
WELCOME

GC0166: Introducing new Balancing Programme Parameters for Limited Duration Assets

Workgroup 5 – 10 June 2024

Online Meeting via Teams

Agenda

Topics to be discussed	Lead
Introductions	Chair
Objectives, Timeline and Terms of Reference	Chair
Action Update - Review Action 11/15 subgroup group slides from Chris McLeod - How frequently need to declare?	All
Review Legal Text	Steve Baker, ESO
Identify remaining questions/ clarifications for solution	Steve Baker, ESO
Workgroup Feedback on Action 11	Bernie Dolan, ESO
Consider Timeline including Workgroup Consultation date	Chair
Any Other Business	Chair
Next Steps	Chair

Expectations of a Workgroup Member

- Contribute to the discussion
- Be respectful of each other's opinions
- Language and Conduct to be consistent with the values of equality and diversity
- Do not share commercially sensitive information
- Be prepared - Review Papers and Reports ahead of meetings
- Complete actions in a timely manner
- Keep to agreed scope
- Email communications to/cc'ing the .box email

Your Roles

- Help refine/develop the solution(s)
- Bring forward alternatives as early as possible
- Vote on whether or not to proceed with requests for Alternatives
- Vote on whether the solution(s) better facilitate the Code Objectives

Workgroup Membership

Name	Company	Role	Sector
Steve Baker	National Grid ESO	Proposer	System Operator
Chris McLeod	Habitat Energy	Workgroup Member	Non-Physical Trader, VLP
Damian Jackman	Field Energy	Workgroup Member	Battery Systems Development/Construction/Operator
Davide Miriello	Enel X	Workgroup Member	Supplier
Eli Treuherz	Arenko Group	Workgroup Member	Generator
Giorgio Balestrieri	Tesla	Workgroup Member	Generator
Graz Macdonald	Waters Wye & Associates	Workgroup Member	Consultant
Hooman Andami	Elmya Energy	Workgroup Member	Generator
Isaac Gutierrez	ScottishPower Renewables	Workgroup Member	Generator
Jamie Clark	Conrad Energy	Workgroup Member	Generator
Jasper Vermandere	YUSO	Workgroup Member	Trader Optimiser
Kamila Nugumanova	Drax Group	Workgroup Member	Generator
Lauren Jauss	RWE Supply & Trading GmbH	Workgroup Member	Generator and Supplier
Maria Popova	Centrica	Workgroup Member	More than one
Oluwabukola Daniel	EDF Renewables	Workgroup Member	Generator
Peter Errington	Flexitricity Ltd	Workgroup Member	Generator
Richard Devenport	Shell	Workgroup Member	Supplier
Robert Longden	Cornwall Insight/Eneco Energy Trade BV	Workgroup Member	Generator
Mark Steger	EDF Energy (UK)	Workgroup Member	
Shantanu Jha	Zenobe	Workgroup Member	Generator
Simon Lord	Engie	Workgroup Member	Generator
Stephen Knight	SSE	Workgroup Member	Generator
Luke McCartney	Ofgem	Authority Representative	Authority

Objectives, Timeline and Terms of Reference

Milly Lewis – ESO Code Administrator

Timeline for GC0166

Milestone	Date	Milestone	Date
Modification presented to Panel	14 December 2023	Code Administrator Consultation (1 Month)	01 October 2024 to 01 November 2024
Workgroup Nominations (15 Working Days)	18 December 2023 to 18 January 2024	Draft Final Modification Report (DFMR) issued to Panel (5 working days)	20 November 2024
Workgroup 1 Workgroup 2 Workgroup 3 Workgroup 4 Workgroup 5 Workgroup 6 To discuss the proposal, analysis required and begin refining the solution.	01 February 2024 7 March 2024 08 April 2024 15 May 2024 10 June 2024 21 June 2024	Panel undertake DFMR recommendation vote	29 November 2024
Workgroup Consultation (15 working days)	14 June 2024 to 05 July 2024 24 June 2024 to 12 July 2025	Final Modification Report issued to Panel to check votes recorded correctly	02 December 2024 – 09 December 2024
Workgroup 7 Workgroup 8 Workgroup 9 Workgroup 10 To review the Workgroup Consultation responses and to finalise the solution	18 July 2024 Early August 2024 20 August 2024 10 September 2024	Final Modification Report issued to Ofgem	10 December 2024
Workgroup report issued to Panel (5 working days)	18 September 2024	Ofgem decision	Early March 2025
Panel sign off that Workgroup Report has met its Terms of Reference	27 September 2024	Implementation Date	End of March 2025

Workgroup Terms of Reference

a) Implementation and costs;
b) Review draft legal text should it have been provided. If legal text is not submitted within the Grid Code Modification Proposal the Workgroup should be instructed to assist in the developing of the legal text;
c) Consider whether any further Industry experts or stakeholders should be invited to participate within the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup. Demonstrate what has been done to cover this clearly in the report; and
d) Consider EBR implications
e) Liaise with other industry groups regarding related information that Network Operators may require

