount of information in our Imbalance Pricing Guideline document. ELEXON will consider whether there is an opportunity to develop an overall illustration of the process.

Q2- When will the new aspects of P305 (i.e. Demand Control Volumes and repriced Short Term Operating Reserve (STOR) Actions) be included in the calculation of Imbalance Prices? What about the impact of P323 on Supplemental Balancing Reserve (SBR) and Demand Side Balancing Reserve (DSBR) actions?

ELEXON calculates and recalculates Imbalance Prices at set points in time after a Settlement Period (i.e. Settlement Runs). The BMRA (Balancing Mechanism Reporting Agent) and Settlement Administration Agent (SAA) use all data available when calculating prices at these set points in time. Where the BMRA or SAA receives data after one of these set points, that data is used in the next scheduled calculation, except following a Final Reconciliation Settlement Run (RF).

The BMRA calculates an Indicative System Price within 15 minutes of the end of a Settlement Period. At this point a Party might expect the BMRA to include the following from its calculation:

- Bid Offer Acceptances (BOAs) - details of all BOAs dispatched through the BM (including BM STOR Actions);
- Balancing Services Adjustment Actions (BSAAs) - details of any BSAAs (including Non-BM STOR Actions) dispatched before or during the Settlement Period. That is, National Grid send an ex-ante Balancing Services Adjustment Data (BSAD) file (no later than 17.00 the day preceding the SP) and a BSAD file by the end of the SP, which the BMRA uses in its calculation. Nb given the nature of dispatching Non-BM STOR it is likely that any such actions are included in an ex-post BSAD file, which National Grid typically sends at 11.00 the working day after the SP. Consequently, Non-BM STOR is unlikely to be included in the BMRA's Indicative System Price;
- Demand Control Volumes - National Grid has a reasonable endeavours requirement to provide Demand Control Instructions within 15 minutes of the start of a Demand Control Event, any update instruction or the end of a Demand Control Event. The BMRA and SAA use these instructions to determine Demand Control Volumes for use in the Imbalance Price calculation. Therefore, details of Demand Control Volumes may be included in the BMRA's calculation if National Grid sends Demand Control Instructions affecting a Settlement Period before the BMRA performs its calculation.

The SAA calculates and recalculates Imbalance Prices according to the Settlement Calendar described in BSCP1. That is, it will calculate the Imbalance Price for a specific SP at:

+5 working days (WD) - the Interim Information Settlement Run (II),

+16WD - the Initial Settlement Run (SF),

≈+39WD - 1st Reconciliation Settlement Run (R1),

≈+84WD - 2nd Reconciliation Settlement Run (R2),

≈+154WD - 3rd Reconciliation Settlement Run (R3), and

≈+292WD - Final Reconciliation Settlement Run (RF).

We expect that the SAA should have details of all actions described above (and any revisions) to calculate an Imbalance Price by the II run. Nb National Grid may revise the data up until the RF run.

Supplemental Balancing Reserve (SBR) and Demand Side Balancing Reserve (DSBR) – SBR actions are already included in any Imbalance Price calculation as they are dispatched through the BM as BOAs. The calculation currently uses SBR actions' Utilisation Price. DSBR is not currently included in the Imbalance Price calculation.

Approved BSC Modification P323 means that SBR Actions will be repriced equal to the Value of Lost Load (VOLL). In order that these actions are included and priced at VOLL from November 2015, National Grid and ELEXON will initially implement a manual solution.

National Grid will also be making changes to its BSAD Methodology Statement to allow it to include DSBR Actions in the BSAD so they are included in the Imbalance Price calculation as BSAAs, also priced at VOLL.

These changes mean that National Grid will only be able to instruct ELEXON to include DSBR actions and reprice SBR actions after the SP the actions relate to. Therefore Parties will not know the full effects of SBR and DSBR being priced at VOLL until the SAA calculates the Imbalance Price at the II run although efforts will be made to provide related information earlier than this where possible (e.g. via Elexon Circulars etc).**Q3 -** Will the 'reverse price' continue to be published on the BSC Website (www.ELEXON.co.uk)?

