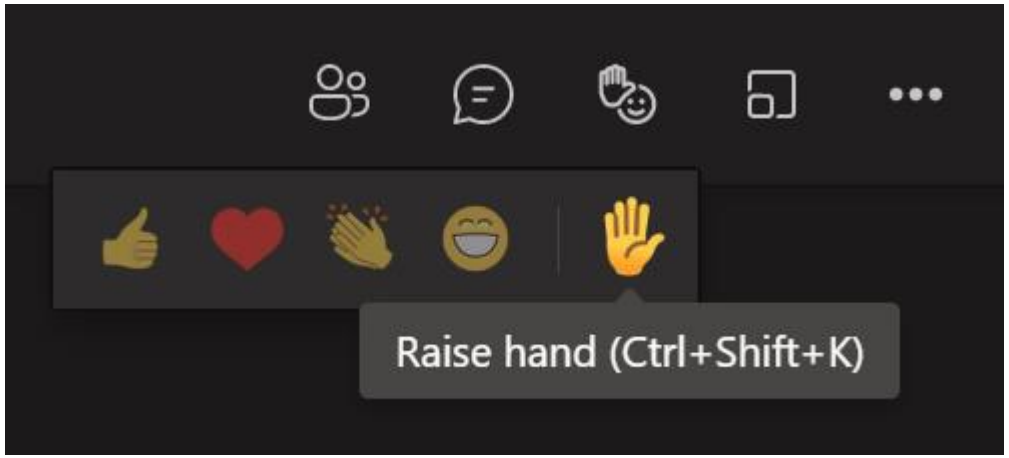
Issue 98 Digital Meeting Etiquette

- Welcome to the Issue 98 Workgroup meeting 1
- No video please to conserve bandwidth
- Please stay on mute unless you need to talk – use the Raise hand feature in the Menu bar in Microsoft Teams if you want to speak, or use the Meeting chat



- Lots of us are working remotely – be mindful of background noise and connection speeds

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Issue 98

Review of the current practice of setting Dynamic Parameters within the Balancing Mechanism

Workgroup Meeting 1

25 November 2021

Meeting Agenda & Objectives

- Overview of the issue
- Discuss potential solution options presented
- Discuss or suggest alternative solution options
- Confirm next steps

Agenda Item	Lead
1. Welcome and Meeting objectives	Elliott Harper (Chair)
2. Overview of Issue 98	Joseph Underwood (Energy UK) and Peter Frampton (Elexon)
3. How Dynamic Parameters are used in the Grid Code	Keren Kelly (NGESO) and Steve Baker (NGESO)
4. Potential solutions	Peter Frampton
5. Group Discussion	Workgroup
6. Conclusion and next steps	George Crabtree
7. AOB & Meeting close	Elliott Harper

OVERVIEW OF ISSUE 98

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Review of the current practice of setting Dynamic Parameters within the Balancing Mechanism

Joe Underwood
Policy Manager, Generation
Energy UK

The voice of the energy industry

What is the issue?

- The Sept 2020 Ofgem publication results in strict compliance with Grid Code rules. Seems to be contradicting the National Grid Two Shifting guidance.
- May lead to a less economic/efficient outcome than what some generating plant were doing prior Ofgem's open letter being published.
- There is a real life distinction between economic vs technical dispatch that is not reflected in guidance or the Code.

Reason for investigation

Allowing the real life distinction between economic vs technical dispatch to be reflected in guidance/Code could:

- Result in increased cost reflectivity and competition in the BM,
- Give the ESO increased options to better manage the system,
- Allow plant generate further away from their technical limit,
- Allow for current and future market arrangements to be adhered to, i.e. emissions limits

BSC Issue Group

Questions for the Issues Group to investigate:

- What is permissible within the current arrangements?
- Do the current arrangements not reflect real life capabilities?
- Would the ESO and market see a benefit in change?
- Develop/investigate potential high-level solutions that could be progressed by the Workgroup including but not limited to:
  - Allow for multiple combinations of dynamic parameters and associated pricing options for a single Balancing Mechanism Units (BMU) in the BM
  - Decreasing BOA prices – Often the cost per MWh of a generator decreases as its output increases, but we note that the BM only allows for increasing BOA prices as output increases
  - Reword the text in the BSC and Grid Code that will allow for more flexibility when declaring technical parameters