Actions

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
12	WG3	BD/SB	References in BC1 compliance	NESO to issue instruction based on declared parameters - BC2 Sections as below stating if parameters are obeyed what can constitute reasons to reject them? **BC2.6.1** Normal Communication With Control Points (a) With the exception of BC2.6.1(c) below, Bid-Offer Acceptances and, unless otherwise agreed with The Company, Ancillary Service instructions shall be given by automatic logging device and will be given to the Control Point for the BM Unit. For all Planned Maintenance Outages the provisions of BC2.6.5 will apply. For Generating Units (including DC Connected Power Park Modules (if relevant)) communications under BC2 shall be by telephone unless otherwise agreed by The Company and the User. (b) Bid-Offer Acceptances and Ancillary Service instructions must be formally acknowledged immediately by the BM Participant (or the relevant person on its behalf) via the Control Point for the BM Unit or Generating Unit in respect of that BM Unit or that Generating Unit. The acknowledgement and subsequent confirmation or rejection, within two minutes of receipt, is normally given electronically by automatic logging device. If no confirmation or rejection is received by The Company within two minutes of the issue of the Bid-Offer Acceptance, then The Company will contact the Control Point for the BM Unit by telephone to determine the reason for the lack of confirmation or rejection. Any rejection must be given in accordance with BC2.7.3 or BC2.8.3. (c) In the event of a failure of the logging device or an outage of The Company's computer system, Bid-Offer Acceptances and instructions will be given, acknowledged, and confirmed or rejected by telephone. The provisions of BC2.9.7 are also applicable. **BC2.7.3** Confirmation and Rejection of Acceptances Bid-Offer Acceptances may only be rejected by a BM Participant : (a) on safety grounds (relating to personnel or plant) as soon as reasonably possible and in any event within five minutes; or (b) because they are not consistent with the Export and Import Limits or Dynamic Parameters applicable at the time of issue of the Bid-Offer Acceptance. A reason must always be given for rejection by telephone. Where a Bid-Offer Acceptance is not confirmed within two minutes or is rejected, The Company will seek to contact the Control Point for the BM Unit. The Company must then, within 15 minutes of issuing the Bid-Offer Acceptance, withdraw the Bid-Offer Acceptance or log the Bid-Offer Acceptance as confirmed. The Company will only log a rejected Bid-Offer Acceptance as confirmed following discussion and if the reason given is, in The Company's reasonable opinion, not acceptable, The Company will inform the BM Participant accordingly. **BC2.8.3** Rejection of Ancillary Service Instructions (a) Ancillary Service instructions may only be rejected, by automatic logging device or by telephone, on safety grounds (relating to personnel or Plant) or because they are not consistent with the applicable Export and Import Limits, Dynamic Parameters, Other Relevant Data or data contained in the Ancillary Services Agreement and a reason must be given immediately for non-acceptance. (b) The issue of Ancillary Service instructions for Reactive Power will be made with due regard to any resulting change in Active Power output. The instruction may be rejected if it conflicts with any Bid-Offer Acceptance issued in accordance with BC2.7 or with the Physical Notification.	WG5	Proposed to Close

Actions

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
14	WG4	BD/SB	BC11 Definitions: Consider removing 'to The Company'	Removed "To The Company"- see Legal text	WG5	Proposed to Close
15	WG4	SB/BD	ESO to look into how we deal with additional declaration when more reserve has been used by a BMU. Liaise with Control Room.	Chris McLeod slides to be reviewed in WG5 following Action 15 SubGroup meeting with Bernie on 4th June Incorporating DFR & Redeclaration of MDO/B within Dispatch timescales	WG5	Proposed to Close
16	WG4	SB/BD	To work with the subgroup to: - provide a diagram to WG on how stacking services would work - provide clarity on the redeclaration scenarios	Diagram contained in this link: https://www.nationalgrideso.com/document/184466/download	WG5	Proposed to Close
17	WG4	LM	To provide the WG information on 'Open letter on dynamic parameters and other information submitted by generators in the Balancing Mechanism'	Liam confirmed that there are not any immediate concerns with classing MDO/MDB as dynamic parameters from an enforcement/compliance perspective. As it is believed that the definition still reads as the amount of energy that can technically be delivered subject to any other ancillary service commitments, rather than the amount that the party would like to deliver. Therefore, this is broadly consistent with other dynamic data in terms of the focus on technical rather than commercial data. Also he believes that as the definition explicitly calls out that the information should be submitted net any energy required for ancillary service contracts, it would mean that it would be difficult for a party to argue that that similar contractual considerations should be accounted for when submitting other dynamic data.	WG5	Proposed to Close
18	WG4	SB	Consider if need 15 or 30 minute rule or whether it is a permanent change (IT systems assume this is max value MIL/MEL)	15/ 30 minute rule due to be replaced when this Modification becomes live		Proposed to Close
19	WG4	SB	To review BC1 Definitions for MDO/MDB: consider expressions 'deliver' and 'receive'.	Suggest the following- **Maximum Delivery Offer (MDO)**, being the maximum volume of an **Offer** by a **BM Unit** which can be instructed by **The Company** through **Bid Offer Acceptance (BOA)** instructions to the **BM Unit**, the volume excludes energy required to satisfy **System Ancillary Services** and/or **Commercial Ancillary Services** such as response and reserve commitments. **Maximum Delivery Bid (MDB)**, being the maximum volume of a **Bid** by the **BM Unit** which can be instructed by **The Company** through **Bid Offer Acceptance (BOA)** instructions to the **BM Unit**, the volume excludes energy required to satisfy **System Ancillary Services** and/or **Commercial Ancillary Services** such as response and reserve commitments. Discuss as part of Legal text Review.	WG5	Proposed to Close
20	WG4	SD	To confirm with BSC Panel what stage of approval they require ahead of starting the BSC modification	ESO received confirmation that agree ESO approach in principle Confirmed contacts from a codes and technical perspective. Feedback was that approach is appropriate we had a enough to start with to speak about final exchange.	WG5	Ongoing

HABITAT ENERGY

GC0166 Action 15
Incorporating DFR & Redeclaration of MDO/B within Dispatch timescales
Subgroup

04th June 2024

Technical vs Commercial nature of MDO/B for limited duration assets

Mindful of OFGEM's Open Letter on treatment of Dynamic Parameters

Posit the following should be accepted as legitimate reasons for modifying/netting from a purely technical SoE parameter, distinguishing at all times between NGESO Dispatch Timescale, & Scheduling Timescale:

- Technical fault or outage impacting available energy
- Physical Notification as best view of intended dispatch profile [particularly on becoming 'Final' at Gate Closure if deliverability is to be maintained]
- Contracted ESO or DNO ancillary service energy which must be reserved under Service Terms (e.g. DFR)
- Response energy as part of ancillary service provision*