The 'reverse price' (correctly known as the Market Price) is derived from Market Index Data (MID). ELEXON will continue to publish MID on the BMRS so Parties will continue to be able to calculate the Market Price (see http://bmreports.com/servlet/com.logica.neta.bwp_MarketIndexServlet?displayCsv=false).

Q4 - Is there any information on how credit arrangements will change under P305?

P305 will not change the BSC's credit arrangements.

It should be noted that a handful of recently approved and 'in development' BSC Modifications are focused on BSC credit arrangements[1]; however none of these specifically consider or take account of the expected impacts of P305.

Q5 - Does the Grid Code constrain Parties from running a production account imbalance?

Grid Code BC2.5.1 generally requires that Balancing Mechanism (BM) Participants ensure that each of their BM Units (BMU) follow related Physical Notifications (PN). The effect of this requirement is that BM Participants should import or export according to what they had planned; and by implication not incur any imbalance.

However, BC2.5.1 adds that the general requirement is subject to variation where: Bids or Offers have been accepted for the BMU(s); Grid have instructed the BMU(s) to deviate from its PN; where the BM Participant is complying with Grid Code BC1, 2 or 3; or where the BMUs are powered by an intermittent power source and the PNs were prepared in accordance with Good Industry Practice.

In summary, whilst Parties must deliver against their PN unless there is a very good reason not to, the Grid Code does not prevent an imbalance position (i.e. notified position vs metered position) being taken. For instance, it would not prevent a party spilling so long as this is in line with the PN requirements noted above.

Short Term Operating Reserve (STOR)

Q6 – When reviewing Bid Offer Acceptances (BOAs) and Balancing Services Adjustment Actions (BSAAs), e.g. on the BMRS, will Parties be able to differentiate between STOR Actions - BM STOR[2] (Short Term Operating Reserve) and Non BM STOR actions - and all other actions?

Yes. Any STOR Action can be identified because it will have an associated STOR Provider Flag and must have taken place during a STOR Availability Window.

Parties will be able to review STOR Actions as they will be included in the Imbalance Price calculation and will appear on the BMRS website (e.g. in the Indicative System Price Stack (ISPSTACK) on the Detailed System Prices page of the BMRS), via TIBCO and in SAA reports (e.g. the SAA-I014). The BMRS will also provide details of STOR Availability Windows.

When reviewing the BMRS, the simplest way of identifying a STOR action in the ISPSTACK is to look for those actions that have a STOR Provider Flag and an RSP value associated to them. Nb actions that have an RSP value associated to them do not necessarily mean they have been priced equal to RSP. The RSP value simply indicates the prevailing RSP, which is only displayed during STOR Availability Windows. A STOR Action's price is the greater of its original BOA Price and the RSP.

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[1] Implemented BSC Modifications P306, P307 and P310; BSC Modifications being developed: P308 and P326.

[2] A STOR Action is a Balancing Service action taken, from time to time, by National Grid as the System Operator to balance the Transmission System. A STOR Action is either a BOA or BSAA that has a STOR Provider flag to identify that the action was provided by a STOR Provider and is during a STOR Availability Window.

Q7 - Will STOR actions be attributed to individual BMUs?

There are two types of STOR Actions – BM STOR and Non-BM STOR. BM STOR Actions relate to STOR Actions dispatched through the BM. Therefore these actions are associated to specific BMUs and so the BMU ID for the action will be visible. National Grid dispatches Non-BM STOR Actions outside of the BM, so these actions are not associated to specific BMUs, and are reported as BSAAs. Like all BSAAs, Non-BM STOR Actions will be anonymous.

Q8 - Will Parties be able to see BM STOR actions in real time?

National Grid dispatches BM STOR Actions through the BM and so will be reported as BOAs. Therefore Parties will be able to see National Grid instructing BM STOR actions in close to real time as it reports the BOAs to ELEXON, which then publishes them on the BMRS and via TIBCO.