ISSUE BACKGROUND

Overview of REMIT

Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (REMIT) outlines obligations relating to the generation, supply and trading of electricity in the EU. Following the UK's withdrawal from the EU, REMIT was retained in GB by the European Union (Withdrawal) Act 2018 and amended by the Electricity and Gas (Market Integrity and Transparency) (Amendment) (EU Exit) Regulations 2019 (SI 2019/534). REMIT operation and enforcement is centrally coordinated by the Agency for the Cooperation of Energy Regulators (ACER), but enforcement activities are typically carried out by National Regulatory Authorities.

REMIT contains rules relating to, amongst other things, insider trading and market manipulation in wholesale energy markets. This includes the provisions of REMIT Article 5, where the entire Article reads;

- *'Any engagement in, or attempt to engage in, market manipulation on wholesale energy markets shall be prohibited.'*

Market manipulation is defined within REMIT Article 2(2) as including;

- *'…disseminating information through the media, including the internet, or by any other means, which gives, or is likely to give, false or misleading signals as to the supply of, demand for, or price of wholesale energy products…'*

For the purposes of REMIT, 'information' includes;

- *'…information relating to the capacity and use of facilities for production, storage, consumption or transmission of electricity…'*

Overview of REMIT (continued)

ACER's Guidance on the application of REMIT makes clear that electricity balancing contracts with delivery in the EU (or GB by virtue of the adoption) are within the scope of REMIT.

Therefore, disseminating false or misleading information about the availability of a Balancing Mechanism Unit (BMU) has the potential to be a breach of REMIT.

Ofgem has published guidance on this matter, and published information about two potential or actual REMIT breaches relating to this.

Ofgem's letters on dynamic parameters

Ofgem have published a series of letters relating to the submission of data required by the Grid Code and the relationship between this information and REMIT.

In December 2016, Ofgem published a letter on 'Scarcity pricing and conduct in the wholesale energy market'. This letter included the following statements;

- *'…plants should ensure that the technical parameters they submit to the System Operator represent their best estimates and are prepared in line with Good Industry Practice… Submitting misleading Physical Notifications or other physical parameters clearly has the potential to breach one or more of these obligations…'*

This December 2016 letter established the link between Grid Code obligations on data submission and potential breached of REMIT.

In September 2020, Ofgem published a letter on 'Dynamic parameters and other information submitted by generators in the Balancing Mechanism'. This letter included the following statements;

- *'…any generator who, for commercial reasons, submitted to the ESO dynamic parameters which did not reflect the operating characteristics of the BM unit would have disseminated information which gave or was likely to give false or misleading signals…the generator would have likely breached Article 5 REMIT.'*

This September 2020 letter clarifies the requirement for Dynamic Parameters to reflect physical rather than commercial operating characteristics.

Ofgem cases relating to dynamic parameters

Ofgem's September 2020 letter was following a finding that Intergen had breached REMIT obligations by submitting false or misleading Physical Notifications and dynamic parameters in a combination that induced NGESO to pay it to generate. In particular, Ofgem found that Intergen used a combination of data to induce NGESO to 'Bid On' power stations to ensure their availability for evening peak, and increased their SEL submission above a normal level.

There was a further case relating to ESB Independent Generation Trading (IGT) and Carrington Power, which concluded in August 2021. While this case concluded without enforcement action, IGT and Carrington did make a payment to the consumer redress fund and admitted that they breached REMIT obligations. Ofgem found Carrington increased their SEL submission above a normal level, resulting in NGESO purchasing a larger volume and spending more than it otherwise would have done.

These findings, in combination with the published letters, set an expectation that dynamic parameters should reflect the physical capabilities of a BMU.

Physical vs. commercial parameters

Ofgem expects dynamic parameters to be based on the physical capabilities of a BMU. However, participation in the Balancing Mechanism is a commercial transaction, much like participation in wholesale markets.