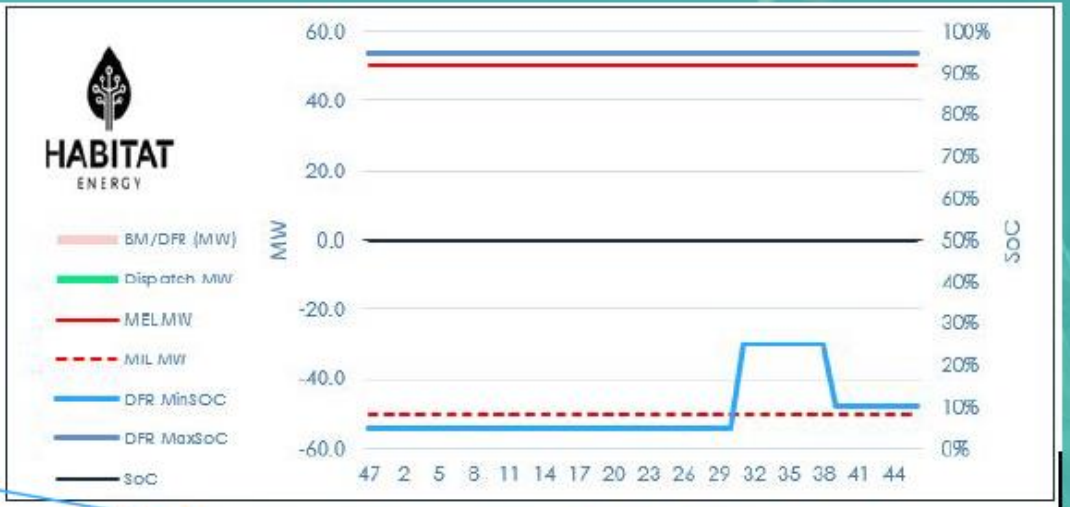
*** Not conflating the Reserved Energy Volume (REV) required under the relevant contract with the updating of MDO/B headroom and footroom over and above the REV which is made available for BOAs, and should be viewed as ensuring a minimum level of accuracy of SoE desirable within BM systems. It is our recommendation that providers are not encouraged to model expected DFR throughput as part of calculating MDO/B, but instead net the Contracted energy requirement & periodically update based on actual response delivery at a reasonable cadence or following an agreed trigger threshold.**

10MW DRL in current EFA & 10MW DCL in upcoming EFA [i]

- Time now 17:30 [SP36]
- 10MW DRL contract being delivered in EFA5
- 10MW DCL Contract starting 19:00/EFA6
- No planned PN
- Next gate closure: 19:00
- prior submitted MDO 11.9MWh within NGESO Dispatch timeframe (gate closed periods)
- Increasing to 19MWh within scheduling timeframe as smaller Reserved Energy Volume (REV) from DC contract leaves more headroom

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

NGESO BOA / Frequency response

Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)	MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:00	31	5	5a	0.0	0.0	50%	-50	50			
15:30	32			0.0	0.0	50%	-50	50			
16:00	33			0.0	0.0	50%	-50	50			
16:30	34			0.0	0.0	50%	-50	50			
17:00	35		5b	0.0	0.0	50%	-50	50			
17:30	36			0.0	0.0	50%	-50	50	-24.3	11.9	Dispatch timeframe
18:00	37			0.0	0.0	50%	-50	50	-24.3	11.9	
18:30	38	Self dispatch (PN)		0.0	0.0	50%	-50	50	-24.3	11.9	
19:00	39	6	6a	0.0	0.0	50%	-50	50	-24.3	19.0	Scheduling timeframe
19:30	40			0.0	0.0	50%	-50	50	-24.3	19.0	
20:00	41			0.0	0.0	50%	-50	50	-24.3	19.0	
20:30	42			0.0	0.0	50%	-50	50	-24.3	19.0	
21:00	43		6b	0.0	0.0	50%	-50	50	-24.3	19.0	
21:30	44			0.0	0.0	50%	-50	50	-24.3	19.0	
22:00	45			0.0	0.0	50%	-50	50	-24.3	19.0	

MDO Increases in EFA6 due to lower REV moving from DR to DC

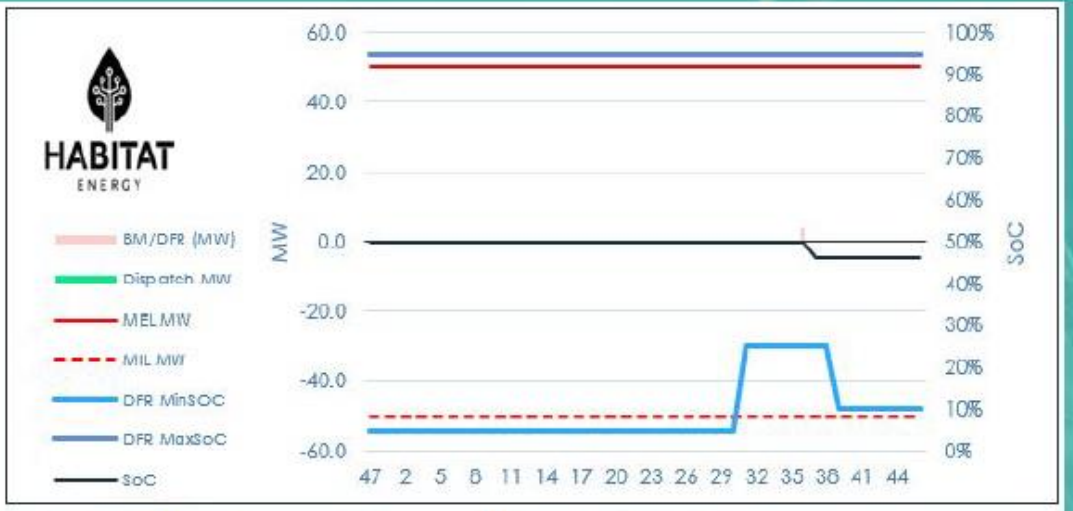
10MW DRL in current EFA & 10MW DCL in upcoming EFA [ii]

- Time now 17:55 [SP36]
- Provision of 2MWh of response in DRL so far in SP36
- redeclare MDO/B through to 19:00 via EDL (NGESO Dispatch timeframe / gate closed periods)
- redeclare MDO/B from 19:00 via EDT (Scheduling timeframe)