National Grid reports Non BM STOR actions as BSAAs. Depending on when National Grid requests the Non-BM STOR Actions is likely to determine when it reports them to ELEXON in Balancing Services Adjustment Data (BSAD). Our expectation is that National Grid will report Non-BM STOR Actions the day after the Settlement Period they affect, i.e. after the BMRA's Indicative System Price calculation but before the SAA's Interim Information Imbalance Price calculation.

Q9 - Could the BM and non BM STOR Actions have an impact on the Imbalance Price?

All BM and Non-BM STOR actions will feed into the Imbalance Price calculation. However whether these actions directly contribute to the final Imbalance Price depends on what else is in the Imbalance Price calculation for a particular Settlement Period.

Historical analysis completed for the P305 Workgroup showed that the inclusion of BM STOR and Non-BM STOR actions does not have a consistent impact on prices but that they could indeed have a significant impact. For example, re-pricing STOR actions to the RSP occurred infrequently and had little impact on Imbalance Prices. However, simply including Non-BM STOR actions generally increased the volume of offers which tended to dampen the price when the system was long and by excluding STOR availability costs from Buy Price Adjusters tended to dampen prices when the system was short. Please see Appendix A of the P305 Final Modification Report for a summary of ELEXON's historical analysis.

Q10 - Will details of Non-BM STOR contracts be available or confidential?

Details of individual STOR contracts are confidential so are not available. Whilst specific contract details might be confidential, National Grid have said that the average utilisation price is ~£100 per MWh.

Q11 - If National Grid instructs Demand Side Response, would that instruction be included in the Imbalance Price calculation?

Yes, demand side STOR will be included. Following modifications to National Grid's C16 Statements, DSBR will also be included.

Loss of Load Probability

Q12 - In accordance with the Static LoLP method, will De-rated Margin be used to calculate LoLP values?

Yes. When using the Static Method, National Grid will use a value of De-rated Margin at Gate Closure to determine the Final LoLP value to be used for that particular Settlement Period.

When calculating LoLP in accordance with the Dynamic Method, National Grid does not use the De-rated Margin value. Instead National Grid use up to date information to determine the probability that Demand will exceed Available Generation Capacity to produce a Final LoLP value.

Please refer to the LoLP Calculation Statement for more details on how National Grid will calculate LoLP and De-rated Margin values.

Q13 - What is the current version of the LoLP Calculation Statement?

The current version of the LoLP Calculation Statement is version 1.0. This version was approved by the Authority on 15 October 2015 and is available on the BSC Website.

Q14 – When calculating Generation Capacity for use in the calculation of De-rated Margin and LoLP values, does National Grid take account of REMIT[3] submissions?

National Grid does not take account of REMIT submissions when calculating Generation Capacity in accordance with the LoLP Calculation Statement.

Q15 - Does National Grid's calculation of De-rated Margin include or exclude STOR, SBR or DSBR?

According to the LoLP Calculation Statement, the calculation of De-rated Margin takes account of STOR but not SBR and DSBR.

Q16 - With reference to the P305 historical analysis of LoLP, what was the explanation for high LoLP on 8 July 2013?

The main reason for the high value of LoLP for Settlement Period 32 on 8 July 2013 was that a large unit had fallen off the system in a preceding Settlement Period. This meant that its MEL was excluded from the LOLP calculation and served to exacerbate the fact that margins were already tight even without the loss.

Demand Control

Q17 - Is National Grid more likely to undertake a voltage reduction before a demand disconnection?

[3] Regulation on Wholesale Energy Market Integrity and Transparency

It depends on the situation and is within National Grid's remit to determine what actions are necessary to manage a Demand Control Event. More information is available in the work surrounding Grid Code modification GC0050[4].

Q18 - Wouldn't voltage reduction be included in the Imbalance Price calculation?