We understand that BMUs can operate in a number of configurations, depending on the generating units employed within the BMU. Additionally, the physical limits of operation for some BMUs may represent the extremes of what a BMU is capable of, but not necessarily the most efficient mode of operation.

For example, the Stable Export Limit (SEL) of a BMU is the 'minimum value at which the BM can, under stable conditions, export to the National Electricity Transmission System'.

- As a purely physical variable, this will often be a relatively fixed number below which the BMU is at a high risk of 'tripping' – i.e. becoming unavailable to generate.

- However, there may be a value above the physical SEL where the BMU is able to operate more efficiently – for example where operating at the SEL may increase physical wear on the unit which needs to be priced in. This may represent a commercially efficient level, where NGESO will would to purchase more volume but at a reduced unit rate. This could result in scenarios where NGESO is paying a lower price overall than if the BMU were paid to operate at SEL.

There are many dynamic parameters, and they interact with each other in different ways. They also have varying commercial considerations attached to them.

HOW DYNAMIC PARAMETERS ARE USED IN THE GRID CODE

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Issue 98 Work Group

Dynamic Parameters

Keren Kelly & Steve Baker | 25th Nov 2021

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Introduction

Dynamic Parameters are defined in the Grid Code and are referenced in Section Q of the BSC.

Next slide contains relevant sections from the GC describing:

1. What they are
2. When are they to be used
3. What tests are needed

This links to GC0126 (Implementing Profiled Stable Import and Export Limits, and reversing unimplemented aspects of GC0068), which is currently on hold pending Issue 98 Group recommendations.

Dynamic Parameters in the Grid Code

- Dynamic Parameters are defined in the Grid Code. They are a set of data items that units are obligated to submit to National Grid ESO:
  - Run Up Rates/Run Down Rates (and Run Up Elbow/Run Down Elbow)
  - Notice to Deviate from Zero (NDZ)
  - Notice to Deliver Offers (NTO) and Notice to Deliver Bids (NTB)
  - Minimum Zero Time (MZT)
  - Minimum Non-Zero Time (MNZT)
  - Stable Export Limit (SEL)
  - Stable Import Limit (SIL)
  - Maximum Delivery Volume (MDV)
  - Last Time to Cancel Synchronisation

- Each of the Dynamic Parameters *'shall reasonably reflect the expected true operating characteristics of the BM Unit and shall be prepared in accordance with Good Industry Practice*'
- Dynamic Parameters can be revised at any point by updating the data item held by National Grid ESO
- National Grid ESO will use the latest version (subject to timescales/deadlines) of dynamic parameter data for system planning and making decisions in relation to operation of the Balancing Mechanism

Dynamic Parameters in the Grid Code (1 – for reference)

Dynamic Parameters: Definition: Those parameters listed in Appendix 1 to **BC1** under the heading **BM Unit Data – Dynamic Parameters**.

BC1.A.1.5 Dynamic Parameters
The **Dynamic Parameters** comprise:

- Up to three Run-Up Rate(s) and up to three Run-Down Rate(s), expressed in MW/minute and associated Run-Up Elbow(s) and Run-Down Elbow(s), expressed in MW for output and the same for input. It should be noted that Run-Up Rate(s) are applicable to a MW figure becoming more positive;
- Notice to Deviate from Zero (NDZ) output or input, being the notification time required for a **BM Unit** to start importing or exporting energy, from a zero **Physical Notification** level as a result of a **Bid-Offer Acceptance**, expressed in minutes;
- Notice to Deliver Offers (NTO) and Notice to Deliver Bids (NTB), expressed in minutes, indicating the notification time required for a **BM Unit** to start delivering Offers and Bids respectively from the time that the **Bid-Offer Acceptance** is issued. In the case of a **BM Unit** comprising a **Genset,** NTO and NTB will be set to a maximum period of two minutes;
- Minimum Zero Time (MZT), being either the minimum time that a **BM Unit** which has been exporting must operate at zero or be importing, before returning to exporting or the minimum time that a **BM Unit** which has been importing must operate at zero or be exporting before returning to importing, as a result of a **Bid-Offer Acceptance**, expressed in minutes;
- Minimum Non-Zero Time (MNZT), expressed in minutes, being the minimum time that a **BM Unit** can operate at a non-zero level as a result of a **Bid-Offer Acceptance**;
- Stable Export Limit (SEL) expressed in MW at the **Grid Entry Point** or **Grid Supply Point** or **GSP Group**, as appropriate, being the minimum value at which the **BM Unit** can, under stable conditions, export to the **National Electricity Transmission System**;
- Stable Import Limit (SIL) expressed in MW at the **Grid Entry Point** or **Grid Supply Point** or **GSP Group**, as appropriate, being the minimum value at which the **BM Unit** can, under stable conditions, import from the **National Electricity Transmission System**;
- 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.
- Last Time to Cancel Synchronisation, expressed in minutes with an upper limit of 60 minutes, being the notification time required to cancel a **BM Unit**'s transition from operation at zero. This parameter is only applicable where the transition arises either from a **Physical Notification** or, in the case where the **Physical Notification** is zero, a **Bid-Offer Acceptance**. There can be up to three Last Time to Cancel Synchronisation(s) each applicable for a range of values of Notice to Deviate from Zero.

Dynamic Parameters in the Grid Code (2 – for reference)

BC1.4.2 Day Ahead Submissions

Data for any **Operational Day** may be submitted to **The Company** up to several days in advance of the day to which it applies, as provided in the **Data Validation, Consistency and Defaulting Rules**. However, **Interconnector Users** must submit **Physical Notifications,** and any associated data as necessary, each day by 11:00 hours in respect of the next following **Operational Day** in order that the information used in relation to the capability of the respective **External Interconnection** is expressly provided. **The Company** shall not by the inclusion of this provision be prevented from utilising the provisions of BC1.4.5 if necessary.

The data may be modified by further data submissions at any time prior to **Gate Closure**, in accordance with the other provisions of **BC1**. The data to be used by **The Company** for operational planning will be determined from the most recent data that has been received by **The Company** by 11:00 hours on the day before the **Operational Day** to which the data applies, or from the data that has been defaulted at 11:00 hours on that day in accordance with BC1.4.5. Any subsequent revisions received by **The Company** under the Grid Code will also be utilised by **The Company**. In the case of all data items listed below, with the exception of item (e), **Dynamic Parameters** (Day Ahead), the latest submitted or defaulted data, as modified by any subsequent revisions, will be carried forward into operational timescales.

(e) Dynamic Parameters (Day Ahead)

Each **BM Participant** may, in respect of each of its **BM Units**, but must not in respect of its **Generating Units** submit to **The Company** for the next following **Operational Day** the data listed in **BC1** Appendix 1 under the heading of "**Dynamic Parameters**" to amend that data already held by **The Company**.

These **Dynamic Parameters** shall reasonably reflect the expected true operating characteristics of the **BM Unit** and shall be prepared in accordance with **Good Industry Practice**.

The **Dynamic Parameters** applicable to the next following **Operational Day** will be utilised by **The Company** in the preparation and analysis of its operational plans for the next following **Operational Day** and may be used to instruct certain **Ancillary Services**. For the avoidance of doubt, the **Dynamic Parameters** to be used in the current **Operational Day** will be those submitted in accordance with BC2.5.3.1.

Dynamic Parameters in the Grid Code (3 – for reference)

BC1.4.3 Data Revisions

The **BM Unit Data**, and **Generating Unit Data**, derived at 1100 hours each day under BC1.4.2 above may need to be revised by the **BM Participant** for a number of reasons, including for example, changes to expected output or input arising from revised contractual positions, plant breakdowns, changes to expected **Synchronising** or **De-Synchronising** times, etc, occurring before **Gate Closure**. **BM Participants** should use reasonable endeavours to ensure that the data held by **The Company** in relation to its **BM Units** and **Generating Units**, is accurate at all times. Revisions to **BM Unit Data**, and **Generating Unit Data** for any period of time up to **Gate Closure** should be submitted to **The Company** as soon as reasonably practicable after a change becomes apparent to the **BM Participant**. **The Company** will use reasonable endeavours to utilise the most recent data received from **Users,** subject to the application of the provisions of BC1.4.5, for its preparation and analysis of operational plans.