*** Balances accuracy of SoE within BM systems with data load and a "desirable" number of redeclarations. Should there be an agreed percentage threshold from which a provider's new MDO/B differs from their last submitted value which triggers a redeclaration?**

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)	MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:00	31	5	5a	0.0	0.0	50%	-50	50			
15:30	32			0.0	0.0	50%	-50	50			
16:00	33			0.0	0.0	50%	-50	50			
16:30	34			0.0	0.0	50%	-50	50			
17:00	35		5b	0.0	0.0	50%	-50	50			
17:30	36			0.0	4.0	50%	-50	50	-24.3	11.9	Dispatch timeframe
18:00	37			0.0	0.0	46%	-50	50	-26.5	10.0	
18:30	38			0.0	0.0	46%	-50	50	-26.5	10.0	
19:00	39	6	6a	0.0	0.0	46%	-50	50	-26.5	17.1	Scheduling timeframe
19:30	40			0.0	0.0	46%	-50	50	-26.5	17.1	
20:00	41			0.0	0.0	46%	-50	50	-26.5	17.1	
20:30	42			0.0	0.0	46%	-50	50	-26.5	17.1	
21:00	43		6b	0.0	0.0	46%	-50	50	-26.5	17.1	
21:30	44			0.0	0.0	46%	-50	50	-26.5	17.1	
22:00	45			0.0	0.0	46%	-50	50	-26.5	17.1	

Provision of response warrants redec of MDO/B for accuracy*

MDO increases in EFA6 due to lower REV moving from DR to DC

Appendix

Other example scenarios

[A] & [B] - instances whereby PN energy should be netted from MDO/B with illustrative BOA

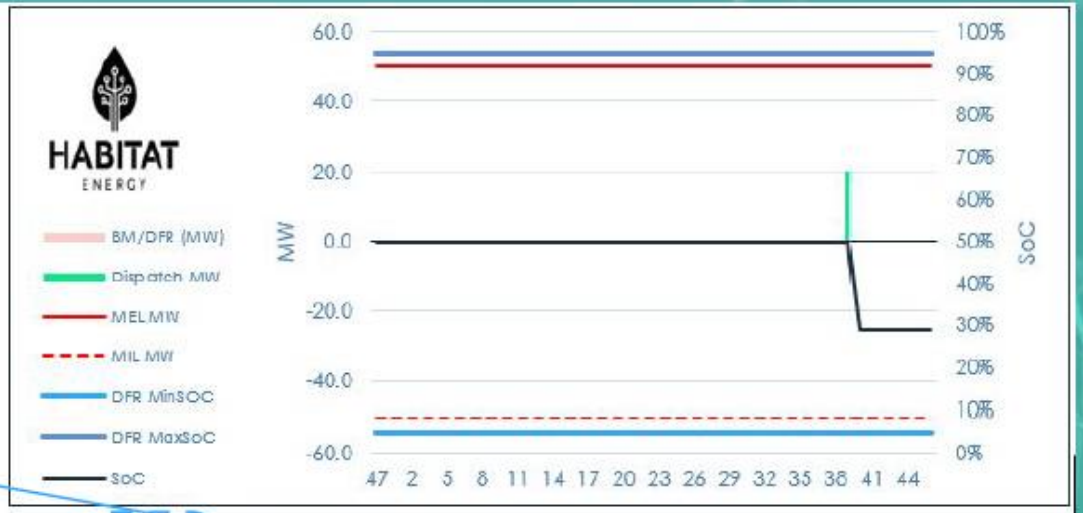
[C] - instances where there is an upcoming DFR contract with illustrative BOA

A. No DFR, PN in future period [i]

- Time now: 17:00 [SP35]
- No DFR Contracts
- 20MW export PN planned for 19:00 [SP39]
- Next Gate Closure: 18:30 [SP38]
- Declared MDO 21.4MWh within dispatch [Gate Closed] window
- Dropping to 11.4MWh following the planned PN

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



NGESO BOA / Frequency response

Date: 04/06/2024

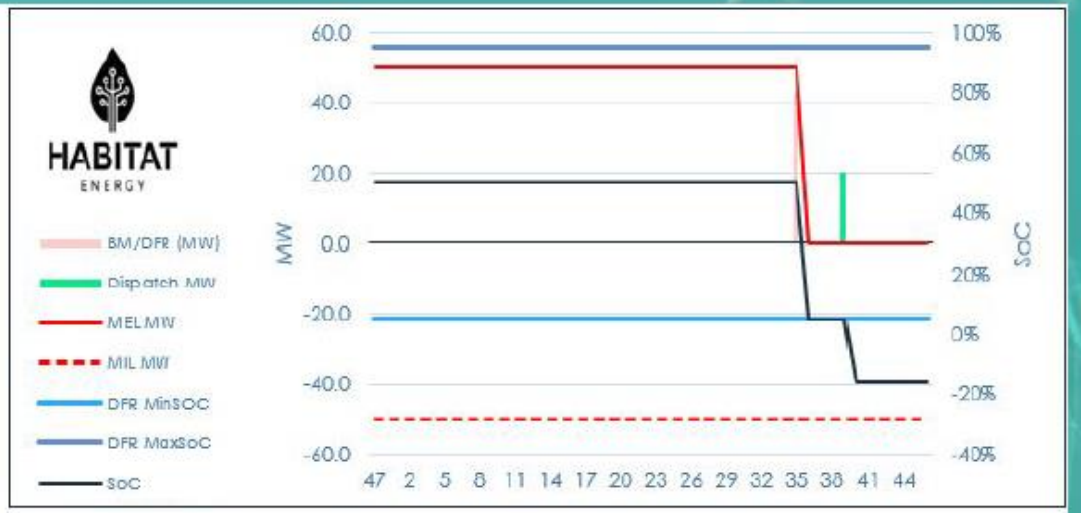
Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)	MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:30	32	5	5a	0.0	0.0	50%	-50	50			
16:00	33			0.0	0.0	50%	-50	50			
16:30	34			0.0	0.0	50%	-50	50			
17:00	35		5b	0.0	0.0	50%	-50	50	-24.3	21.4	Dispatch timeframe
17:30	36			0.0	0.0	50%	-50	50	-24.3	21.4	
18:00	37			0.0	0.0	50%	-50	50	-24.3	21.4	
18:30	38			0.0	0.0	50%	-50	50	-24.3	21.4	Scheduling timeframe
19:00	39	Self dispatch (PN)		20.0	0.0	50%	-50	50	-24.3	21.4	
19:30	40	6	6a	0.0	0.0	29%	-50	50	-35.7	11.4	← MDO/B modelled change following PN
20:00	41			0.0	0.0	29%	-50	50	-35.7	11.4	
20:30	42			0.0	0.0	29%	-50	50	-35.7	11.4	
21:00	43		6b	0.0	0.0	29%	-50	50	-35.7	11.4	
21:30	44			0.0	0.0	29%	-50	50	-35.7	11.4	
22:00	45			0.0	0.0	29%	-50	50	-35.7	11.4	
22:30	46			0.0	0.0	29%	-50	50	-35.7	11.4	

