Welcome to the Operational Forum – 11 Nov 2020

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Welcome and Agenda

- Agenda – fully packed day
- Recorded
- Feedback
- Armistice Day – 2 min silence
- Lunch Break
- Questions Slido/ ‘Wave’

Electricity Operational Forum		
10:05	**Welcome and Introduction**	David Wildash
10:15	Balancing Costs Update	Nigel Swan
10:45	Control Room - Difficult Day Analysis *We will observe a 2 minute silence at 11am*	Alex Carter
11.15	Winter Outlook	Archie Corliss
11.35	Pathfinder and Operability update	David Preston
11.55	Future of Reactive Power	Yuting Dai
12.10	Early Competition	Hannah Kirk-Wilson
12.30	SQSS modification	Matt Magill
12.50	**Break for Lunch - 30 Minutes**	
13.20	Dynamic Containment	Andy Rice
13.40	Black Start Tender Update	Steve Miller
14.00	Despatch Efficiency	Mark Jones
14.15	Trading Update	Rachel Turner
14.30	Weekly Transparency Forum	Rob Rome
15.00	Performance Monitoring Report	Ben Smith
15.15	Update Reserve Review	Adam Sims
15.25	**Questions / Close**	

Q&A

Please provide feedback via slido.com
Code: #N1120

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Welcome and Introduction

David Wildash

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Balancing Costs
Nigel Swan
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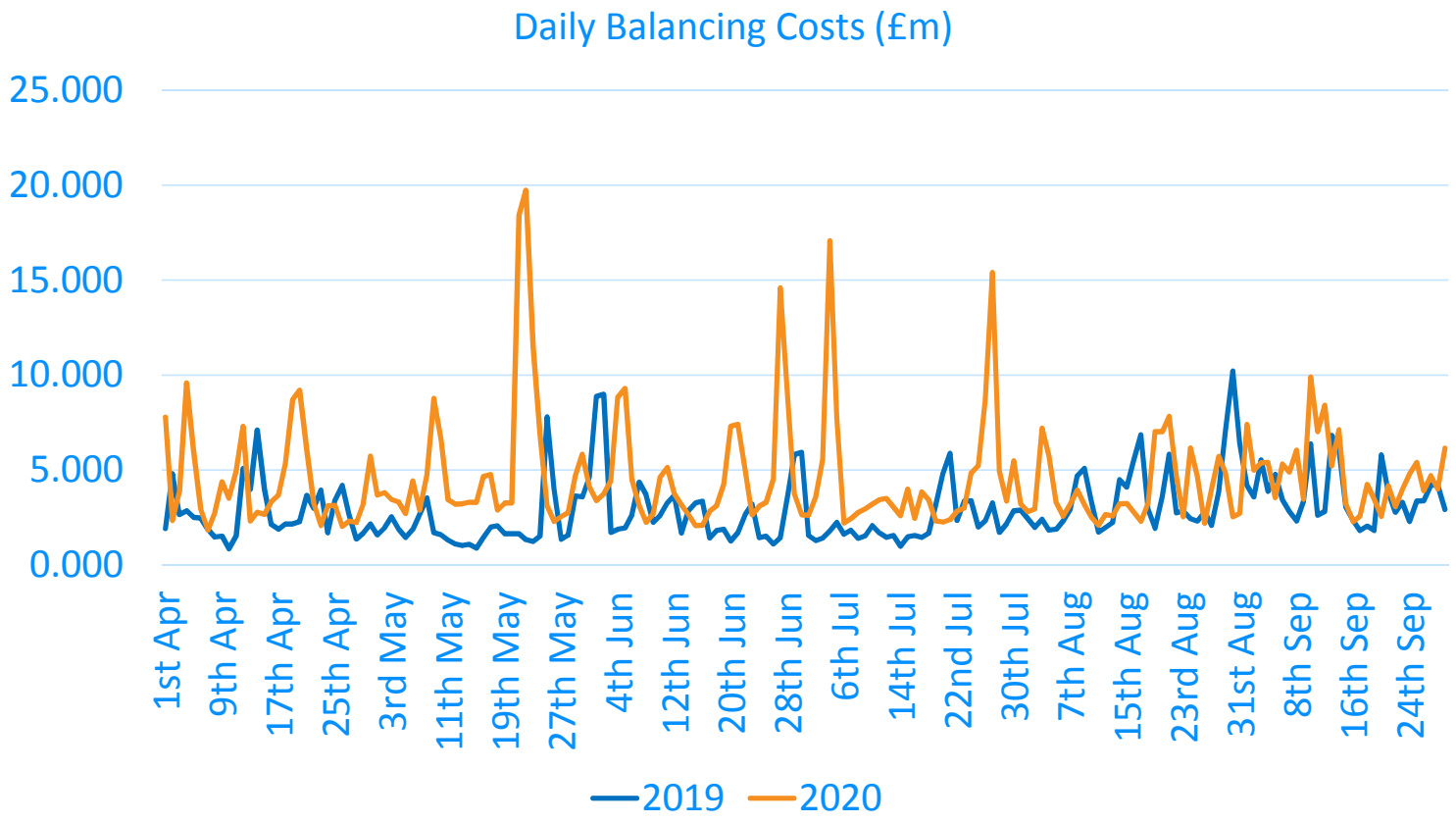
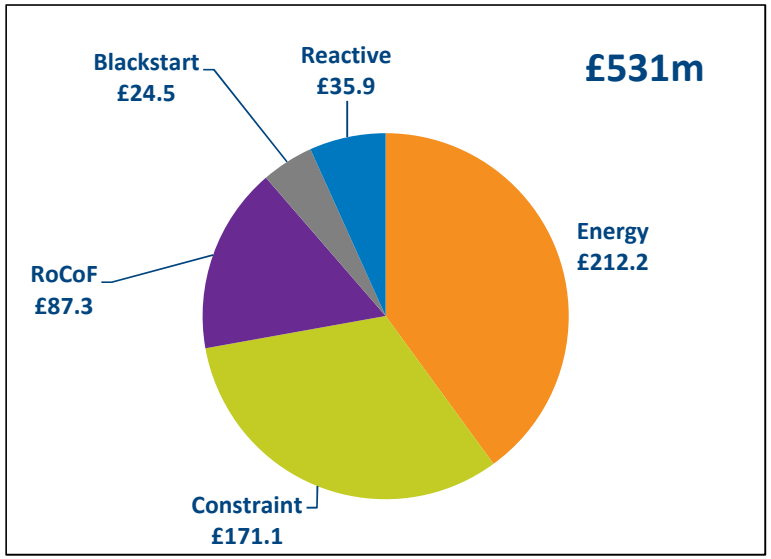
Q1+2 19/20 compared with Q1+2 20/21

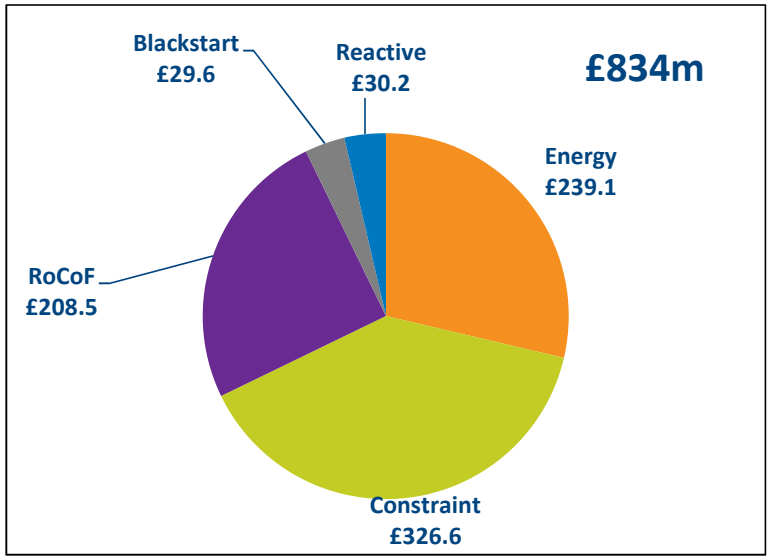


Q1+2 19/20 compared with Q1+2 20/21

Q1+2 19/20



Q1+2 20/21



Costs have generally increased across the board, however the biggest increases have been in Constraints and RoCoF

Q1+2 19/20 compared with Q1+2 20/21

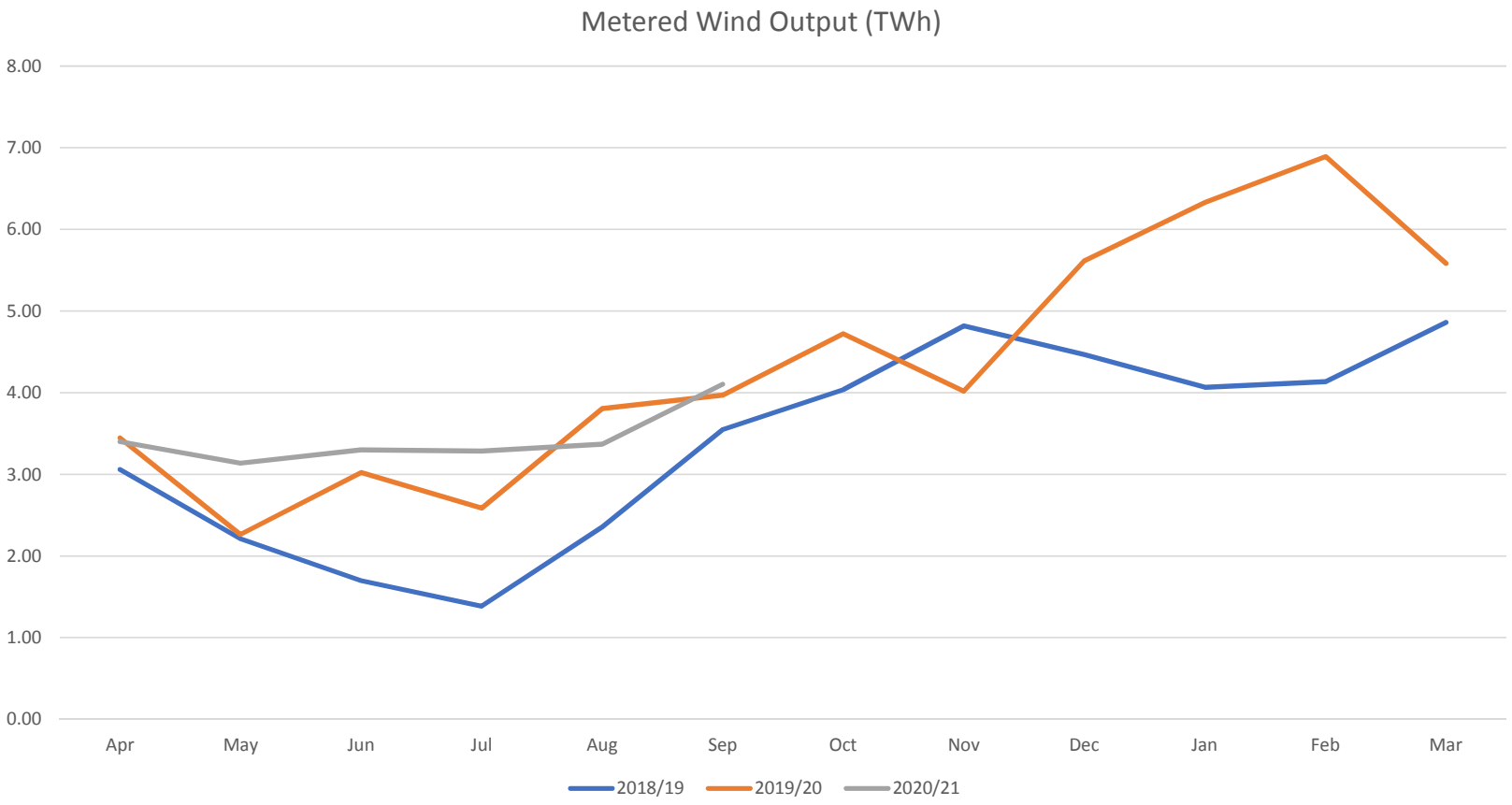
Cost Category	Q1+2 19/20 £(M)	Q1+2 20/21 £(M)	Difference £(M)	Difference %
Energy	£ 212.20	£ 239.07	£ 26.87	13%
Constraint	£ 171.12	£ 326.60	£ 155.48	91%
RoCoF	£ 87.31	£ 208.52	£ 121.21	139%
Blackstart	£ 24.46	£ 29.61	£ 5.15	21%
Reactive	£ 35.87	£ 30.22	-£ 5.65	-16%
Total Cost	£ 530.96	£ 834.02	£ 303.06	57%

