

MP/CP No.	P135	Title:	Marginal System Buy Price During Periods of Demand Reduction					
Assessor Name	John Lucas	Assessor Team	Design Authority			Date	01.09.03	
Stage of Assessment	Internal Assessment		Document Assessed	Technical Solution (v0.1)				
Likely Impacted Departments:								
<p>This internal impact assessment covers both the workarounds and software solutions for P135 and the P135 Alternative (as defined in draft v0.1 of the <i>Technical Solution for Urgent Modification P135</i>).</p> <p>The impact matrix below is largely unchanged from the initial DA assessment (although it may be that IT is no longer impacted, given that the proposed workaround uses the existing TOMAS infrastructure). However, the section on <i>Design Authority Comments, Issues or Risks</i> overleaf has been significantly updated, to comment on the detail of the proposed workarounds and solutions.</p>								
CVA Programme	✓	SVA Programme		IT		Legal	✓	
Governance		Comms	✓	Finance		Strategic Comm. Servs		
Commercial and SVAA Operations.		CVA Operations	✓	Market Monitoring	✓	Customer Services Management		
Assurance	✓	P6		Other (please specify)				
Likely ELEXON Activities:								
Procurement Activity Required		MRA CP Required		Special Project / Working Group Required		Legal Guidance Required	✓	
BSC System Related Changes:								
	BMRA	CDCA	CRA	ECVAA	FAA	SAA	TAA	TLFA
Software	✓					✓		
Code Subsidiary Documents	✓					✓		
Other Configurable Items	✓					✓		
	SVAA	PARMS	EAC/AA	MIDP	NHHDA	BSC Website	NGC	TOMAS
Software						✓	✓	✓
Code Subsidiary Documents								

Other Configurable Items							✓	✓	✓
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Non-BSC System Related Changes:									
BPM	✓	NDFC	✓	Reporting Catalogue	✓	SVA Data Catalogue		Communications Reqs Document	
IDD Part 1	✓	IDD Part 2		EPFAL IDD Part 1		EPFAL IDD Part 2		Market Indicator Definition Statement	
Service Descriptions		BSC Auditor	✓	Certification Agent		Profile Administrator		Teleswitch Agent	
BSC Code Sections	Primary impact will be on Section T (with potential additional impacts on Section Q).								
Core Industry Documents									
BSCPs									
PSL									
SSL									
COPs									
Impacted Participants:									
BSC Parties	✓	Non BSC Parties		BSC Party Agents		BSC Agents	✓		
Core Industry Document Owners				BSC Panel					
Related Mods, CPs or other Projects:-									
<p>Modification Proposals P136 and P137 address a similar defect to P135, but are seen by their Proposers as more enduring solutions. Because of this, the decision on P136/P137 will affect the number of Settlement Days to which P135 applies (and may therefore affect the decision on whether P135 needs a software solution as well as a workaround).</p>									
Design Authority Comments, Issues or Risks:-									
<i>Comments on P135 Workaround</i>									
<p>As currently drafted, the workaround isn't clear on what action should be taken if the market is long (i.e. NIV < 0) during a demand control period. In step 7, for example, what (if anything) would be published on the BSC Website if the TOMAS run at D+2 showed NIV to be less than zero?</p> <p>On a related point, the workaround would also need to deal with the exceptional case where NIV appears negative at D+2, but is subsequently recalculated as positive (at II or SF, for example) when the calculation is repeated with corrected input data.</p> <p>Step (7) implies that TOMAS uses ETLMO+ or ETLMO-. I understand that Market Monitoring have expressed concern over whether it's possible for TOMAS to know which of these to use for a given BM</p>									

Unit.

Step (9) states that approaches (a) and (b) to determining BPA each have merit in relation to the overall accuracy of the II run. It's not clear to me that this is true. I've added a separate box to the impact assessment (after this one) which explores this in more detail, but essentially option (a) introduces one error into the price, and option (b) introduces two. It therefore seems to me that option (a) is likely to be more accurate. (It does require more work at SAA, of course, but for a small number of Settlement Periods that may not be a problem. It also potentially reduces the work required of TOMAS, because under option (b) TOMAS has to calculate both a P135-compliant and a pre-P135 SBP value.)