BC2.5.3.1 Revisions to BM Unit Data

At any time, any **BM Participant** (or the relevant person on its behalf) may, in respect of any of its **BM Units**, submit to **The Company** the data listed in **BC1**, Appendix 1 under the heading of **Dynamic Parameters** from the **Control Point** of its **BM Unit** to amend the data already held by **The Company** (including that previously submitted under this BC2.5.3.1) for use in preparing for and operating the **Balancing Mechanism**. The change will take effect from the time that it is received by **The Company**. For the avoidance of doubt, the **Dynamic Parameters** submitted to **The Company** under BC1.4.2(e) are not used within the current **Operational Day**. The **Dynamic Parameters** submitted under this BC2.5.3.1 shall reasonably reflect the true current operating characteristics of the **BM Unit** and shall be prepared in accordance with **Good Industry Practice**. Following the **Operational Intertripping** of a **System** to **Generating Unit** or a **System** to **CCGT Module** and/or a **System** to **Power Generating Module**, the **BM Participant** shall as soon as reasonably practicable re-declare its MEL to reflect more accurately its output capability.

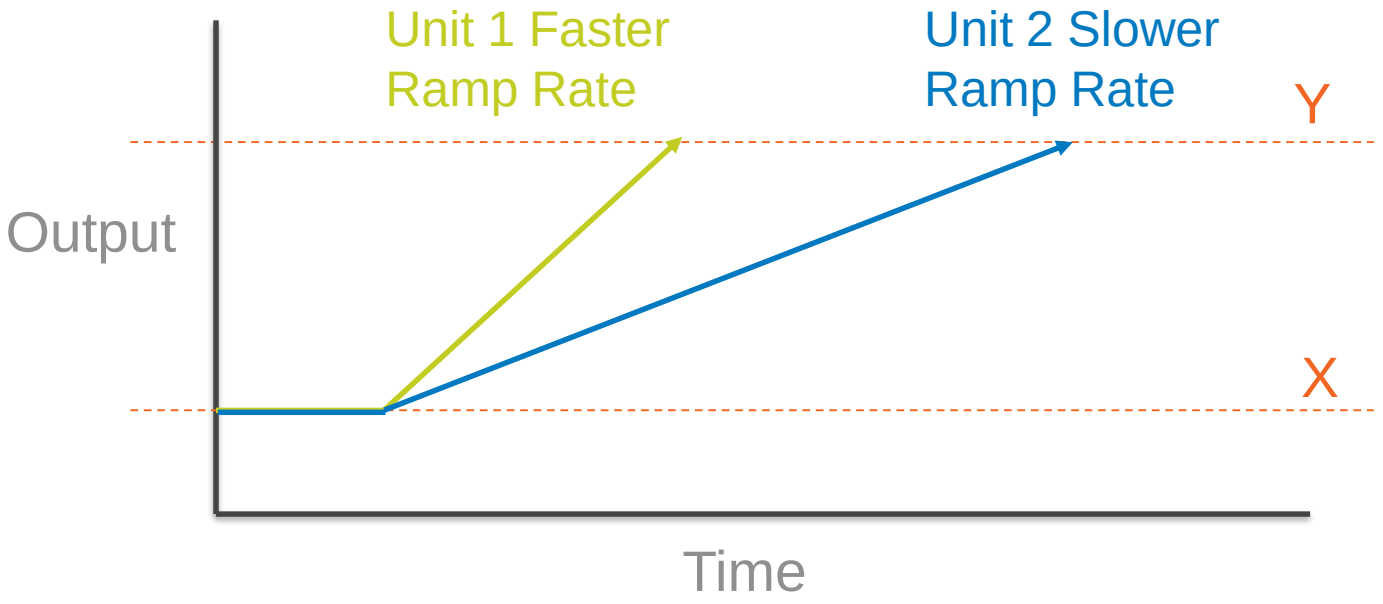
How the ESO Uses Dynamic Parameters – Ramp Rates

We use Dynamic Parameters to help determine which balancing actions to take within the Balancing Mechanism (BM).