Yes. When National Grid instruct Voltage Reduction as part of a Demand Control Event, it will report these instructions (like other Demand Control Instructions) to ELEXON. The BMRA and SAA will take these Voltage Reduction instructions into account when determining Demand Control Volumes for inclusion in the Imbalance Price calculation.

Whilst voltage reduction will be included in the price calculation, it was excluded from the adjustment of Parties' Imbalance Volumes because it was considered too difficult to estimate at the time P305 was developed. Including an estimate of voltage reduction in the adjustment of Parties Imbalance Volumes may be raised as an 'Issue' for industry to consider once P305 has been implemented.

Q19 - Don't the DNOs (District Network Operators) determine what action is taken in a demand control event?

According to the Grid Code OC6, both National Grid and DNOs may initiate actions as part of a Demand Control Event. In terms of calculating Imbalance Prices and Imbalance Volumes, the BMRA and SAA only take account of those actions initiated by National Grid. That is, those actions that National Grid may instruct a DNO to execute.

Q20 - When was the last instance of a disconnection event?

Our understanding is the last Demand Disconnection initiated by National Grid was in the 1970s. The P305 Workgroup developed its requirements and ELEXON completed its P305 historical analysis with this understanding in mind.

Following comments at the P305 Industry Day, we confirmed with National Grid that there had been more recent instances of Auto Low Frequency Demand Disconnection (ALFDD) on 27 May 2008 (which resulted in disconnections lasting ~40 minutes) and Voltage Reduction that affected four Settlement Periods on 11 February 2012.

Whilst instances of Demand Control are relatively infrequent, the changing characteristics of the Transmission System mean that National Grid is experiencing tighter margins. Consequently National Grid has procured additional Balancing Services (SBR and DSBR) to enable it to effectively manage the System.

Q21 - If National Grid initiated a demand control event, wouldn't the Loss of Load Probability (LoLP) be 1?

Not necessarily. This is because National Grid calculates the LoLP value at Gate Closure (an hour before the Settlement Period begins) at which point there might be a high probability of loss load, but it's not necessarily a certainty that there will be a need for disconnections.

[4] http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/GC0050/

Q22 - Where will the notification of a disconnection event be published?

Details of Demand Control Events (which include Demand Disconnection) will be publicised by National Grid and ELEXON in different ways.

National Grid publishes system warnings on its website. ELEXON also publishes these on the BMRS website and via TIBCO. Grid Code OC7.4.8 sets out the various System Warnings that National Grid might issue that indicate that demand disconnection may be necessary.

If National Grid instructs DNOs to take Demand Control, it must use reasonable endeavours to send ELEXON Demand Control Instructions within 15 minutes of issuing the instruction to DNOs. ELEXON will publish details of these Demand Control Instructions on the BMRS website and via TIBCO within 5 minutes of receiving them.

In addition, as part of P305 National Grid will send us forecasts of De-rated Margin and LoLP values for every SP at scheduled intervals ahead of the SP beginning. ELEXON will publish these values on the BMRS website and TIBCO within five minutes of receiving them. These values will provide Parties with a sense of whether to expect a Demand Control Event.

Q23 - Can National Grid disconnect interconnectors as part of a demand control event?

Grid Code OC6 does not explicitly refer to disconnecting Interconnectors as part of a Demand Control Event. Our understanding is that National Grid may disconnect an Interconnector to prevent energy flowing out of GB but this would only be in very rare situations (e.g. where there were supply issues on the other side of the interconnector) as, in a well-functioning market, the expectation would be that price spreads should normally lead to power flowing into GB when margins are tight.

However, in terms of calculating Imbalance Prices, ELEXON only takes account of Demand Control Instructions issued to DNOs or in relation to connections to DNO networks. Instructions to disconnect Interconnectors will not be included.

It should be noted that whilst instructions to disconnect Interconnectors are not included in the calculation of Imbalance Prices, National Grid may trade energy over the interconnectors in order to balance the GB system. In which case National Grid submit details of those trading actions in the BSAD (Balancing Services Adjustment Data).