A. No DFR, PN in future period [ii]

- NGESO issues BOA in SP35 using all available MDO (21.4 MWh)
- taking asset to Min SoC
- Result is that planned PN at 19:00 [SP39] is no longer deliverable
- MDO redeclared post BOA to zero, & update to MDB within dispatch timescale, as well as forward in scheduling timescale*
- Occurs within scheduling timeframes so PN is removed and exposure traded

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Breach
MEL Limit:	Breach



Date
04/06/2024

Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)		MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:30	32	5	5a	0.0	0.0	50%		-50	50			
16:00	33			0.0	0.0	50%		-50	50			
16:30	34			0.0	0.0	50%		-50	50			
17:00	35		5b	0.0	42.8	50%	0	-50	50	-24.3	21.4	Dispatch timeframe
17:30	36			0.0	0.0	5%		-50	0	-48.6	0.0	← MDO/B redeclared
18:00	37			0.0	0.0	5%		-50	0	-48.6	0.0	
18:30	38			0.0	0.0	5%	0	-50	0	-48.6	0.0	Scheduling timeframe
19:00	39	6	6a	20.0	0.0	5%		-50	0	-48.6	0.0	
19:30	40			0.0	0.0	-16%		-50	0	-60.0	-10.0	Planned PN no longer deliverable
20:00	41			0.0	0.0	-16%		-50	0	-60.0	-10.0	
20:30	42			0.0	0.0	-16%		-50	0	-60.0	-10.0	
21:00	43		6b	0.0	0.0	-16%		-50	0	-60.0	-10.0	
21:30	44			0.0	0.0	-16%		-50	0	-60.0	-10.0	
22:00	45			0.0	0.0	-16%		-50	0	-60.0	-10.0	
22:30	46			0.0	0.0	-16%		-50	0	-60.0	-10.0	

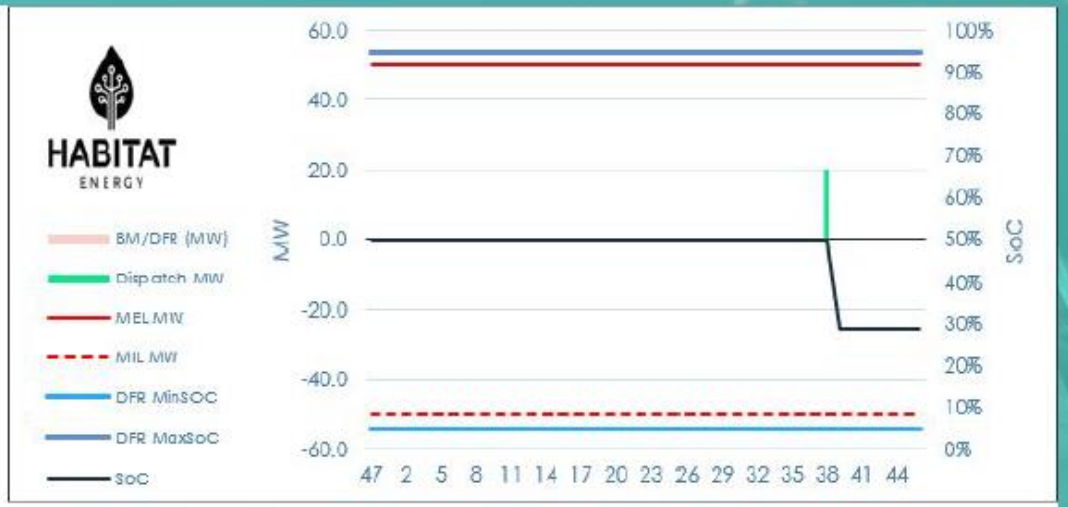
* MDO & SoC unlikely to go negative. Illustrative to highlight future breach

B. No DFR, PN in next period to become Gate Closed [i]

- Time now 17:25 [SP35]
- No DFR Contracts
- 20MW export PN planned for **18:30 [SP38]**
- Next gate closure: 18:30 [in 5min]
- prior submitted MDO 21.4MWh
- Alongside FPN, redeclare MDO to 11.4MWh within NGESO Dispatch timeframe (gate closed periods)
- MDB redeclared in scheduling window
- Safeguards deliverability of FPN showing NGESO available MWh headroom between Time_Now and 18:30