My final comment on the P135 workaround is that the Technical Solution document doesn't seem to have clarified the ambiguities in the detail of the marginal price calculation which were flagged up in the initial DA impact assessment:

- The Proposal states that (in periods of Demand Reduction when the market is short), SBP will be set using the marginal methodology, whilst SSP will be set using the 'existing BSC methodology'. However, it is not always clear what the 'existing BSC methodology' means in this context. For example, if no MIDP data is provided, does this mean:
 - i. Set SSP to SBP as determined under the current (pre-P135) methodology; or
 - ii. Set SSP to SBP as determined under the new P135 marginal price methodology?
- It doesn't seem entirely clear on whether only Offers can set the marginal price, or whether Energy BSAD is also eligible.

Comments on P135 Software Solution

Is there a timing issue about NGC telling BMRA which Settlement Periods fall within the demand control period? BMRA presumably needs to know this before calculating system prices.

As for the workaround, the ambiguities in the marginal price calculation don't seem to have been resolved.

Comments on P135 Alternative Workaround

In general, I believe this section overstates the difficulty of achieving the P135 Alternative through a workaround. Steps (9) to (11) of the workaround are all about using TOMAS to estimate the pre-P135 SBP value that SAA will derive, once the marginal price (calculated in step 8) has been fed forward into Offer prices. However, these steps are only required if we choose option (b) under step 13. If we choose option (a) – and I believe we should, for the reasons given in my discussion of the P135 workaround above – then this issue goes away, and steps (9) to (11) are no longer needed.

Alternatively, the P135 Alternative is amenable to a different sort of BSAD-adjusting workaround, which completely avoids the need to predict the pre-P135 SBP value that will be calculated by SAA. Rather than adding an adjustment to BPA, you adjust input data as follows:

- Set all Offer Prices to the marginal price (which you have to do anyway under the P135 alternative).
- Set the cost of Energy BSAD to the marginal price (i.e. $UEBCA = UEBCA * \text{Marginal Price}$)
- Set BPA to zero (because it's already allowed for in the calculated Marginal Price)

This workaround is actually simpler and less error-prone than the P135 workaround (because it avoids the need to predict the pre-P135 price).

In addition, the comments on the P135 Workaround also apply to the P135 Alternative Workaround.

Comments on P135 Alternative Software Solution

The mechanism for incorporating the deemed demand control volume (and price) into the Offer stack doesn't seem very clear. Are they treated as two new BSAD variables (in which case it presumably needs to be described in the BSAD Methodology)? As an Offer (in which case it would need to be broken down to the level of individual BM Units)? Or as some entirely new type of variable?

Also the comments on the P135 software solution apply to the P135 Alternative also.

Design Authority Comments – Additional Analysis of Price Errors in Workarounds

Further to the Design Authority comments above, this section of the impact assessment form provides some additional analysis of the potential pricing errors introduced into settlement by the various workaround solutions.

P135 Workaround

The proposed P135 workaround achieves the marginal price in SAA (even though SAA has no functionality for calculating marginal prices) by adjusting the Buy Price Price Adjustment (BPA_j). The value of BPA theoretically required to achieve this is as follows:

$$\text{Revised BPA} = \text{BPA} + (\text{Marginal Price Value}) - (\text{Pre-P135 SBP Value Calculated by SAA})$$

In practice, it may not be possible to achieve the theoretically correct value, for the following reasons:

- i. The *Marginal Price Value* calculated by TOMAS may not be entirely correct e.g. when calculating price values at D+2, TOMAS won't know the correct TLM values to apply to each BM Unit.
- ii. There may be additional errors in estimating the *Pre-P135 SBP Value Calculated by SAA*.

The advantage of running SAA to determine the *Pre-P135 SBP Value Calculated by SAA* (i.e. option (a) in step 9 of the workaround) is that it completely avoids the second of these errors. For this reason, option (a) should generally reduce the level of pricing error introduced by the workarounds.