Example – Using Ramp Rates

We may need to increase output from X to Y

A faster Ramp Rate (MW/min) will allow output to reach Y more quickly and therefore offers more flexibility



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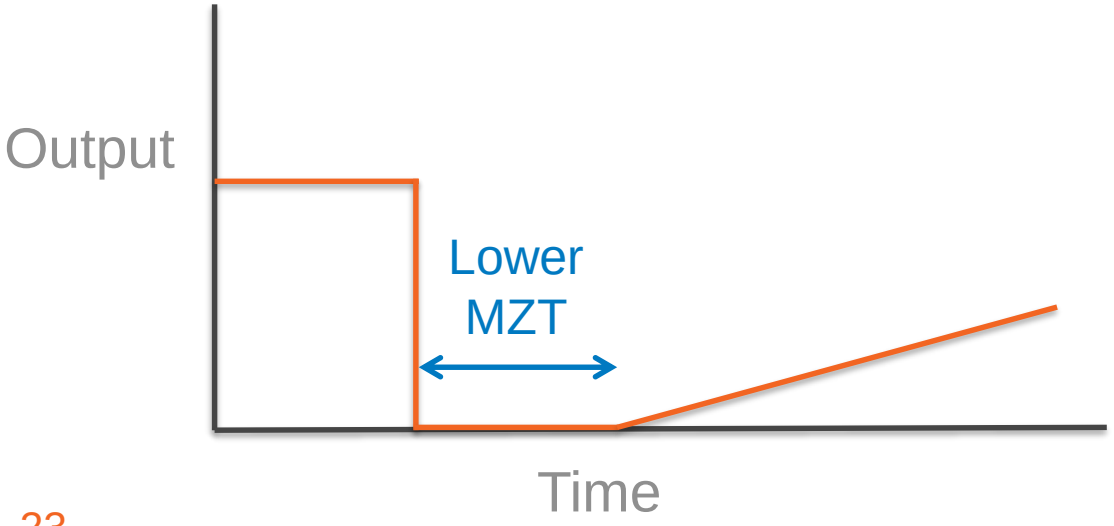
How the ESO Uses Dynamic Parameters – MZT

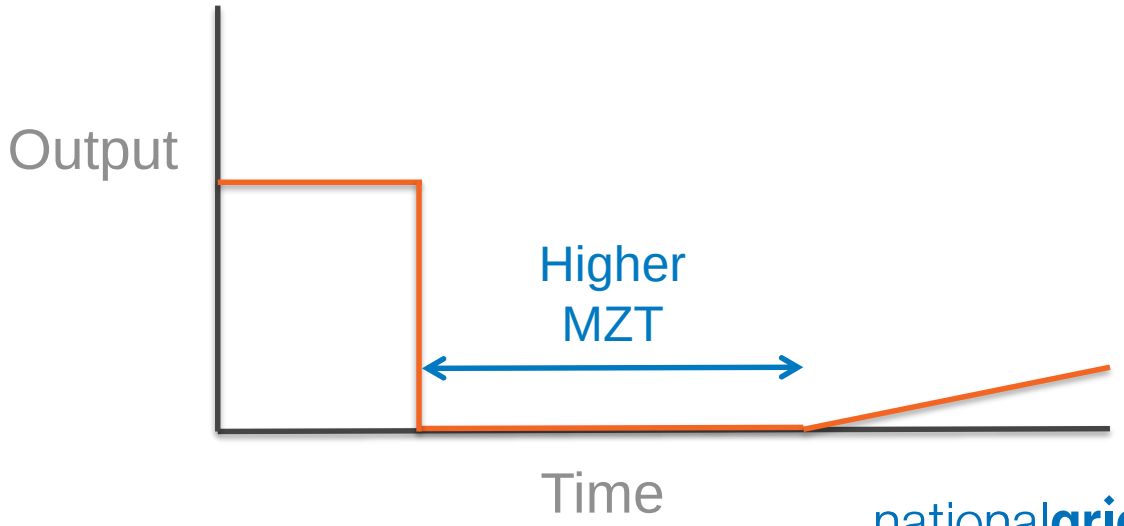
We use Dynamic Parameters to help determine which balancing actions to take within the Balancing Mechanism (BM).