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

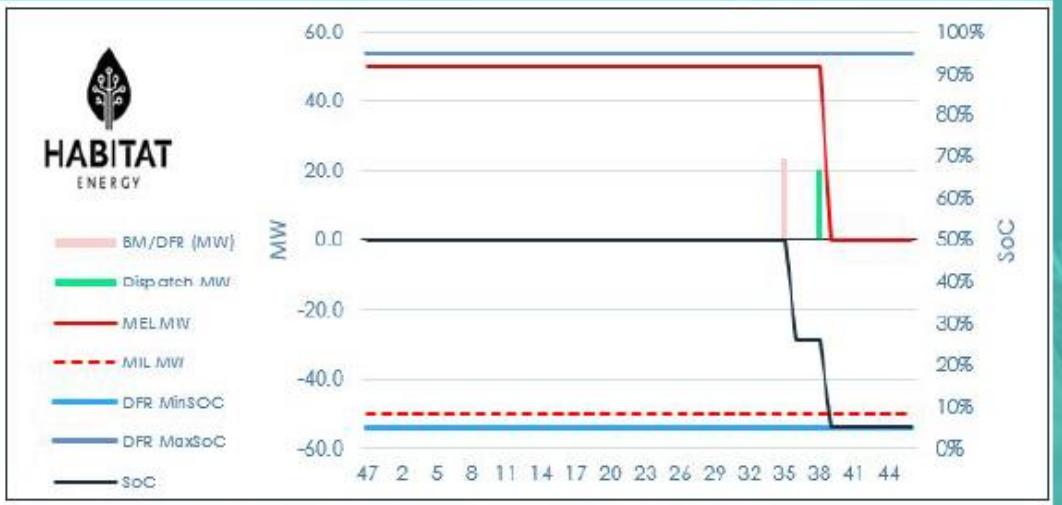
Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)	MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:30	32	5	5a	0.0	0.0	50%	-50	50			
16:00	33			0.0	0.0	50%	-50	50			
16:30	34			0.0	0.0	50%	-50	50			
17:00	35		5b	0.0	0.0	50%	-50	50	-24.3	11.4	Dispatch timeframe
17:30	36			0.0	0.0	50%	-50	50	-24.3		← MDO redeclared
18:00	37			0.0	0.0	50%	-50	50	-24.3		
18:30	38			20.0	0.0	50%	-50	50	-24.3		Scheduling timeframe
19:00	39	6	6a	0.0	0.0	29%	-50	50	-35.7	11.4	← MDB redeclared
19:30	40			0.0	0.0	29%	-50	50	-35.7	11.4	
20:00	41			0.0	0.0	29%	-50	50	-35.7	11.4	
20:30	42			0.0	0.0	29%	-50	50	-35.7	11.4	
21:00	43		6b	0.0	0.0	29%	-50	50	-35.7	11.4	
21:30	44			0.0	0.0	29%	-50	50	-35.7	11.4	
22:00	45			0.0	0.0	29%	-50	50	-35.7	11.4	
22:30	46			0.0	0.0	29%	-50	50	-35.7	11.4	

B. No DFR, PN in next period to become Gate Closed [ii]

- NGESO issues BOA using all available MDO (11.4 MWh)
- redeclare MDO to 0MWh & update MDB within NGESO Dispatch timeframe (gate closed periods)
- MDO now zero but FPN energy has already been netted so it remains deliverable

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

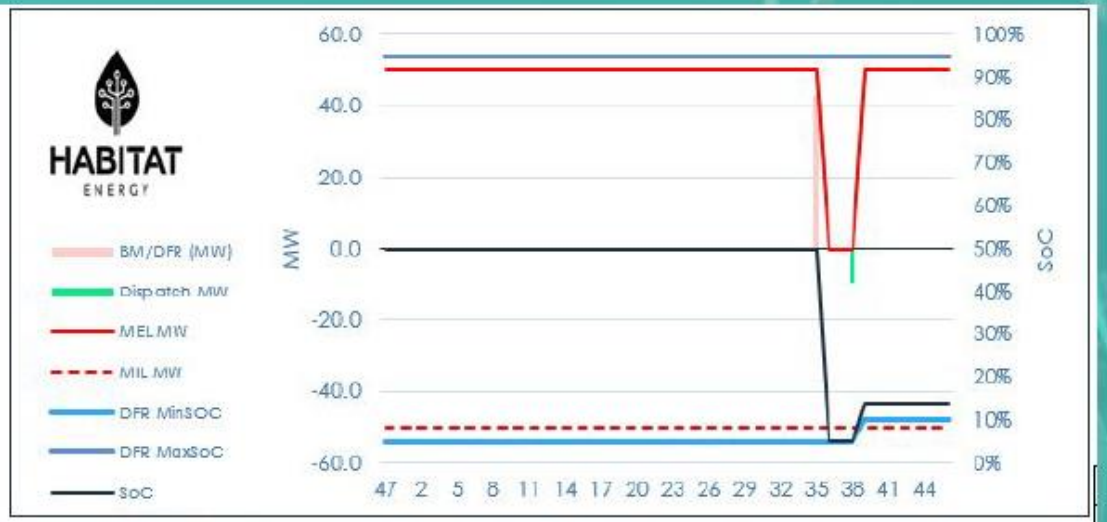
Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)		MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
15:30	32	5	5a	0.0	0.0	50%		-50	50			
16:00	33			0.0	0.0	50%		-50	50			
16:30	34			0.0	0.0	50%		-50	50			
17:00	35		5b	0.0	22.8	50%	0	-50	50	-24.3	11.4	Dispatch timeframe
17:30	36			0.0	0.0	26%		-50	50	-37.3	0	← MDO/B redeclared
18:00	37			0.0	0.0	26%		-50	50	-37.3		
18:30	38			20.0	0.0	26%	0	-50	50	-37.3		Scheduling timeframe
19:00	39	6	6a	0.0	0.0	5%		-50	0	-48.6	0.0	
19:30	40			0.0	0.0	5%		-50	0	-48.6	0.0	
20:00	41			0.0	0.0	5%		-50	0	-48.6	0.0	
20:30	42			0.0	0.0	5%		-50	0	-48.6	0.0	
21:00	43		6b	0.0	0.0	5%		-50	0	-48.6	0.0	
21:30	44			0.0	0.0	5%		-50	0	-48.6	0.0	
22:00	45			0.0	0.0	5%		-50	0	-48.6	0.0	
22:30	46			0.0	0.0	5%		-50	0	-48.6	0.0	

C. 10MW DCL in upcoming EFA [i]

- Time now 17:00 [SP35]
- 10MW DCL Contract starting 19:00/EFA6
- Next gate closure: 18:30
- prior submitted MDO 21.4MWh
- NGESO issues BOA using all available MDO (21.4 MWh) in SP35
- redeclare MDO to 0MWh & update MDB within NGESO Dispatch timeframe (gate closed periods)
- PN charge / Rebaseline in 18:30 [SP38] to regain SoE compliance ahead of EFA6 DCL contract