P135 Alternative Workaround

The P135 Alternative introduces an additional complexity, in that the Marginal Price Value calculated by TOMAS feeds forwards into Bid-Offer Prices, and hence affects the *Pre-P135 SBP Value Calculated by SAA*. However, whether or not this is a problem depends on the method used to calculate the value:

- Under option (a) in step 11, the *Pre-P135 SBP Value Calculated by SAA* is practically guaranteed to be correct, as it will be produced by an actual run of the SAA system.
- Under option (b), the *Pre-P135 SBP Value Calculated by SAA* is susceptible to differences in Bid-Offer data between TOMAS and SAA (including differences in the manual setting of Offer Prices to the marginal price).

So for the P135 Alternative, even more than P135 proper, it is preferable to perform a dummy settlement run (withholding settlement reports) in order to determine BPA i.e. option (a) rather than (b) in step 13.

P135 Alternative Workaround – A Different Approach

As stated in the Design Authority Comments above, the P135 Alternative is actually amenable to a rather different sort of BSAD-adjusting workaround:

- Set all Offer Prices to the marginal price (which you have to do anyway under the P135

alternative).

- Set the cost of Energy BSAD to the marginal price (i.e. $UEBCA = UEBVA * \text{Marginal Price}$)
- Set BPA to zero (because it's already allowed for in the calculated Marginal Price)

This is guaranteed to achieve the desired Marginal Price, without any need to perform a dummy SAA run. (Like any pricing workaround, it obviously remains susceptible to errors in the actual calculation of the Marginal Price by TOMAS).

P135 Impact Assessment from Market Monitoring and Reporting

Assumptions

- NGC will provide a new flow containing the Settlement Dates and Periods they consider to be "Periods of Demand Reduction" in an agreed format to both ELEXON and the SAA;
- MP135 states that the "Demand Reduction" SBP should be "the price of the most expensive accepted whole (or part) Offer in the NIV stack... that are not De Minimus [i.e. <DMAT], arbitrage or NIV tagged offers". It is assumed that the exclusions should also list acceptances whose Continuous Acceptance Duration (CAD) <CADL;
- No new Price Derivation Codes will be created for these modifications;
- This work will be completed as part of an ELEXON CVA Programme Release, not a separate project, which would require much greater contribution from MMR;
- **No time** has been included for Project liaison, any Auditor requirements or preparation for or participation in Integration Testing, SIT or PPT;
- **5 person-days** Management resource will be required per approved modification to oversee these changes within MMR;
- Impacted documentation is listed but **no time** is included in estimates for carrying out revisions;
- Impact on the Web Team of the additional reporting requirements is **not included** in this impact assessment.

P135 Marginal System Buy Price During Periods of Demand Reduction

Manual

TOMAS would have to be modified to load the new flow containing the list of Demand Control periods. The flow should therefore be in NETA Flow Format and should be transmitted to ELEXON via e-mail or the MDM system. A new price calculation module for demand reduction periods should be created and new logic added to existing modules to consider the data loaded from the new flow. Additional System Reports will be required to publish data on the ELEXON Web Site.

A new flow format should be agreed between TOMAS and the SAA for transmission of 'corrected' prices, and this flow created within TOMAS as a System Report. TOMAS has previously been used to provide Settlement Data to the SAA, but significant changes have been made to the TOMAS System since this use, in particular the entire Imbalance Price Calculation was rewritten for P78. ELEXON would have to test this system to Settlement standard and ensure the operational environment and infrastructure supported the provision of this data within agreed timescales. System Testing, Integration testing and Disaster Recovery testing should also be carried out.

Impacts: TOMAS Software (Development 6 days, testing 24 days (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue. If new NGC flow is to be received via MDM, MDM Software (Development 5 days, testing 15 days including regression) and documentation. Operational Impact of 2 person-days per week.

System

TOMAS would have to be modified to load the new flow containing the list of Demand Control periods. The flow should therefore be in NETA Flow Format and should be transmitted to ELEXON via e-mail or the MDM system. A new price calculation module for Demand Control periods should be created and new logic added to existing modules to consider the data loaded from the new flow. Additional System Reports will be required to publish data on the ELEXON Web Site.