Q1+2 19/20 compared with Q1+2 20/21

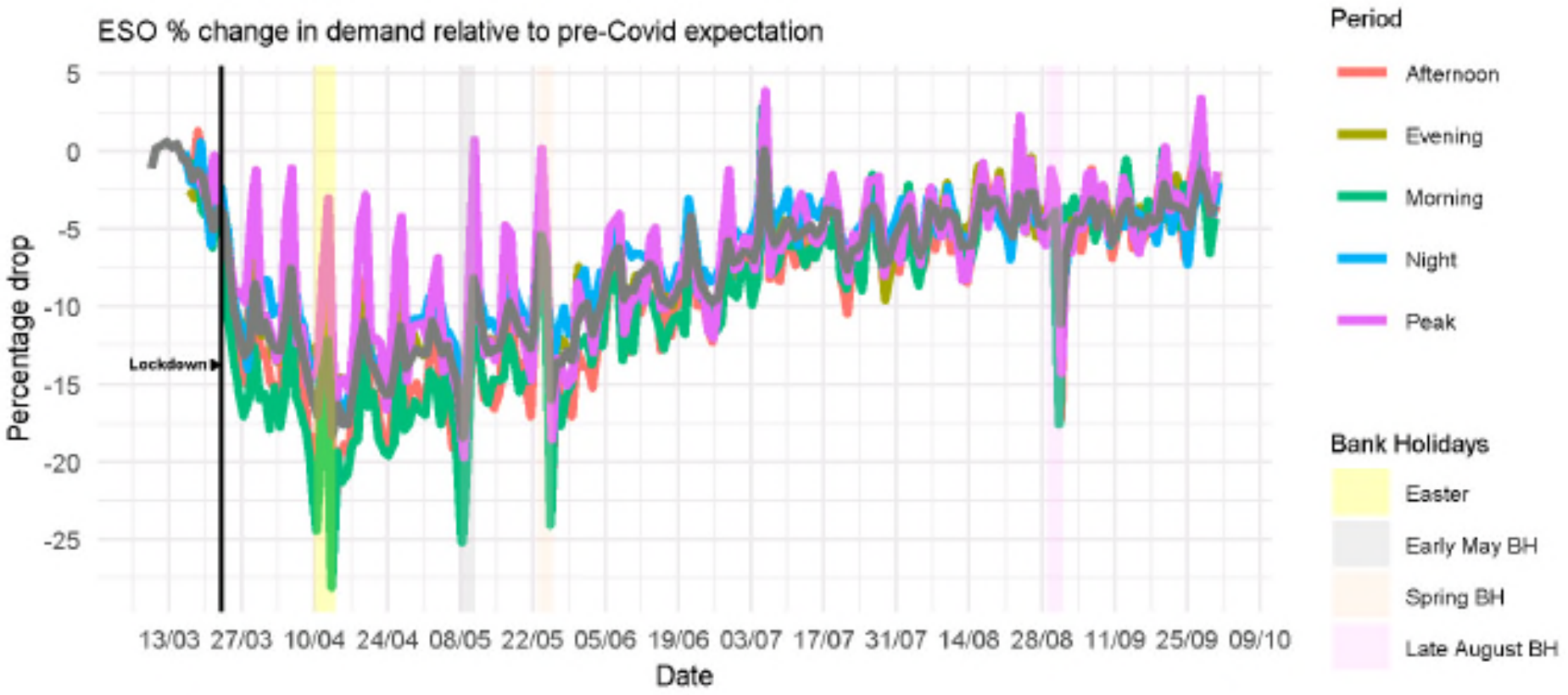
Cost Category	Q1+2 19/20 £(M)	Q1+2 20/21 £(M)	Difference £(M)	Difference %
Constraints - E&W	£ 49.77	£ 79.17	£ 29.40	59%
Constraints - Cheviot	£ 25.85	£ 25.24	-£ 0.61	-2%
Constraints - Scotland	£ 22.55	£ 41.23	£ 18.69	83%
Constraints – Ancillary*	£ 16.29	£ 94.11	£ 77.82	478%
Constraints Sterilised HR	£ 56.66	£ 86.84	£ 30.18	53%

*ODFM and Sizewell costs are included in Constraints – Ancillary.

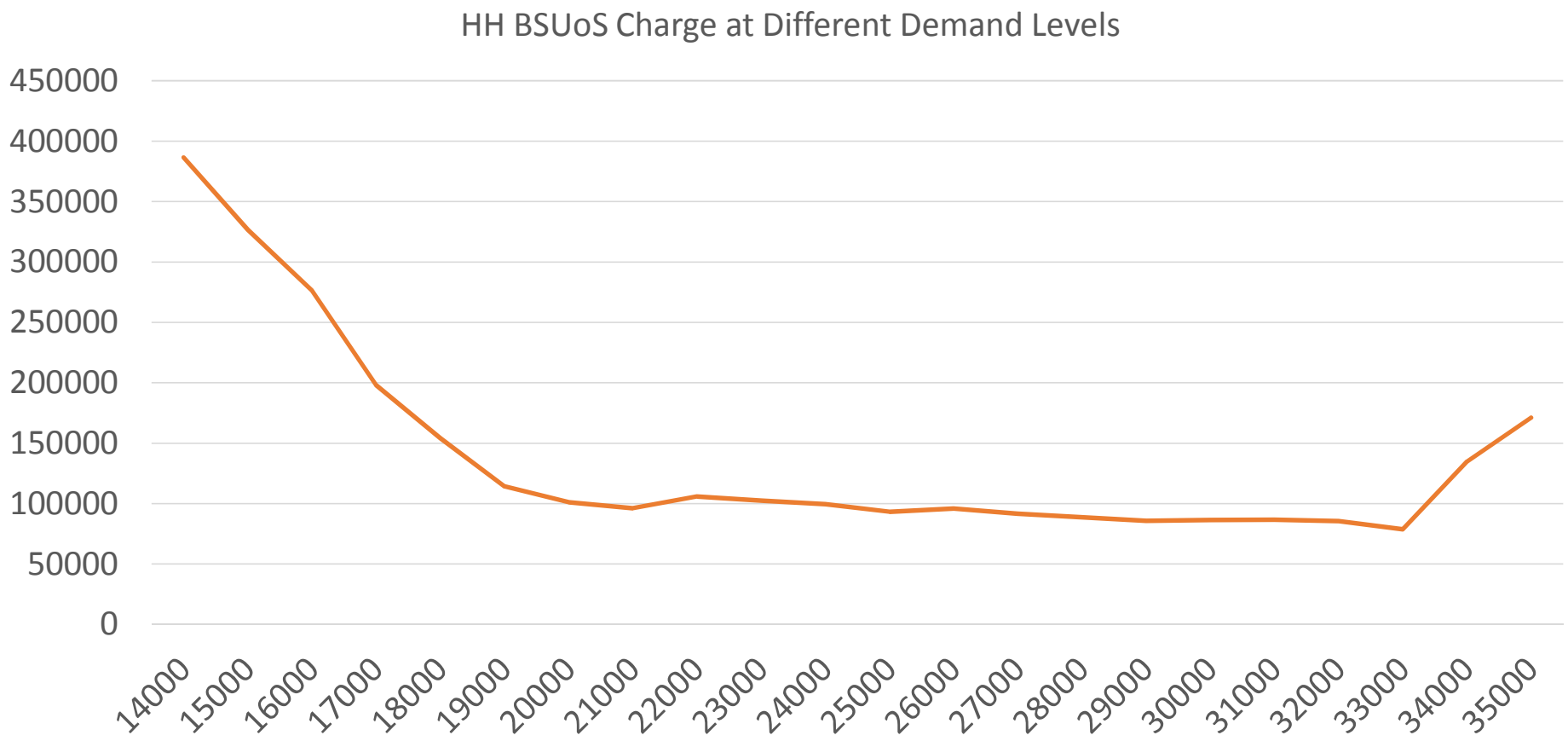
Wind Output


Metered Wind Output (TWh)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
2018/19
2019/20
2020/21