Example – Using Minimum Zero Time (MZT)

Again, we may need to increase output, but in this scenario, the output from a generating unit has reduced to zero

A lower MZT will mean a shorter time before the unit can begin exporting and therefore offers more flexibility





How the ESO Uses Dynamic Parameters (1)

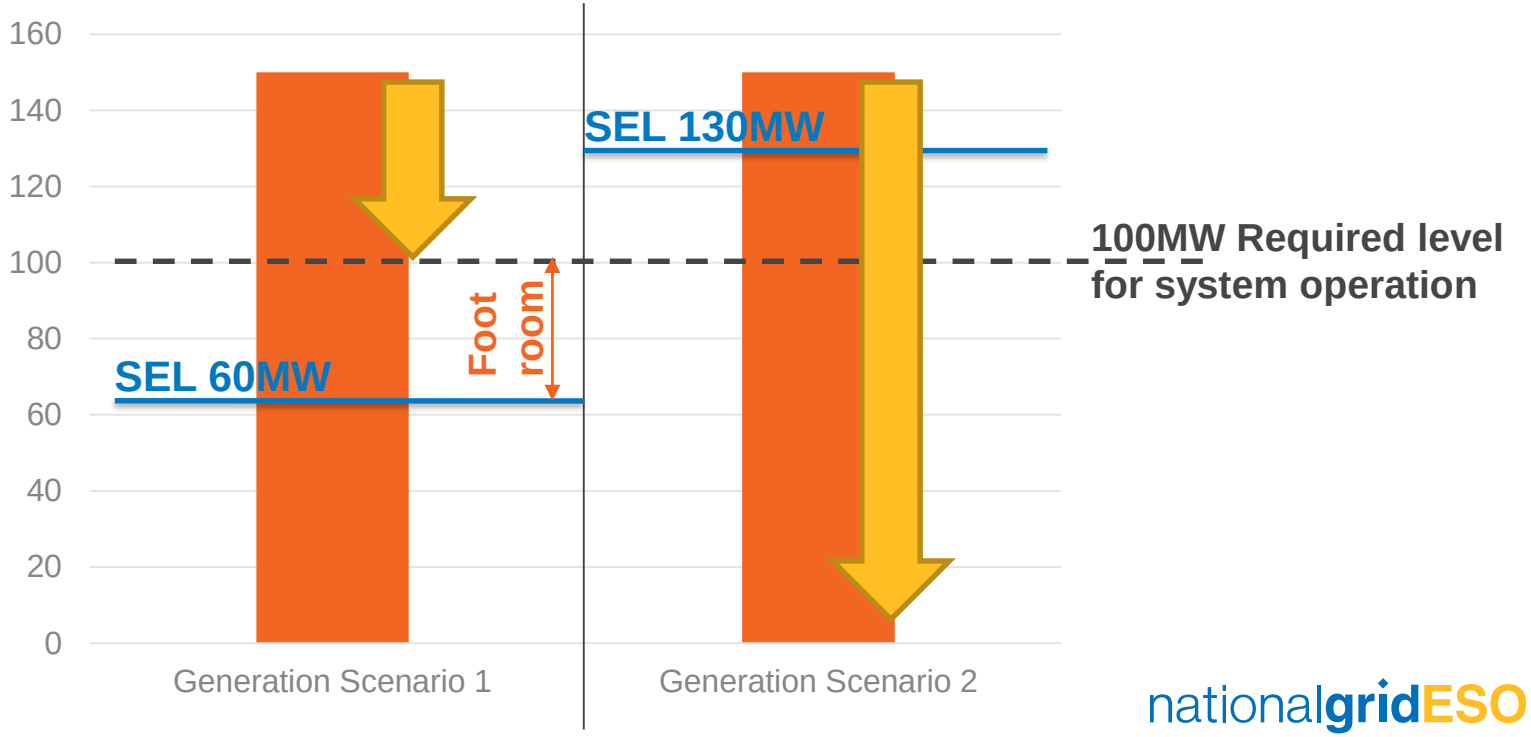
We use Dynamic Parameters to help determine which balancing actions to take within the Balancing Mechanism (BM).