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)		MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
16:30	34	5		0.0	0.0	50%		-50	50			
17:00	35		5b	0.0	42.8	50%	0	-50	50	-24.3	0	Dispatch timeframe
17:30	36			0.0	0.0	5%		-50	0	-48.6		← MDO/B redeclared
18:00	37			0.0	0.0	5%		-50	0	-48.6		
18:30	38			-10.0	0.0	5%	0	-50	0	-48.6		Scheduling timeframe
19:00	39	6	6a	0.0	0.0	14%		-50	50	-43.8	1.9	←
19:30	40			0.0	0.0	14%		-50	50	-43.8	1.9	
20:00	41			0.0	0.0	14%		-50	50	-43.8	1.9	
20:30	42			0.0	0.0	14%		-50	50	-43.8	1.9	
21:00	43		6b	0.0	0.0	14%		-50	50	-43.8	1.9	
21:30	44			0.0	0.0	14%		-50	50	-43.8	1.9	
22:00	45			0.0	0.0	14%		-50	50	-43.8	1.9	
22:30	46			0.0	0.0	14%		-50	50	-43.8	1.9	

Second MDO/B Redeclaration on submission of PN for SP38

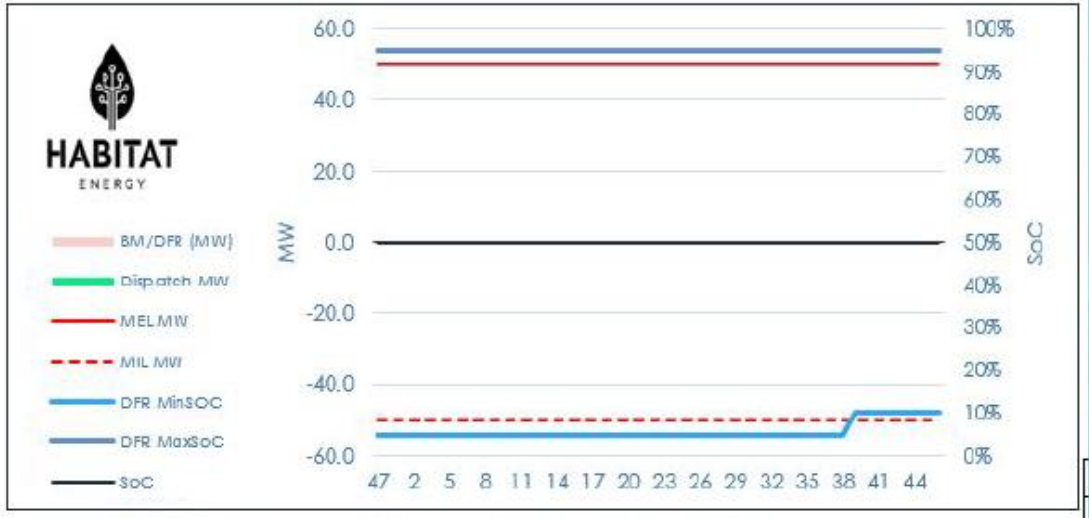
C. 10MW DCL in upcoming EFA [ii]

- Time now 17:25 [SP35]
- No BOA received
- Ahead of gate closure* redeclare MDO to 19MWh for remainder of SP35 as well as subsequent periods in EFA6
- as on SP38 becoming gate closed there is no longer any opportunity for the provider to manage SoC to enter the DC contract with the required service energy

*** At the risk appetite of the provider to determine how much time to leave to re-baseline/PN before gate closure. Requires quick turnaround following acceptance & assessment of BOA energy, and MWh needed to recover, allowing time for EDT submission**

Site:	AG-GC0166 BESS
MW	MWh
50	50
Min SoC	Max SoC
5%	95%
Imp_eff	Exp_eff
93%	95%

SoC Limit:	Ok
MEL Limit:	Ok



Date
04/06/2024

Time	SP	EFA Block	EFA sub-block	Dispatch (MW)	BM/DFR (MW)	SoC (%)		MIL (MW)	MEL (MW)	MDB (MWh)	MDO (MWh)	
16:30	34	5		0.0	0.0	50%		-50	50			
17:00	35		5b	0.0	0.0	50%	0	-50	50	-24.3	21.4	Dispatch timeframe
17:30	36			0.0	0.0	50%		-50	50	-24.3	19	← MDO redeclared
18:00	37			0.0	0.0	50%		-50	50	-24.3		
18:30	38			0.0	0.0	50%	0	-50	50	-24.3		Scheduling timeframe
19:00	39	6	6a	0.0	0.0	50%		-50	50	-24.3	19.0	
19:30	40			0.0	0.0	50%		-50	50	-24.3	19.0	
20:00	41			0.0	0.0	50%		-50	50	-24.3	19.0	
20:30	42			0.0	0.0	50%		-50	50	-24.3	19.0	
21:00	43		6b	0.0	0.0	50%		-50	50	-24.3	19.0	
21:30	44			0.0	0.0	50%		-50	50	-24.3	19.0	
22:00	45			0.0	0.0	50%		-50	50	-24.3	19.0	
22:30	46			0.0	0.0	50%		-50	50	-24.3	19.0	

Overview of Legal Text

Steve Baker – ESO

FSoC versus FSoE

Operational metering signals ESO current specify in Bilateral Agreements are as follows:-

Aggregated Signals (including sub units <1MW)	Range	Scale (Unit)	Accuracy	Resolution	Refresh Rate
Active Power	-1000MW to +1000MW	MW	1% of meter reading	1MW	1 per second
Reactive Power	-1000MVar to +1000MVar	MVar	1% of meter reading	1MVar	1 per second
Power Available	0 – 100MW	MW	1% of meter reading	1MW	1 per second
State of Charge (Energy) (Export)	0 – 100%	%	1% of meter reading	1%	1 per second
State of Charge (Energy) (Import)	0 – 100%	%	1% of meter reading	1%	1 per second
Energy Available (Export)	0 – 1000MWh	MWh	1% of meter reading	1MWh	1 per second
Energy Available (Import)	0 – 1000MWh	MWh	1% of meter reading	1MWh	1 per second

- The last four signals cover related operational metering signals.
- ESO position is that either may work, however bearing in mind that we are talking about energy here, and we are using the units (MWh) then "Future State of Energy (FSoE)" would be the more appropriate term.
- As this is the volume of energy available it may be better to change the word "is" to "would be" as indicated below.