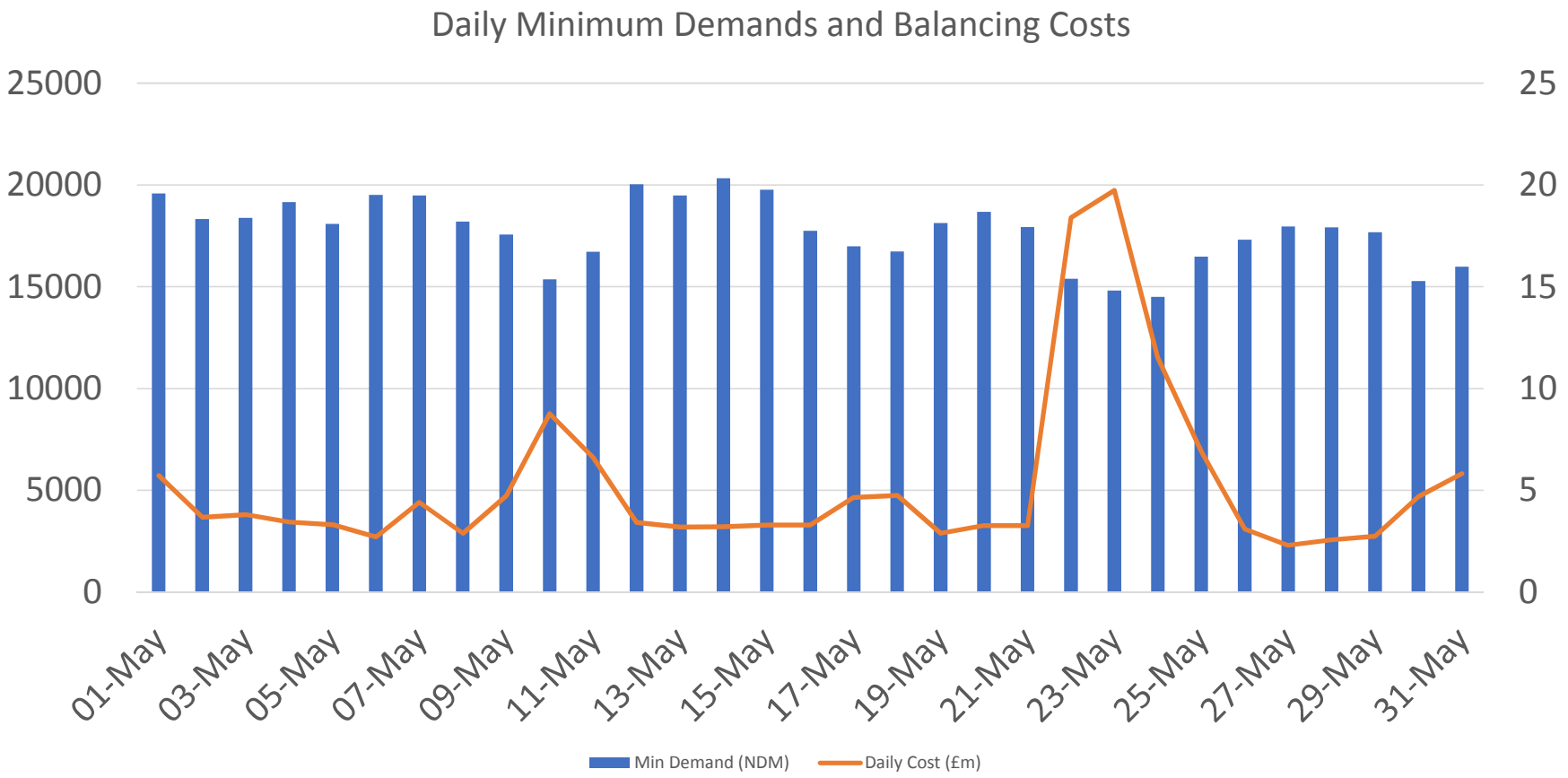
Demand


ESO % change in demand relative to pre-Covid expectation
Percentage drop
5
0
-5
-10
-15
-20
-25
Lockdown
13/03 27/03 10/04 24/04 08/05 22/05 05/06 19/06 03/07 17/07 31/07 14/08 28/08 11/09 25/09 09/10
Date
Period
Afternoon
Evening
Morning
Night
Peak
Bank Holidays
Easter
Early May BH
Spring BH
Late August BH

Impact of demand on cost



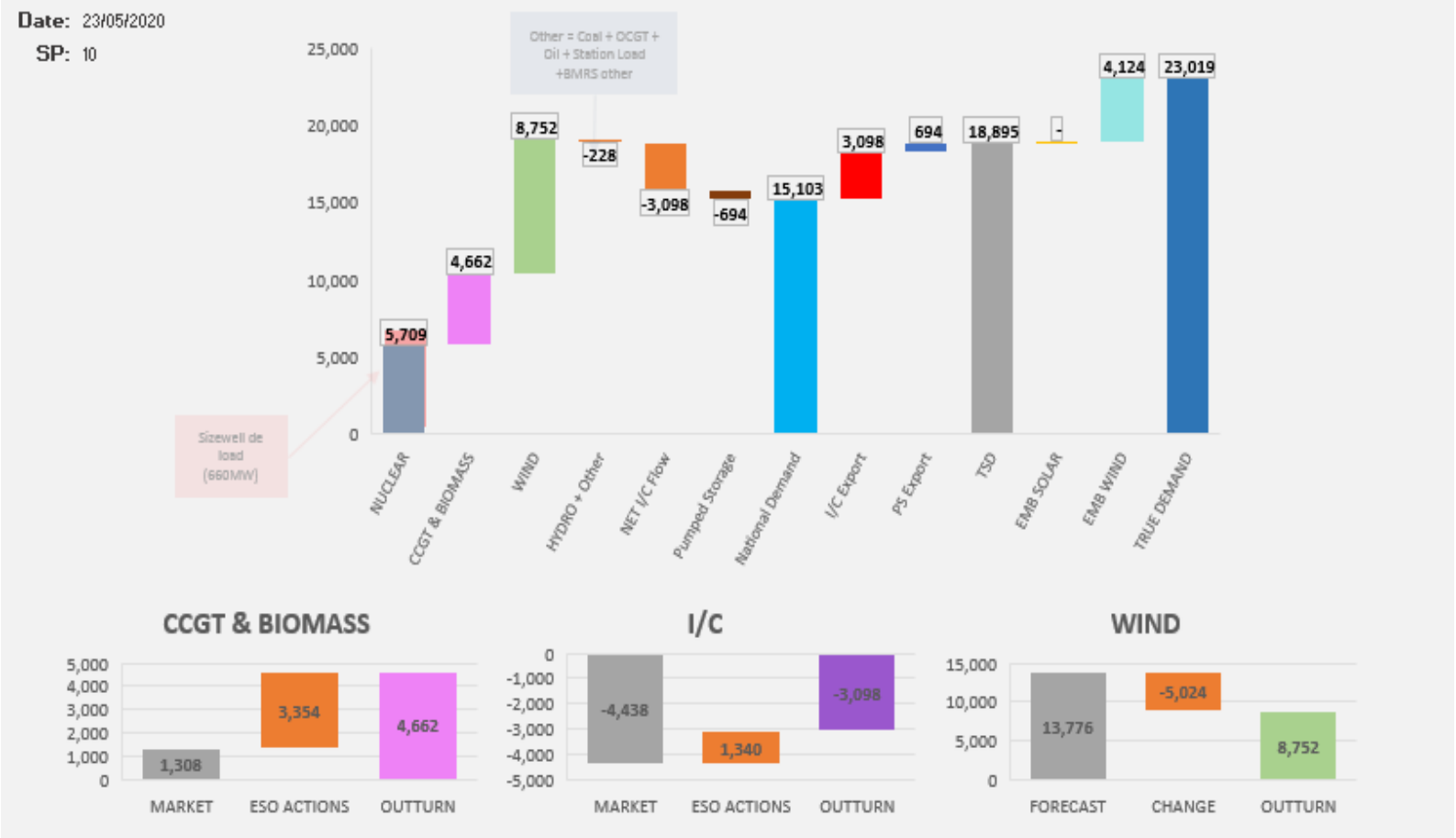
Impact of demand on cost



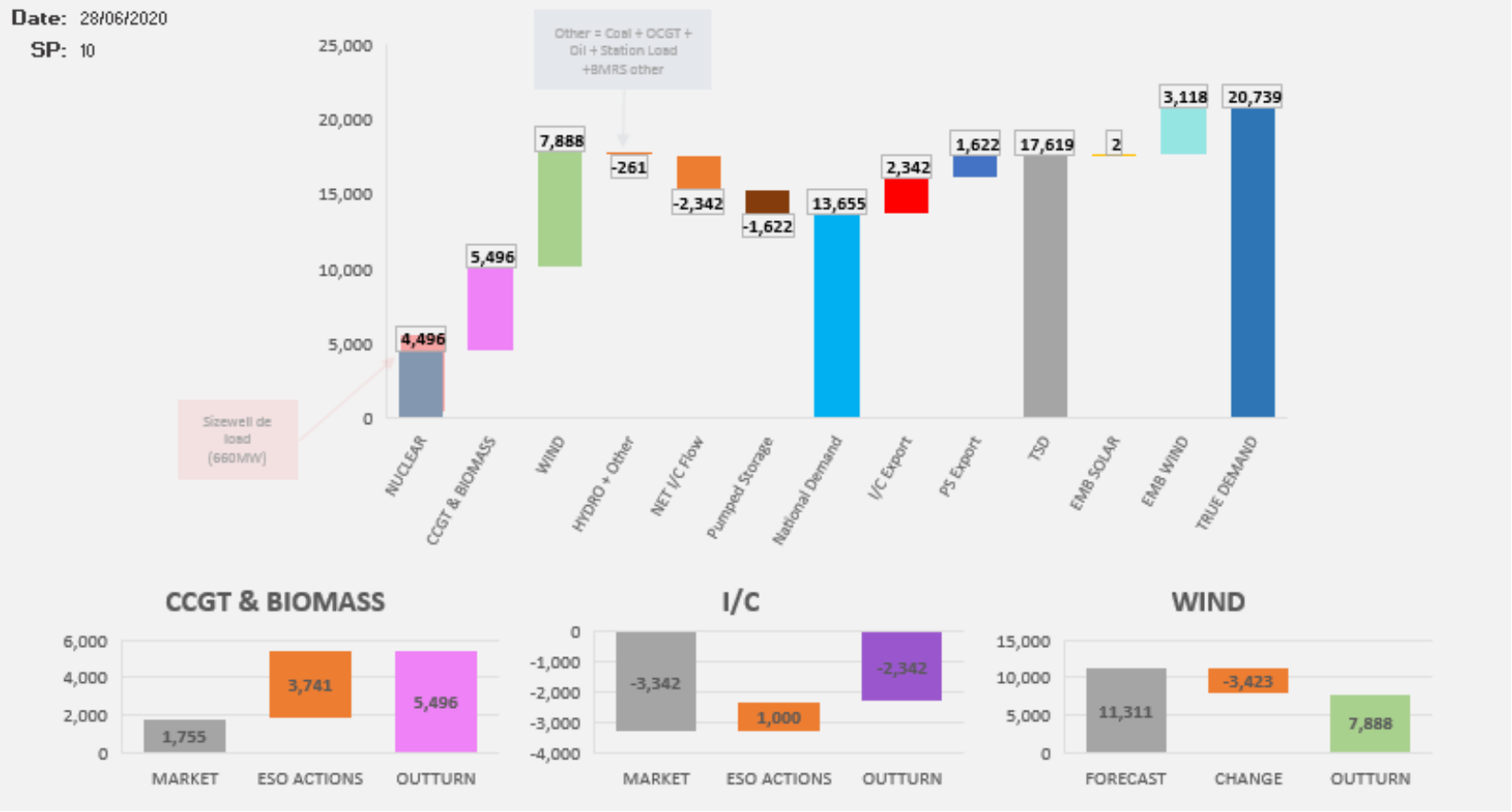
Extreme Days

Date	Daily cost (£m)	Minimum demand	ODFM used?	Wind output (after action)
22/05/2020	£18.4 m	15,390 GW		8.9 GW
23/05/2020	£19.7 m	14,813 GW	Y	9.2 GW
24/05/2020	£11.5 m	14,500 GW	Y	7.7 GW
28/06/2020	£14.5 m	13,367 GW		8.9 GW
05/07/2020	£17.1 m	14,514 GW	Y	9.7 GW
28/07/2020	£15.4 m	16,458 GW		7.9 GW