Q24 - Can demand control actions be flagged to indicate they were taken to manage a System constraint (i.e. SO-flagged)?

Yes, any Demand Control Instruction can be SO-Flagged. In particular, Auto Low Frequency Demand Disconnection instructions will automatically be SO-flagged.

Q25 – Following a disconnection event, what should Non Half Hourly Data Collectors (DC) and Non Half Hourly Data Aggregators (DA) do upon receipt of D0018, P0238 and D0375 data flows?

The processes that Party Agents must follow are set out in the BSC and updated versions of the BSC Procedures (BSCP).

In summary, NHHDCs will need to load D0018s, P0238s and D0375s into the EAC/AA Software each time they receive one of these flows. Then the NHHDC will need to produce/reproduce EACs and AAs for the MSIDs listed in the P0238s and D0375s. Nb NHHDCs will need to monitor P0238s to ensure that, when they receive a second P0238 for the same Demand Control Event, they will produce EACs and AAs for the MSIDs listed in the flows but also for the exceptions (i.e. MSIDs removed by the updated P0238).

The NHHDAs will need to load P0238s and D0375s to determine which MSIDs should be included (and potentially excluded) in the calculation of the Disconnection Purchase Matrix (DPM). The DPM is run ***in parallel*** to the Supplier Purchase Matrix for Settlement Days affected by a Demand Control Event.

SBR and DSBR

Q26 - How might Supplemental Balancing Reserve (SBR) and Demand Side Balancing Reserve (DSBR) impact the calculation of Imbalance Prices?

P305 excludes pricing SBR and DSBR at VOLL. Therefore the historical analysis didn't model the possible effects of SBR and DSBR.

However, Modification P323 and changes to National Grid's C16 Statements have recently been approved to allow SBR and DSBR to be included in the Imbalance Price calculation, priced at VOLL. Please see our answers to questions below and to Q2 for more details on how SBR and DSBR will be included in the Imbalance Price calculation.

It is difficult to say with certainty how SBR or DSBR would affect the Imbalance Price calculation if they were to be dispatched. This is because SBR and DSBR actions would be exposed to typical 'flagging' and 'tagging' processes. In practice we expect that if SBR or DSBR are dispatched, the resulting Imbalance Prices will either be equal to VOLL or will be pushed toward VOLL.

Q27 - How will Parties have visibility of SBR and DSBR?

Parties already have visibility of when National Grid dispatch SBR and DSBR. That is, National Grid publishes details on its SONAR website of when they instruct an SBR or DSBR Provider to warm up, ramp up or provide the service. Furthermore, because SBR actions are dispatched over the BM, the associated BOAs are also already visible to Parties. Nb at present these BOAs are not explicitly identified as SBR acceptances but because details of SBR providers are public, Parties can identify associated BOAs by monitoring the BMU IDs of BOAs.

In addition, National Grid publishes System Warnings to inform the industry of when there is a chance of Demand Control action. National Grid publishes these warnings on its website. ELEXON also publishes these on the BMRS and via TIBCO.

Following the approval of P323, from November 2015 SBR actions will be identified with an SBR Notice that is sent by National Grid to ELEXON after the affected Settlement Period(s). In addition, National Grid will report DSBR actions in BSAD and their associated price will be equal to VOLL.

Finally, if National Grid dispatches SBR and sends an SBR Notice to ELEXON, ELEXON will publish details of the notice in an ELEXON Circular as soon as possible.

Q28 - If the utilisation price for SBR and DSBR is higher than the Value of Loss Load (VOLL), would the utilisation price be used in the Imbalance Price calculation?

No, SBR and DSBR will be priced at VOLL.

Publishing data and reporting

Q29 - Will LoLP be published on the BMRS website?

From 5 November 2015, National Grid will provide forecast De-rated Margin and Final LoLP values which ELEXON will publish on the BMRS and via TIBCO.