Future State of Energy (FSoE)	The volume of energy (**MWh**) under which an **Electricity Storage Module** would be depleted to zero .

Legal Text Draft changes

GRID CODE SECTION	CODE REQUIREMENTS	DETAILS	COMMENTS-
Glossary & Definitions	**New definition: Future State of Energy (FSoE)**	The volume of energy (MWh) under which an Electricity Storage Module would be depleted to zero.	As we are talking about energy here, and we are using the units (MWh) then "Future State of Energy (FSoE)" is the better term.
Glossary & Definitions	New definition: **Maximum Delivery Offer (MDO)**	As defined in BC1.A.1.5 Dynamic Parameters	Further to speaking with Legal, refer to new DPs in GD and refer to definition in BC1.A.1.5 for consistency with other DPs
Glossary & Definitions	New definition: **Maximum Delivery Bid (MDB)**	As defined in BC1.A.1.5 Dynamic Parameters	as above
Glossary & Definitions	Data Validation, Consistency and Defaulting Rules	The rules relating to validity and consistency of data, and default data to be applied, in relation to data submitted under the Balancing Codes, to be applied by The Company under the Grid Code as set out in the document "Data Validation, Consistency and Defaulting Rules" - Issue 8, dated 25th January 2012. The document is available on the National Grid website or upon request from The Company.	Version needs updating! Housekeeping Issue 9 also includes details of EDT* & EDL* which of course never happened. Ben Carter has recently produced a new draft for version 10 which has these bits stripped out. This is due for review. Decision needed whether v10 will be issued soon or later with the storage parameters added. SCR initials on the 2016 version…

Legal Text Draft changes

GRID CODE SECTION	CODE REQUIREMENTS	DETAILS	COMMENTS-
Balancing Code 1	APPENDIX 1 - BM UNIT DATA BC1.A.1.5 Dynamic Parameters Delete Maximum Delivery Volume (MDV),	•~~Maximum Delivery Volume (MDV), expressed in MWh, being the maximum number of MWh of Offer (or Bid if MDV is negative) that a particular BM Unit may deliver within the associated Maximum Delivery Period (MDP), expressed in minutes, being the maximum period over which the MDV applies~~ .	No longer relevant
Balancing Code 1		•Maximum Delivery Offer (MDO), being the maximum volume of an Offer by a BM Unit which can be instructed by The Company through Bid Offer Acceptance (BOA) instructions to the BM Unit, the volume excludes energy required to satisfy System Ancillary Services and/or Commercial Ancillary Services such as response and reserve commitments.	Definition has been reworked following discussion on WG#4 An Offer can be a generator increasing its output (export) or a demand unit taking more import. Suggested new definition
Balancing Code 1	APPENDIX 1 - BM UNIT DATA BC1.A.1.5 Dynamic Parameters Insert new Parameters for Short Duration assets	•Maximum Delivery Bid (MDB), being the maximum volume of a Bid by the BM Unit which can be instructed by The Company through Bid Offer Acceptance (BOA) instructions to the BM Unit , the volume excludes energy required to satisfy System Ancillary Services and/or Commercial Ancillary Services such as response and reserve commitments.	as above
Balancing Code 1	APPENDIX 1 - BM UNIT DATA Add BC1.A.11 section on Battery SoE Modelling	BC1.A.11 **Electricity Storage Module Future State of Energy (FSoE)** Modelling BC1.A.11.1 **Generators** in respect of **Electricity Storage Modules** must provide relevant data to allow for modelling of **Future State of Energy (FSoE)** and the limits of operation of an **Electricity Storage Module** must obey. BC1.A.11.2 As a minimum **Generators** in respect of **Electricity Storage Modules** must provide Import and Export efficiency and **Electricity Storage Module Future State of Energy** limits resulting from commercial contracts and other technical limitations. Whenever **Future State of Energy** limits change, **Generators** in respect of **Electricity Storage Modules** must supply future limits for the ensuing 24 hours. BC1.A.11.3 [means of communication to be inserted/ defined].	FSoE- replaces FSoC Additional text needed for Means of communication needs to be inserted…… (portal) BC1.A.11.3

Update on BSC Changes

Steve Baker – ESO

BSC Changes

- As discussed previously there is a requirement to move the short term asset data onto the Elexon Insight platform. Whilst the change won't be developed until we have an agreed approach approved by Panel, we are identifying what can be done prior to sign off.

- ESO have engaged with Elexon to discuss the changes and establish the best way forward given the desire from the industry to progress this capability.

- We are in the process off setting up a meeting with the nominated Elexon Business & IT representatives and the ESO IT contacts with a view to establishing the activities that can be done in preparation for final approval and the timelines for them.

- Some aspects of the solution may be solution independent and could be progressed, whilst others may need to wait until final sign off. Once we have identified these and the associated timelines we can share the plan.

Draft Workgroup Consultation Questions

Milly Lewis – ESO Code Administrator

Workgroup Terms of Reference

a) Implementation and costs;
b) Review draft legal text should it have been provided. If legal text is not submitted within the Grid Code Modification Proposal the Workgroup should be instructed to assist in the developing of the legal text;
c) Consider whether any further Industry experts or stakeholders should be invited to participate within the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup. Demonstrate what has been done to cover this clearly in the report; and
d) Consider EBR implications
e) Liaise with other industry groups regarding related information that Network Operators may require

Any Other Business

Milly Lewis – ESO Code Administrator

Next Steps

Milly Lewis – ESO Code Administrator