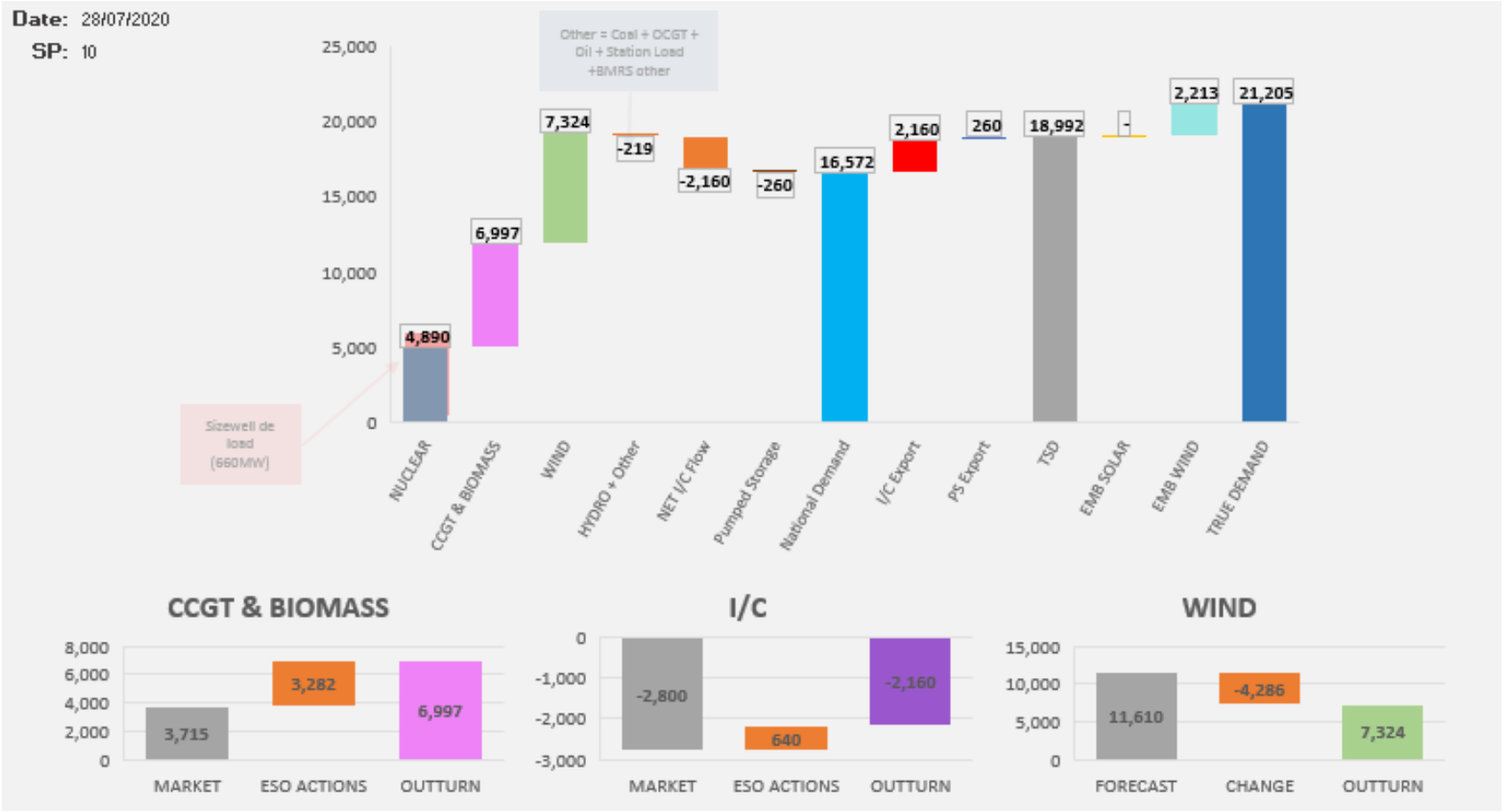
23rd May Minimum Demand



28th June Minimum Demand



28th July Minimum Demand



Thank you for listening!

Any Questions?

Q&A

Please provide feedback via slido.com
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Control Room – Difficult Day
Alex Carter
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Low Demand 28/06/20

Forecasts

- Demand 14,487 MW
- Wind 11,300 MW
- Nuclear 4,496 MW
- No conventional unit PNs
- BRITNED/NEMO/IFA initially all out

Trades

- Buy IC for stability
- 7 units for voltage (low SEL)
- 3 units for stability (low SEL)

BM

- 2 units for voltage
- 6 units for stability
- 1.6GW wind off for constraints
- 1GW wind off for energy

SYSTEM OPERATING PLAN Produced at 28/06/20 01:22

Final 2 Operating Plan for **1B** at **05:40** on **28/06/20** from 28/06/20 01:15 D & C

Wind forecast generated on 27/06/2020 23:05

Customer Demand Forcast (CDF)	14,487
Station Transformer (STX)	500
DSBR	0
Demand Adjustment	0
Total (SOP Demand)	**14,987**

ZONE	EMX	EOL	EMI
NO1	8,160	6,874	6,709
NW1	4,552	4,549	3,892
SO1	5,826	3,845	3,845
SW1	3,302	3,302	2,642
BRITNED	-670	-670	-670
EWIC	287	287	287
FRANCE	-1,352	-1,352	-1,352
INTIFA2	0	0	0
MOYLE	-38	-38	-38
NEMO	-687	-687	-687
PS	-950	-950	-1,016
STO	0	0	0
SB	404	1	0
Total	**18,834**	**15,161**	**13,612**

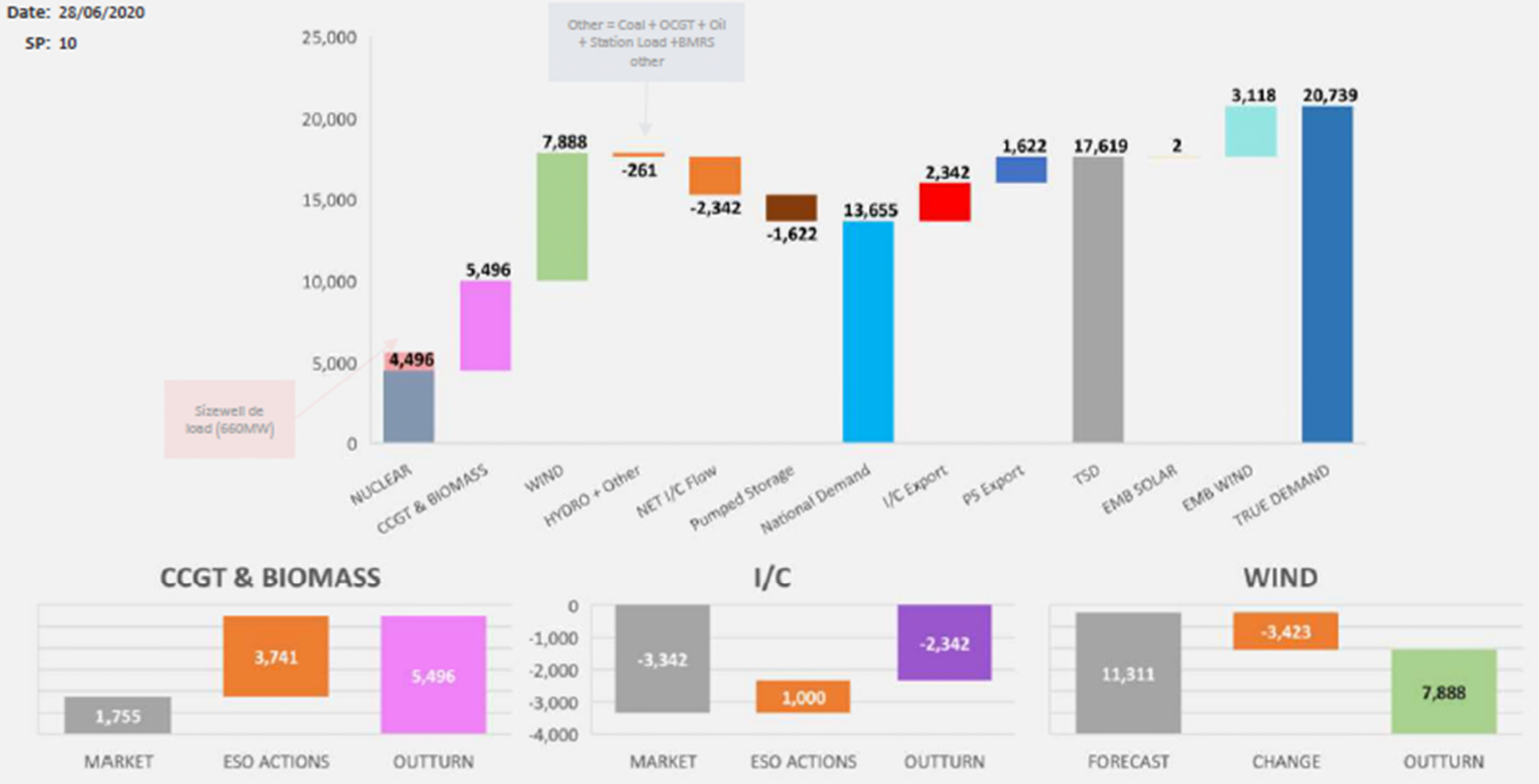
Contingency Reserve (at 3hrs)

Contingency Requirement	31
Operating Margin Surplus / (shortfall)	2838
Trigger Level (shortfall)	-400

Summary

Positive Residual (EMX - (SOP Demand + Positive Reserve))	2,562	
Imbalance (SOP Demand - EOL)	-174	**Bids**
Negative Residual (SOP Demand - (EMI + Negative Reserve))	74	

Positive Reserve	
Standing Reserve (< 20 mins)	
Standing Reserve Requirement (SRR)	1,500
Standing Reserve Availability (SRA)	1534
Standing Reserve Shortfall (SRS)	0
Standing Reserve Excess (SRE)	34
Standing Res Wind Adj (WSRR)	0
Scheduled Reserve	
Net Positive Regulating Reserve (PRG)	1,285
Positive Reg Res Wind Adj (WPRR)	(1134)
Reserve For Response (PRE)	0
0% Percentage of Standing Reserve Excess	0
Total Positive Reserve (SCS)	**1,285**
Negative Reserve	
Net Negative Regulating Reserve (NRG)	1,301
Negative Reg Res Wind Adj (WNRR)	(0)
Negative Response Reserve (NRS)	0
Total (Negative Reserve)	**1,301**
Maximum Loss (Generation)	680
Maximum Loss (Demand)	700



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Q&A

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Electricity Winter Outlook

Archie Corliss

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Executive summary / Key messages

COVID-19

Due to the uncertainty caused by COVID-19, we are examining a range of scenarios for margins rather than a single forecast. We expect to see downward pressure on demand compared to last winter.

Security of supply

System margins aren't quite as high as last winter but remain well within the Reliability Standard set by the Government under all COVID-19 scenarios.