Example – Using the Stable Export Limit (SEL)

If a unit is sitting behind a constraint boundary (e.g. 100MW), we may need to take action to reduce generation output (or increase demand).

The principal balancing capability that is impacted by SEL is the downward margin requirement or 'foot room'.

SEL data ensures that the ESO Control Room has enough capability to immediately reduce the output of units (or increase demand) in order to manage excess supply to the system or a high frequency deviation as a result of demand loss



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GC0126: Dynamic SIL/SEL Functionality

- Dynamic SIL/SEL delivery was originally part of the EBS project – and was continued after this as it appeared to have a positive CBA
- Delivery was delayed due to other priorities within the ESO balancing programme and then particularly due to COVID
- A more detailed impact assessment has now been carried out. Delivery is more complex than originally thought resulting in a significant increase in implementation costs from £700k to £3m+
- Notional benefits are no longer as tangible given that the 'Super SEL' service, which has been running successfully since 2017, has enabled essentially provision of the same functionality but without any system changes being necessitated
- Delivery of GC0126 is paused whilst this Issue 98 group progresses

POTENTIAL SOLUTIONS AND DISCUSSION

BSC Issue Group

Questions for the Issues Group to investigate:

- What is permissible within the current arrangements?
- Do the current arrangements not reflect real life capabilities?
- Would the ESO and market see a benefit in change?
- Develop/investigate potential high-level solutions that could be progressed by the Workgroup including but not limited to:
  - Allow for multiple combinations of dynamic parameters and associated pricing options for a single Balancing Mechanism Units (BMU) in the BM
  - Decreasing BOA prices – Often the cost per MWh of a generator decreases as its output increases, but we note that the BM only allows for increasing BOA prices as output increases
  - Reword the text in the BSC and Grid Code that will allow for more flexibility when declaring technical parameters

Discussion: Questions for potential solution

- What is the goal of dynamic parameters?
  - Identify operational capabilities of BMUs?
  - Enable trading based on BMU capability?

- What sets of parameters & pricing enable most efficient operation and trading?
  - Can multiple sets of physical parameters be true for one BMU simultaneously? (per Run-Up/Run-Down Rates)

- What sets of parameters satisfy transparency requirements?
  - Are the transparency requirements inherent in REMIT/Transparency regulations or do they exist as a function of codes?
    - Is transparency of physical limits a baseline requirement for publishing information?

- Is there a distinction between physical and commercial parameters?
  - If there is a distinction, can/should both sets exist in parallel?

Discussion: Starting points to consider

Alter definition of dynamic parameters

- Change Grid Code definition of dynamic parameters from physical to commercial
- Small Grid Code change, no system changes
- No new information in parameters

Allow variations of BOAs/dynamic parameters

- Create new sets of dynamic parameters, submitted in parallel
- Create new rules for the submission of Bid-Offer Acceptances to cover more commercial outcomes
- Each set of parameters represents potential plant operating conditions, with different commercial terms attached
- All based on physical limits of plant
- No new information in parameters
- Requires some Grid Code, BSC & system changes

Create new set of parameters

- Leave dynamic parameters as they are, including as ‘backstop’ commercial position
- Create new set[s] of ‘commercial parameters’ for bid/offer pricing
- Based on commercial factors rather than physical
- Potentially extensive Grid Code, BSC & system changes

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CONCLUSION AND NEXT STEPS

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Conclusion and Next Steps

- Consider any actions from this meeting
- Meeting notes to be sent to Issue Group Members
- Issue 98 Workgroup Meeting 2 to be scheduled
- Any Other Business