Impacts: TOMAS Software (Development 5 days, testing 12 days (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue. If new NGC flow is to be received via MDM, MDM Software (Development 5 days, testing 15 days including regression) and documentation.

P135 Alternative Solution

Manual

TOMAS would have to be modified to load the new flow containing the list of Demand Control periods and Deemed Demand Control Volume (DDCV). The flow should therefore be in NETA Flow Format and should be transmitted to ELEXON via e-mail or the MDM system. A new price calculation module for Demand Control periods should be created and new logic added to existing modules to consider the data loaded from the new flow. Additional System Reports will be required to publish data on the ELEXON Web Site.

A new flow format should be agreed between TOMAS and the SAA for transmission of 'corrected' prices, and this flow created within TOMAS as a System Report. TOMAS has previously been used to provide Settlement Data to the SAA, but significant changes have been made to the TOMAS System since this use, in particular the entire Imbalance Price Calculation was rewritten for P78. ELEXON would have to test this system to Settlement standard and ensure the operational environment and infrastructure supported the provision of this data within agreed timescales. System Testing, Integration testing and Disaster Recovery testing should also be carried out.

Impacts: TOMAS Software (Development 7 days, testing 26 days (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue. If new NGC flow is to be received via MDM, MDM Software (Development 5 days, testing 15 days including regression) and documentation. Operational Impact of 2 person-day per week.

System

TOMAS would have to be modified to load the new flow containing the list of Demand Control periods and Deemed Demand Control Volume (DDCV). The flow should therefore be in NETA Flow Format and should be transmitted to ELEXON via e-mail or the MDM system. A new price calculation module for Demand Control periods should be created and new logic added to existing modules to consider the data loaded from the new flow. Additional System Reports will be required to publish data on the ELEXON Web Site.

Impacts: TOMAS Software (Development 6 days, testing 14 days (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue. If new NGC flow is to be received via MDM, MDM Software (Development 5 days, testing 15 days including regression) and documentation.

Assessor Name		Assessor Team	ELEXON Corporate Communications	Date	01/09/03
1. Does this Impact your Department?					
2. System Impacts?					
Description:					
BSC (ELEXON) website – www.elexon.co.uk					
Whether urgent Modification 135 or Alternative Modification 135 be implemented the impact on the BSC (ELEXON) website will be similar.					
It would be necessary to modify the static content on the Pricing Data page explaining the changes to the derivation of the pricing calculation and resulting data, and amendments would be required to the content of each individual TOMAS web price report <SBP/SSP/NIV> published within the Pricing Data section http://www.elexon.co.uk/ta/pricing_data/prices.html					
In addition, provision would also be made for the publishing of the demand control period duration (in time and in settlement periods) within the Pricing Data section.					
Allow 6 man days to carry out the work described above, this figure is inclusive of development and testing.					
Total Resources (man days) (Development)	6	Lead time			
3. Process Impacts?					
Description:					
Total Resources (man days) (Development)		Lead time			
4. Documentation Impacts?					
Description:					
The BSC (ELEXON) website URS would need to be updated (allow 1 day).					
Total Resources (man days) (Development)		Lead time			
5. Operational Impacts?					
Description:					
Ongoing Resources (man days per annum) (Post-implementation)					
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?					
Description:					
7. Any other Comments or Assumptions made:					
Overall Lead Time for Project					7 man days

Assessor Name	Phil Clinch	Assessor Team	CVA Programme	Date	1/9/03
1. Does this Impact your Department?		Yes			

2. System Impacts?	Yes				
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Description:**Manual Solution:**

- Business Process Model
- TOMAS
- BSC Website

SAA software solution:

- Business Process Model
- BSC Website

Total Resources (man days) (Development)		Lead time	
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3. Process Impacts?	Yes				
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Description:**Manual Solution:**

- a new 'Workaround' would need to be developed
- changes to LWIs in Service delivery
- changes to any TOMAS LWIs and operational procedures
- change to any BSC Website LWIs

SAA software solution:

- a new 'Workaround' would need to be developed (as this is not a 'full' software solution)
- changes to LWIs in Service delivery
- change to any BSC Website LWIs

Total Resources (man days) (Development)		Lead time	
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4. Documentation Impacts?	Yes				
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Description:**Manual solution:**

- BMRA Service Description
- BMRA Manual System Specification
- SAA Service Description
- SAA Manual System Specification

<ul style="list-style-type: none"> • TOMAS documentation • BSC Website documentation? <p>SAA software solution:</p> <ul style="list-style-type: none"> • SAA URS, SS, MSS and OSM • BMRA documentation? • TOMAS not impacted? • BSC Website? 			
Total Resources (man days) (Development)			Lead time
5. Operational Impacts?	No		
Description:			
Ongoing Resources (man days per annum) (Post-implementation)			
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?			Yes
Description:			
Manual Solution:			
There is an impact on Service Delivery (and TOMAS), Central Services Agent and NGC Systems Operations.			
Software Solution			
There is an impact on Service Delivery, Central Services Agent, and NGC Systems Operation			
7. Any other Comments or Assumptions made:			
Manual Solution:			
The manual solution would involve changes to TOMAS, the development of appropriate LWIs, and changes to CSA documentation and processes.			
We would need a Walkthrough of the LWIs, TOMAS testing and BSC Website changes and testing.			
The manual solution is relatively low risk as the pricing calculation for non-Demand Control periods is not touched. The operational cost quoted by Logica is extremely high and incurs a per-incident cost that could be very expensive.			
SAA Software Solution			
This solution proposed by Logica is low cost, medium implementation risk but overall is a high risk as it involves changes to the SAA pricing calculation for all Settlement Periods.			
We would need to carry out considerable testing:			
<ul style="list-style-type: none"> • Verification testing (part) • OAT • Change Specific Testing • Regression testing (part) 			
The SAA system is not being changed as part of the November 03 Release. If the P135 SAA software solution is chosen then there would be a patch applied for SAA. This patch could be delayed until the required level of testing (particularly Regression Testing of the calculations) is completed but this			

would expose us to the risk that a Demand Control period could occur before the patch has been fully tested.

CVA Programme Resourcing

There are no CVA Programme resources available for testing either the Manual or Software solutions. This would therefore be demand led.

Overall Lead Time for Project:

Manual Solution:

The time to develop the TOMAS functionality is probably the critical lead time activity.

Software Solution (SAA)

Provided an order is placed by 12th September, Logica can meet the November date for a patch to SAA. However, they do NOT include Regression Testing of the SAA Pricing Calculation in their quote or timetable.

The patch release could not be applied without a Regression Test. If a Regression Test could not be achieved by the November release date then the SAA P135 patch would have to be applied after that date once appropriate testing had been completed but this would raise a risk that if a Demand Control period were to arise, the II run could not be carried out with the P135 patch. This could be addressed at the first reconciliation run.

Assessor Name	Richard Smith	Assessor Team	Assurance	Date	01/09/03
1. Does this Impact your Department?		Yes			
2. System Impacts?	Yes				
Description:					
ELEXON is developing systems with Service Delivery to support the Post-Final Extra Settlement Determination process. This change to the price calculation will impact these.					
Total Resources (man days) (Development)			Lead time		
3. Process Impacts?					
Description:					
Further to our assessment of 5 th August, our estimate of Delivery assurance & Elexon Audit by Systems Assurance Team is 20 man days.					
No impact on Trading Disputes process					
No impact on Performance Assurance or BSC Audit processes					
No impact on P6 processes					
Total Resources (man days) (Development)		20	Lead time		
4. Documentation Impacts?					
Description:					
As per previous IA:					
Obligations Register – estimated at 0.5 man days					
ELEXON view of BPM – estimated at 1 man day					
ESD documentation – estimated at 5 man days					
Total Resources (man days) (Development)		7.5	Lead time		
5. Operational Impacts?					
Description:					
Ongoing Resources (man days per annum) (Post-implementation)					
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?					
Description:					
7. Any other Comments or Assumptions made:					
Overall Lead Time for Project					