Operability

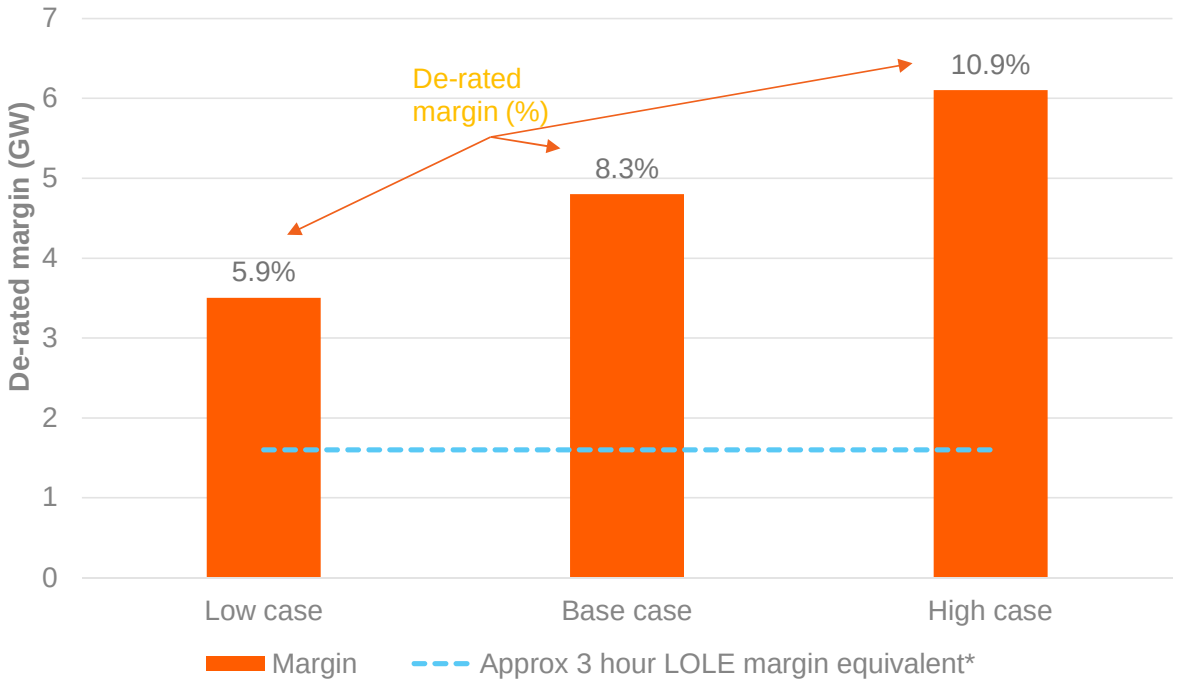
Operability remains complex. We have existing tools & services and are developing others, including dynamic containment, to manage anticipated operability challenges across the winter period. We expect to use these similarly to last winter as increased demands generally cause relatively fewer operability challenges than we have seen this summer.

End of the EU Transition Period

We foresee no additional operability or adequacy challenges this winter as a result of the EU Exit transition period ending.

Impact of COVID-19 on demand

We have modelled scenarios to consider the impact of COVID-19 on the electricity system this winter.

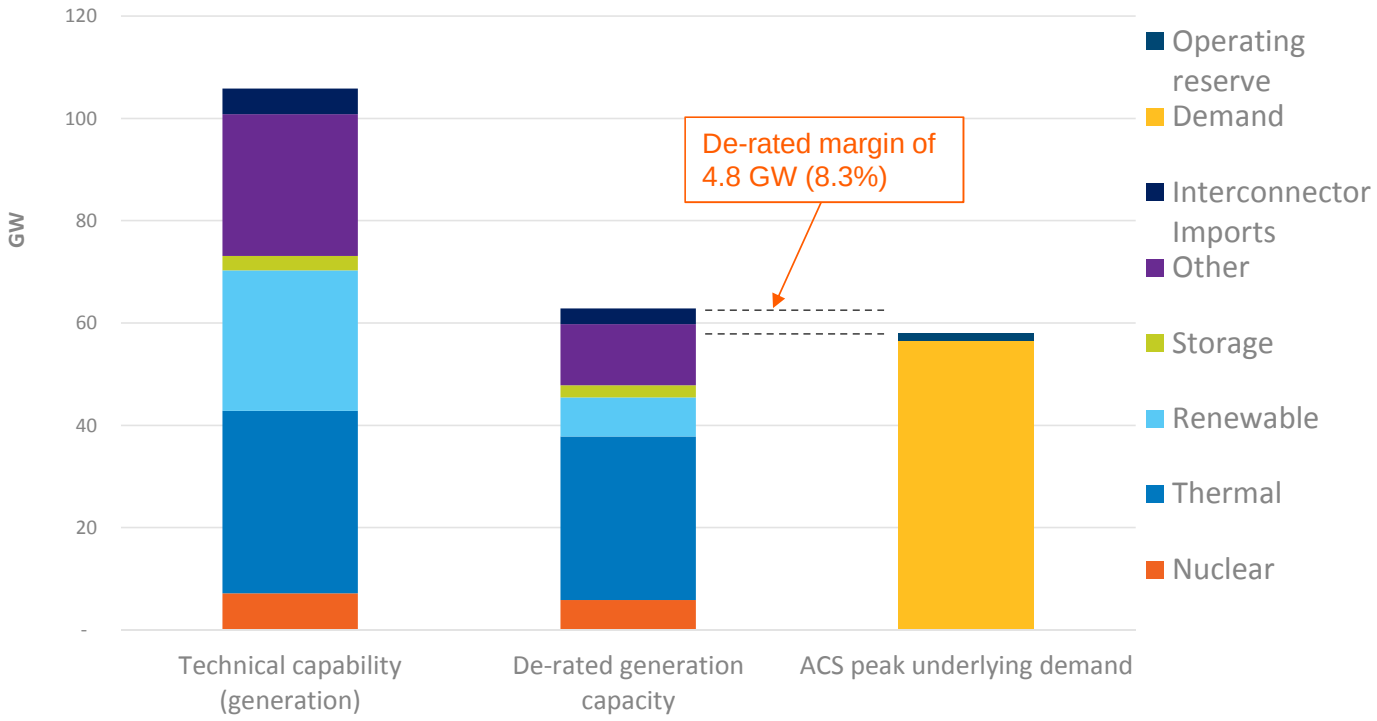


- **The effect of the pandemic this winter leaves a higher degree of uncertainty compared to previous years**
- **Our base case forecast for peak underlying demand over the winter is for a 3% reduction in ACS peak against normal expectations**
- **Our base case is a de-rated margin of 8.3% or 4.8 GW**

Winter Outlook Figure 1, Page 5

* The margin that exactly meets 3 hours LOLE may vary depending on demand and generation assumptions.

De-rated margin

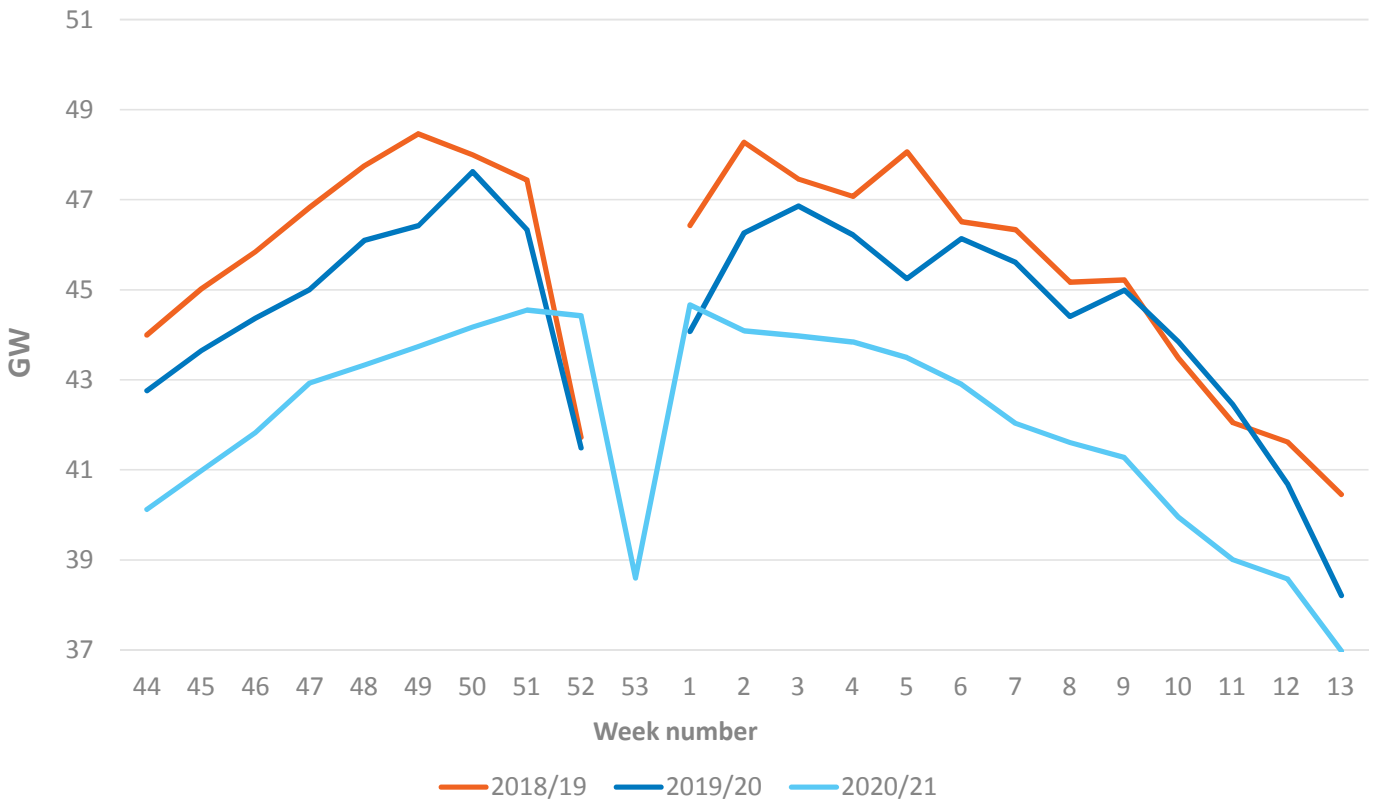


We expect:

- **The de-rated margin to be lower than last year due to generation outages and plant closures, but higher than those forecast for other recent years including 2015/16 and 2016/17**
- **Loss of load expectation (LOLE) to be well within the national Reliability Standard level of three hours per year**

Winter Outlook Figure 2, Page 7

Peak electricity demand



We expect:

- **Transmission demands to be lower than previous years**
- **Weather corrected peak transmission system demand (TSD) to be 44.7 GW**