From 1 May 2018, National Grid will also provide indicative LoLP values which ELEXON will publish on the BMRS and via TIBCO.

Q30 - Will the BMRS website show margin and de-rated margin?

BMRS will continue to publish values of margin as it does already and will begin publishing details of De-rated Margin and LoLP values separately.

Q31 - Will we get to see what BMRS pages will look like?

A test version of the BMRS is available – see http://test.bmreports.com/. Please note that ELEXON uses the site for testing purposes so it is updated regularly by ELEXON's service provider as part of its development and testing work.

If Parties are interested in participating in acceptance testing, they should email releases@elexon.co.uk.

Q32 - Are there plans to improve the transparency of National Grid's operations and data?

Whilst as part of P305 ELEXON will be publishing more information on De-rated Margin and LoLP, we aren't progressing any particular Modifications targeting overall reporting and publication of National Grid data. However if Parties want to discuss the possibility of raising a Modification that improves or clarifies how National Grid reports data relevant to the BSC, they can contact the Change Management team (BSC.change@elexon.co.uk).

Q33 – How will ELEXON report Imbalance Prices and the effects of P305?

In general the Balancing Mechanism Reporting Service (BMRS) isn't changing a large amount – i.e. System Prices and Detailed System Prices will still be the primary pages to find core system pricing details in close to real time. ELEXON is expanding these pages to include details of prevailing RSPs and when actions have a STOR Provider Flag.

Beyond expanding the System Prices and Detailed System Prices pages, we will be adding two new pages that report LoLP and De-rated Margin data, and STOR Availability Window data

To get a sense of how the BMRS is changing, you can use our test site: http://test.bmreports.com/. Please note that it is used for development purposes only so it may be that certain functionality is not fully reflected or operational when viewing the site.

In addition to the BMRS, ELEXON publishes pricing data on the ELEXON Portal – we already publish:

- SSP, SBP and NIV for every Settlement Period as calculated by the SAA (and recalculated by SAA at subsequent Settlement Runs);
- 'Best View Prices' (an unofficial price calculation between the BMRA's Indicative System Price calculation at SP+15mins and the SAA's official Imbalance Price calculation at SP+5wd);
- 'System Prices for EBSCR (not P305) Scenarios' – we reproduce Imbalance Prices in order to illustrate how different PAR values and Single Pricing might affect prices; and
- 'Historic System Prices under the EBSCR Proposed Reforms' – as part of P305's development, we re-calculated ~4 years' worth of Imbalance Prices and imbalance charges to illustrate how P305 might impact them.

Finally, ELEXON produces a monthly Trading Operations Report and BSC Operations Headline Reports which provide an overview of main calculated and reported Settlement values and behaviour – see https://www.elexon.co.uk/reference/technical-operations/trading-operations-report/. We plan to produce a new System Price Analysis Report (SPAR) from December 2015 which will provide a more focused review of Imbalance Prices and related values to allow scrutiny of the effects of P305.

P305 historical analysis

Q34 - To what extent does the P305 historical analysis forecast future pricing and imbalance?

The P305 historical analysis didn't model potential behavioural changes so Parties shouldn't rely on it as a strong representation of how parties may operate from November 2015.The analysis should nevertheless give Parties insight into how prices will be calculated and the possible range and frequency of prices.

Q35 - Under the analysis of P305, did ELEXON consider the impact on Balancing Services Use of System (BSUOS) and Residual Cashflow Reallocation Cashflow (RCRC)?

Amongst other things, the P305 historical analysis considered the net effect of P305 on Parties' historical RCRC charges. This analysis is summarised in Appendix A of the P305 Final Modification Report. In summary, P305 had the effect of reducing the overall volume of RCRC charges for Parties. This is because overall Imbalance Charges decreased, meaning there was less money to redistribute through RCRC.

National Grid charges BSUOS in accordance with the Connection and Use of System Code (CUSC) so it is outside the scope of the BSC. Consequently the P305 historical analysis did not consider the impact of P305 on BSUOS.