This includes a 4% suppression of electricity demand at peak due to COVID-19

Winter Outlook Figure 5, Page 10

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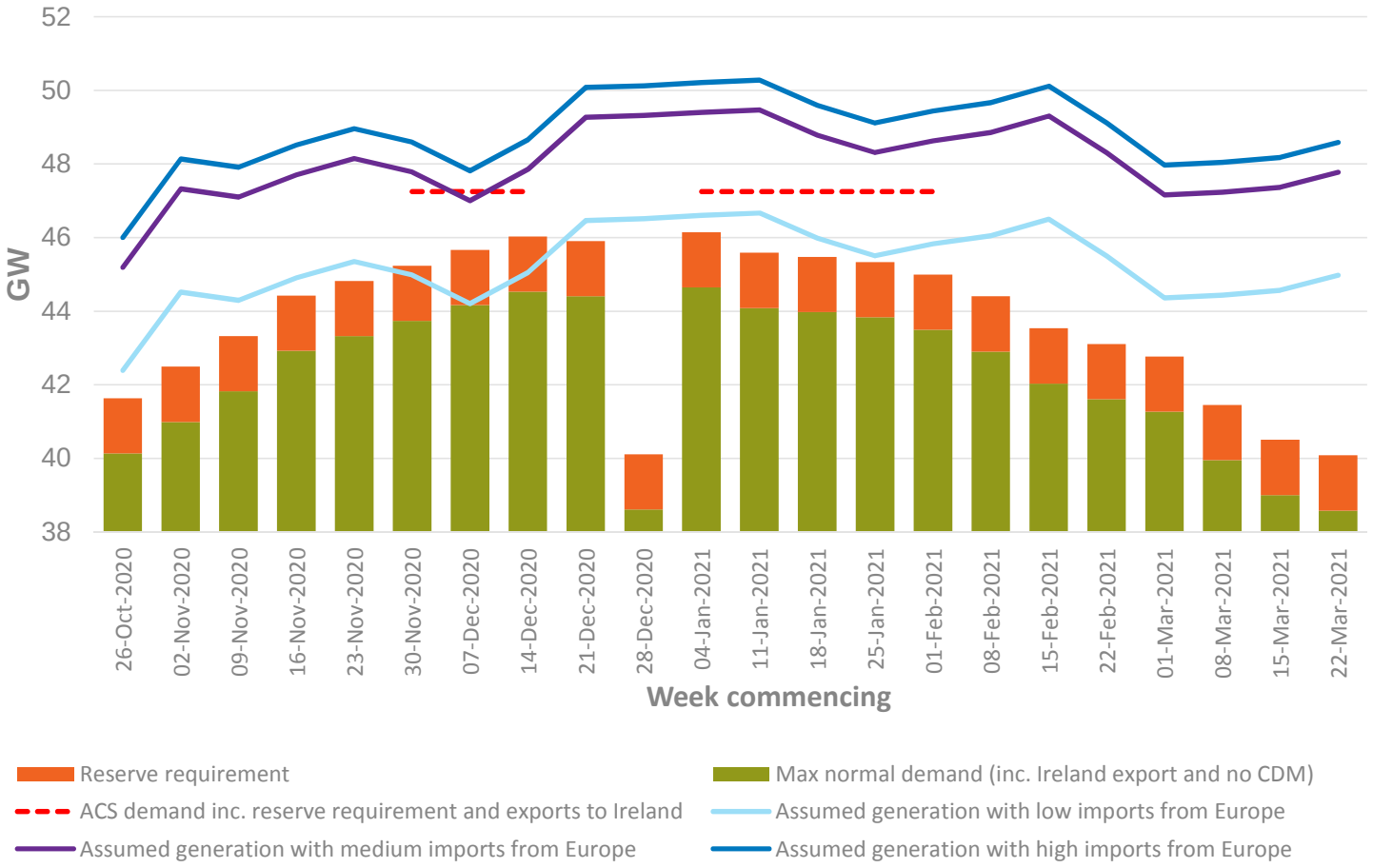
Operational view

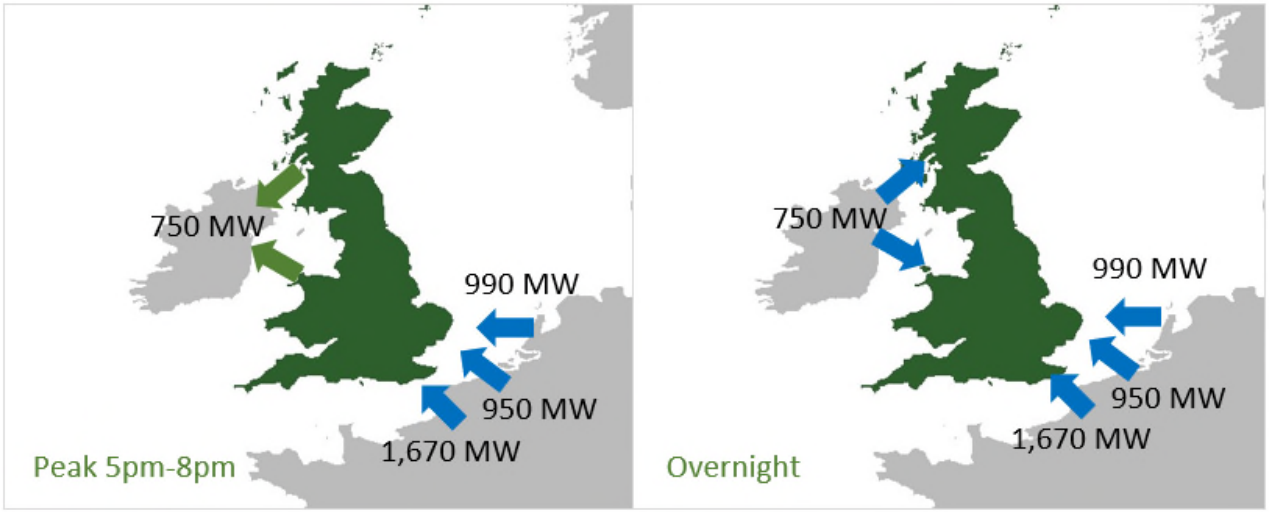


We expect:

- **Sufficient operational surplus for each week of winter 2020/21**
- **Average Cold Spell (ACS) demand to be met in all weeks under the high import interconnector scenario and all but one week in the medium import scenario**
- **Market signals to incentivise flows to ensure that weather corrected demand is met under all interconnector scenarios**

Winter Outlook Figure 3, Page 8

Interconnector flows



We expect:

- **Forward prices in GB to be ahead of those in continental Europe for the majority of the winter period**
- **There may be some occasions when we see exports to continental Europe, however this is unlikely to be during peak times**
- **Moyle and EWIC interconnectors typically to be exporting from GB to Northern Ireland and Ireland during peak times**
- **Interconnectors to continue to flow from January 1st after the end of the EU transition period**

Winter Outlook Figure 7, Page 12

Recap / Key messages

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Q&A

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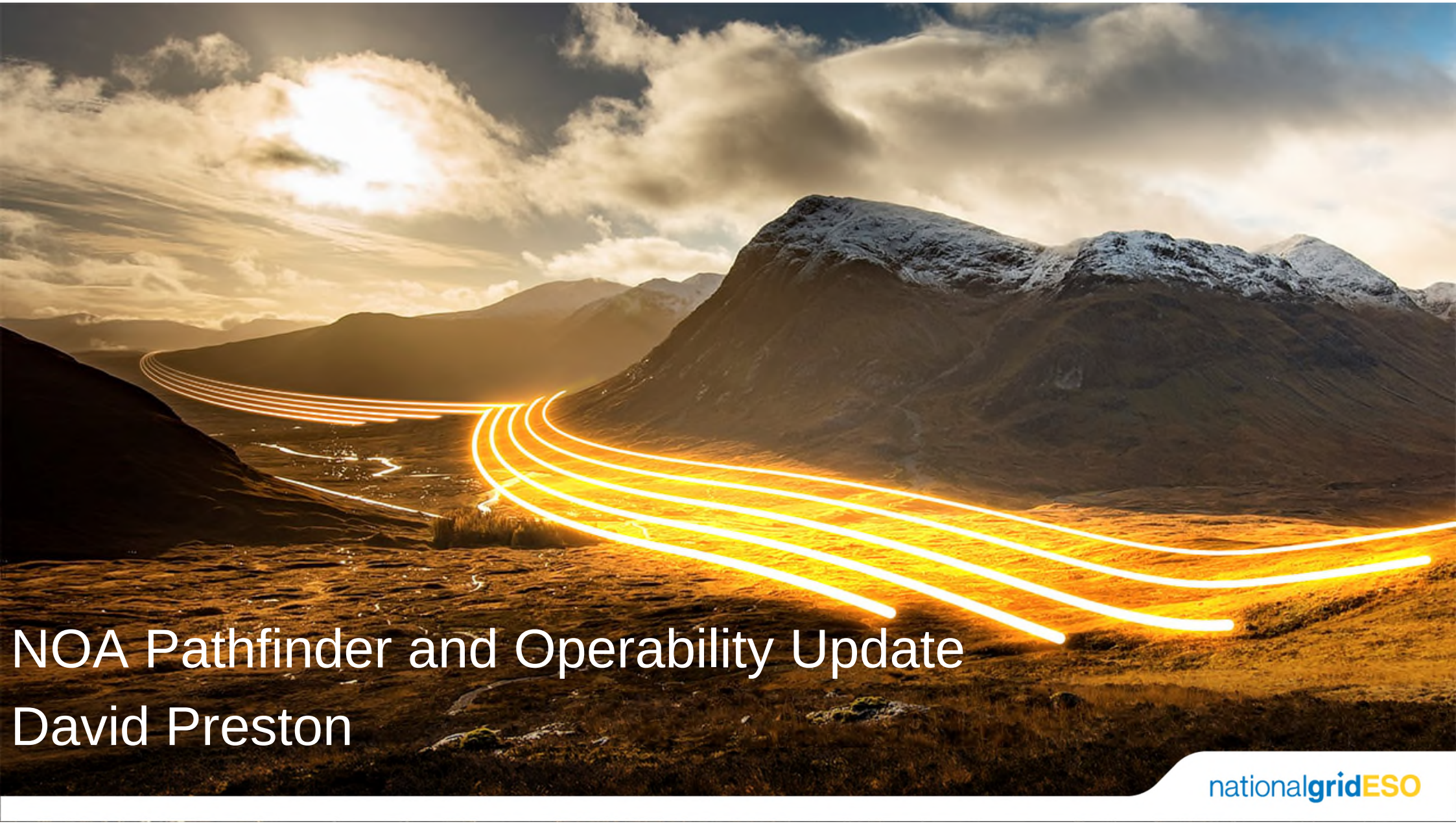

NOA Pathfinder and Operability Update

David Preston

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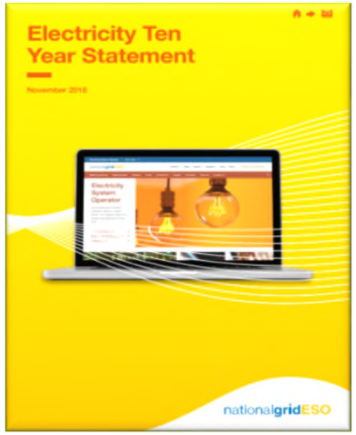
Background to NOA Pathfinders

Outline future energy scenarios (FES)

Assess system needs (ETYS)



System Operability Framework (SOF)

Identify solutions

TOs provide solutions to boundary needs

Tenders for solutions for voltage, stability, thermal and constraint solutions

Driver for NOA Pathfinders

Recommend most efficient solution (NOA)

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Voltage

What is it?

- Procurement of reactive power in discrete regions to meet SQSS compliance and economic benefit
- Long term contract opportunities compared against TO counterfactuals

What's happening currently?

- Progression of long-term Mersey contracts following tender award earlier this year
- Finalising procurement strategy for short term Mersey needs from April 2021
- Reflecting on lessons learned from Mersey events and preparing for next region

What's coming up?

- Mersey lessons learned document to be published imminently
- Long-term Pennine tender is scheduled to open w/b 30 November but is subject to finalising volume requirements and qualifying discrete sub-regions
- 10 year contracts to be offered from April 2024. Likely to be awarded in Summer 2021.

How can you keep up to date?

- Tenders published - https://www.nationalgrideso.com/transmission-constraint-management?market-information
- Sign up for NOA updates - https://subscribers.nationalgrid.co.uk/h/d/7E1C22C6A81C87FE
- Email us at – commercial.operation@nationalgrideso.com

Stability

What is it?

- Procurement of stability (short circuit level, inertia, dynamic voltage) to ensure secure and economic operation
- Long term contract opportunities compared against TO options

What's happening currently?

- Progression of long term stability contract following phase 1 tender award in January
- Invitation for expressions of interest is open for Phase 2 requirement in Scotland until 08 January 2021
- Consultation on contract terms open until 11 December 2020

What's coming up?

- Webinar on contract terms 11:00 12 November 2020 – register here
- Feasibility study for Scotland solutions ending 01 April 2021
- Tender for Scotland solutions summer 2021
- Review of England and Wales requirements

How can you keep up to date?

- Website updates https://www.nationalgrideso.com/research-publications/network-options-assessment-noa/network-development-roadmap
- Sign up for NOA updates - https://subscribers.nationalgrid.co.uk/h/d/7E1C22C6A81C87FE
- Email us at – networkdevelopment.roadmap@nationalgrideso.com

Constraint Management (CMP)

What is it?

- Procurement of generation turn down/demand turn up services to resolve the B6 (Scotland / England border) network constraint
- Initially short-term procurement with subsequent annual tenders to increase competition

What's happening currently?

- At the end of September, we made an announcement that CMP was going to have a tender but for a different service than originally described in the RFI
- Focused on the development of the high-level service design and tender model

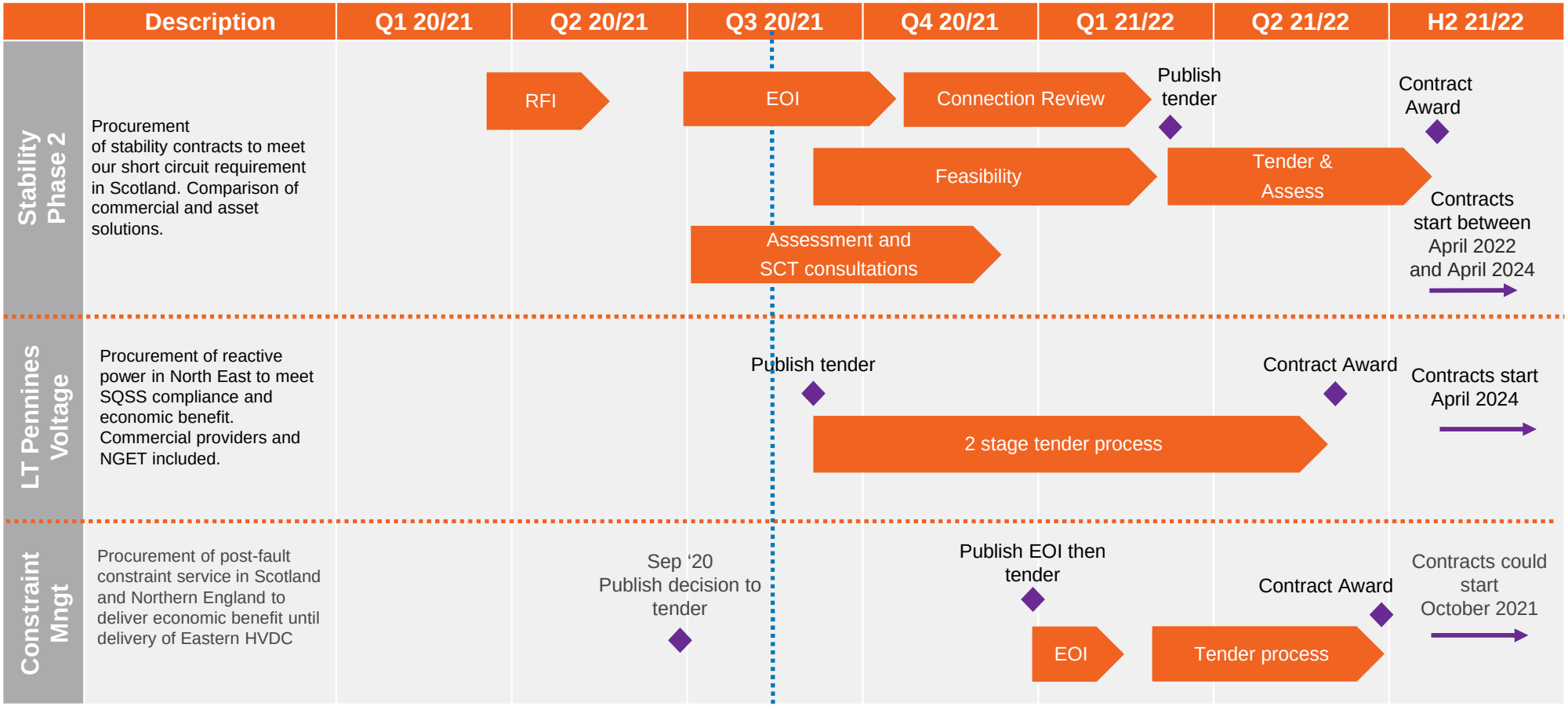
What's coming up?

- Webinar update within the next month – date TBC
- Develop and communicate detailed timetable including EOI, tender window and target contract award date

How can you keep up to date?

- Website updates https://www.nationalgrideso.com/research-publications/network-options-assessment-noa/network-development-roadmap
- Sign up for NOA updates - https://subscribers.nationalgrid.co.uk/h/d/7E1C22C6A81C87FE
- Email us at – networkdevelopment.roadmap@nationalgrideso.com

Current NOA Pathfinder Plan



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Where to go for more information

In December we will publish an update to our **Operability Strategy Report.** It will summarise our work to meet future operability challenges and our zero carbon 2025 ambition. It will set out:

- What we are doing and why,
- What we have learnt,
- Where to look for more information,
- What we're doing next

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Q&A

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Future of Reactive Power

Yuting Dai

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Future of Reactive Power

- There are some challenges with Reactive Power for system operability and the competitive procurement
- Several projects have started aiming to explore the ways to manage those challenges
- We are now developing an approach to review Reactive Power in a holistic and interactive way so that the output can build the solid ground for potential future reform design
- The review will also include the current output and key learning from all Reactive Power projects, e.g. Pathfinder Projects, Power Potential, Network Boundary Transfers etc

Proposed approach

1. **Problem statement**

Articulate what are the current key problems with reactive power

2. Problem analysis

Analyse problems and Identify what are the main issues contributing to these problems

3. Future vision of reactive power

Articulate what are the future state that the future of reactive power will look like

4. Output analysis from current projects

Review the output from current related projects to understand how much they could address the problems by identifying some solutions

5. Gaps analysis

Analyse what **other activities** are required to identify the solutions for the issues identified and help achieve future vision

6. Develop the roadmap and rollout strategy

Agree the timescale and plan for these activities to form a roadmap and rollout strategy

Next Steps

- We would like to engage with industry at each of the stages to ensure the holistic view is taken for future design
- We are starting to meet with some stakeholders to work on initial problem statement, and share the output with wider industry for feedback
- We are keen to hear your views on our approach or any thoughts on Reactive Power by contacting us via our Future of Balancing Services email address: box.futureofbalancingservices@nationalgrideso.com
- More engagement activities are being planned and we will publish it as soon as it's confirmed

Q&A

Please provide feedback via slido.com
Code: #N1120

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Early Competition Plan

Hannah Kirk-Wilson

nationalgridESO

Agenda

- Introduction
- Early Competition Model
  - Suitability for early competition
  - Commercial model
  - Tender process
  - Roles and responsibilities
- Stakeholder timeline

Early Competition

- Ofgem asked the ESO to deliver an Early Competition plan by end of February 2021*
- We are working with stakeholders from inside and outside the energy industry to develop a plan for the introduction of early competition
- The plan will explore:

Early & very early competition models

Competition for non-network solutions

The role ESO could play in distribution level competition

- The plan will set out:

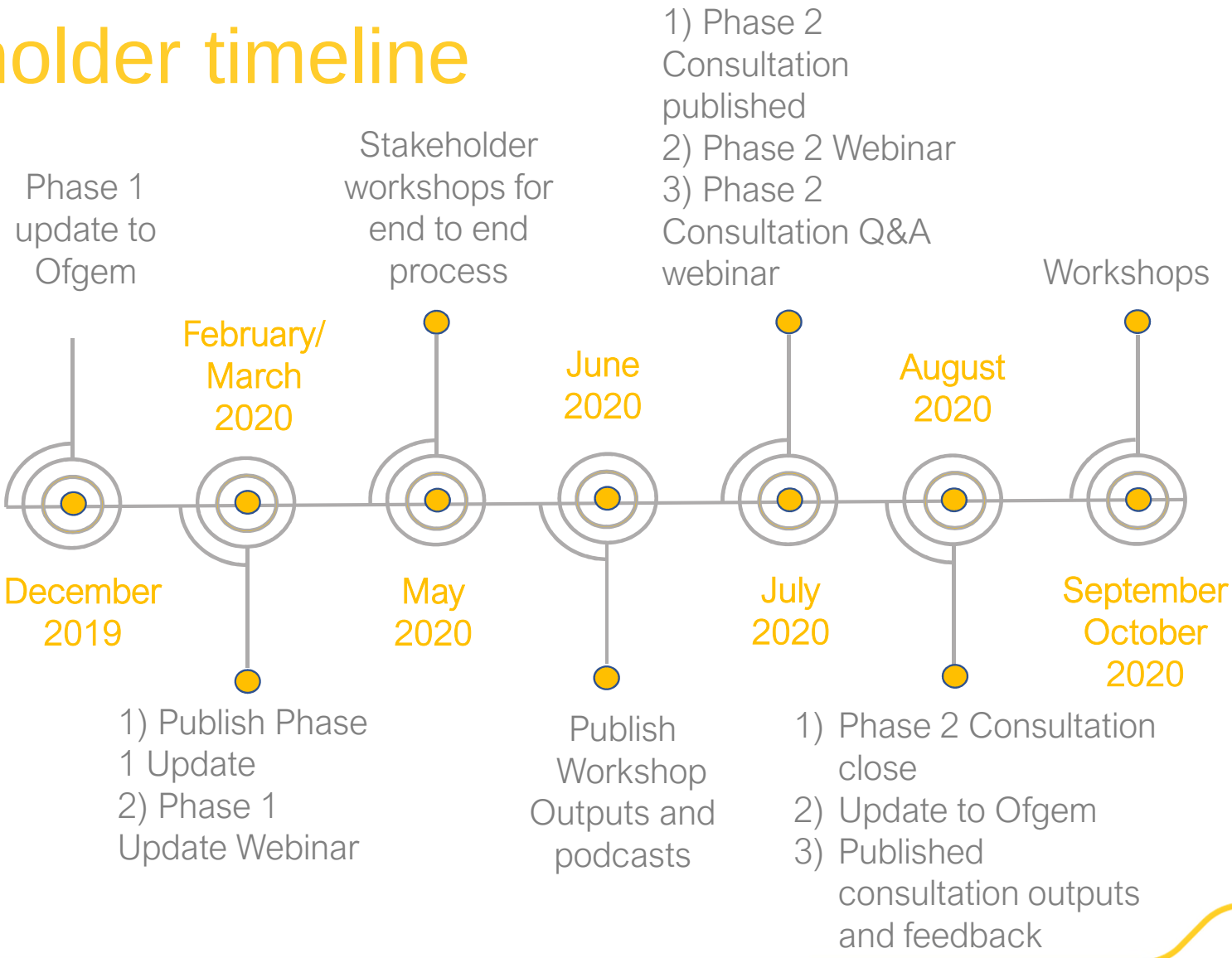
The scope and form of each model, and associated processes

Pathways and timeframes for introduction, including legislative and framework changes

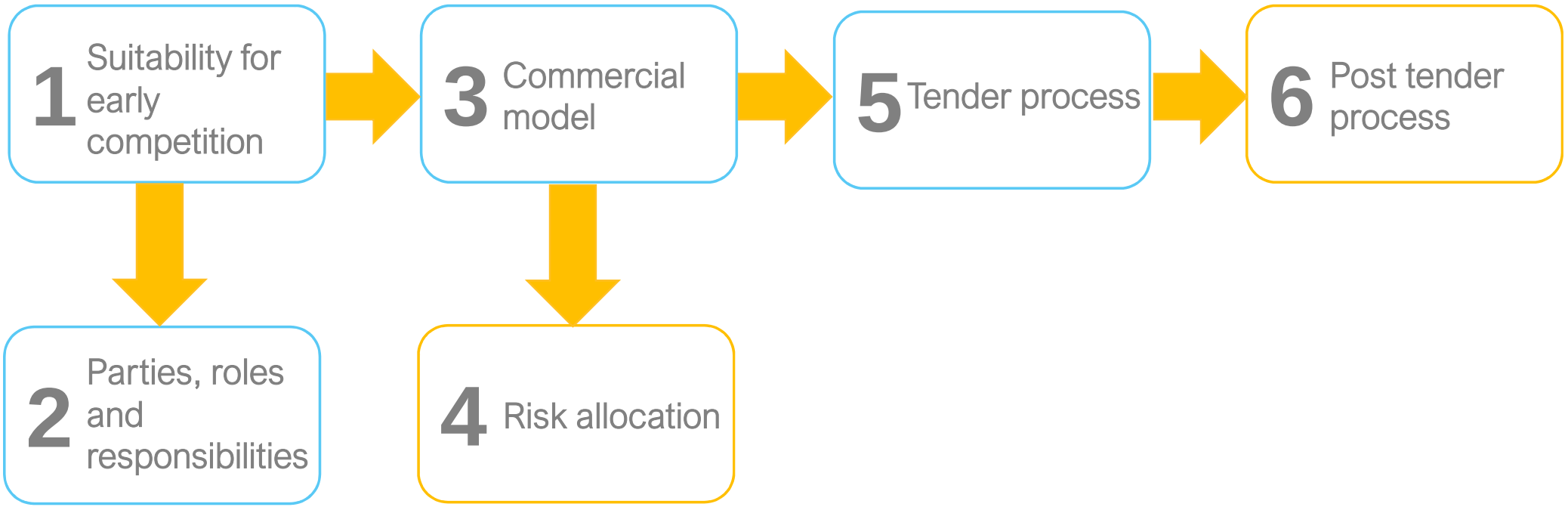
Roles and responsibilities of different parties

*extended by agreement with Ofgem to April 2021

Stakeholder timeline



Early Competition Model



Suitability for Early Competition

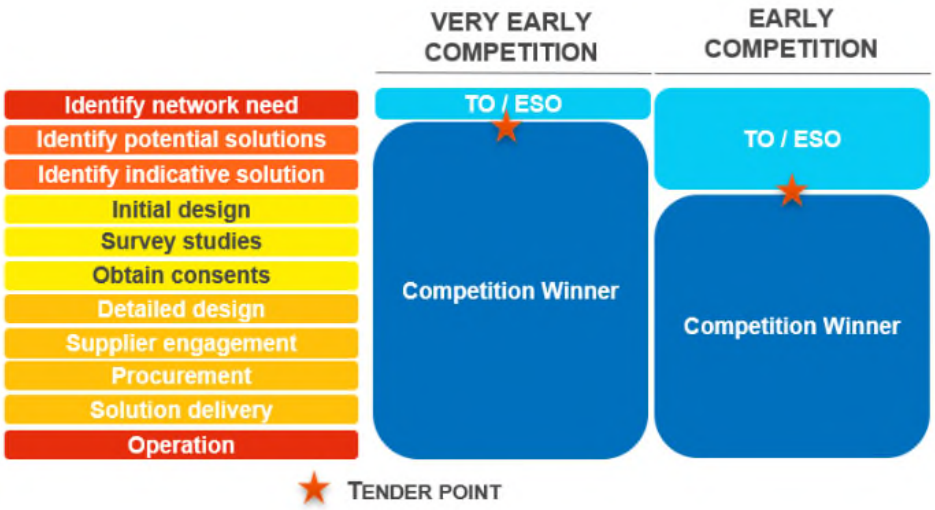
Drivers of network needs
Understand applicability to all types of system need, e.g. boundary needs, voltage, stability, asset health and connections

Process
Launch tender at 'early' point (after indicative design developed through NOA process)

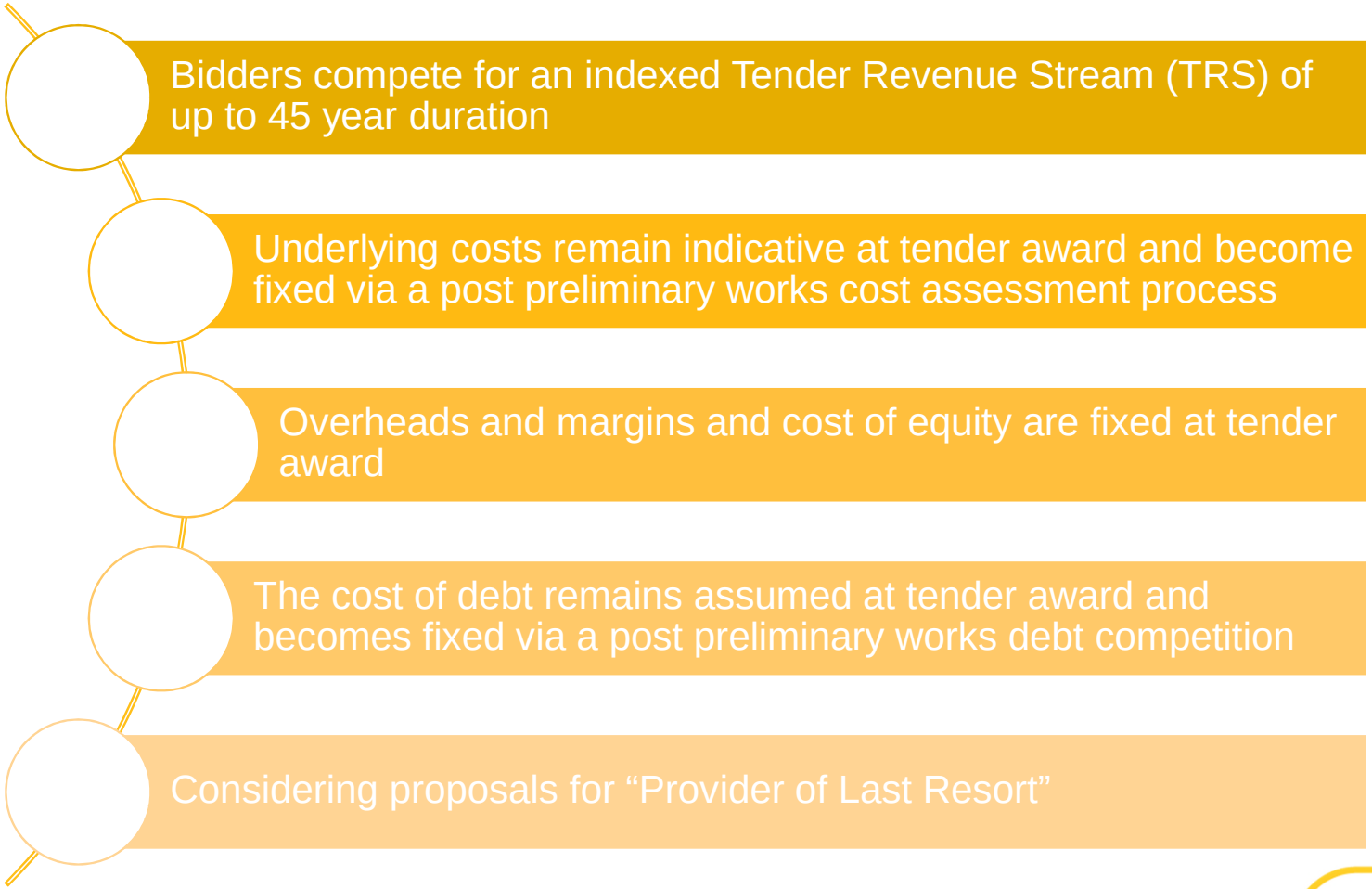
But…. **begin market engagement 'very early**' in order to ensure the indicative design considers as broad a range of options as possible.

Criteria
Propose **no minimum value threshold** – instead a **CBA** undertaken on individual projects

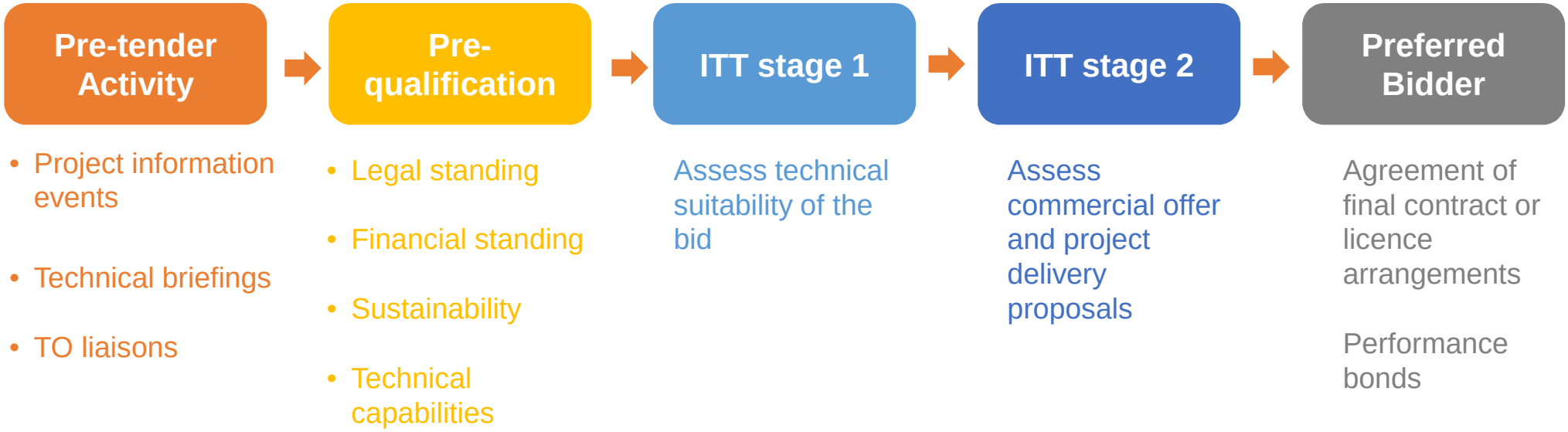
Also propose market appetite, certainty, new and separable



Commercial Model



Tender Process



Roles and Responsibilities

- New roles are required for Early Competition. We have identified the following roles:

Procurement Body

Responsible for design and running of the procurement process

Approver

Makes the formal decision to conclude a stage of early competition

Licence Counterparty

Issues licence

Manage and monitor obligations on any winning bidder issued with a transmission licence (network solutions)

Contract Counterparty

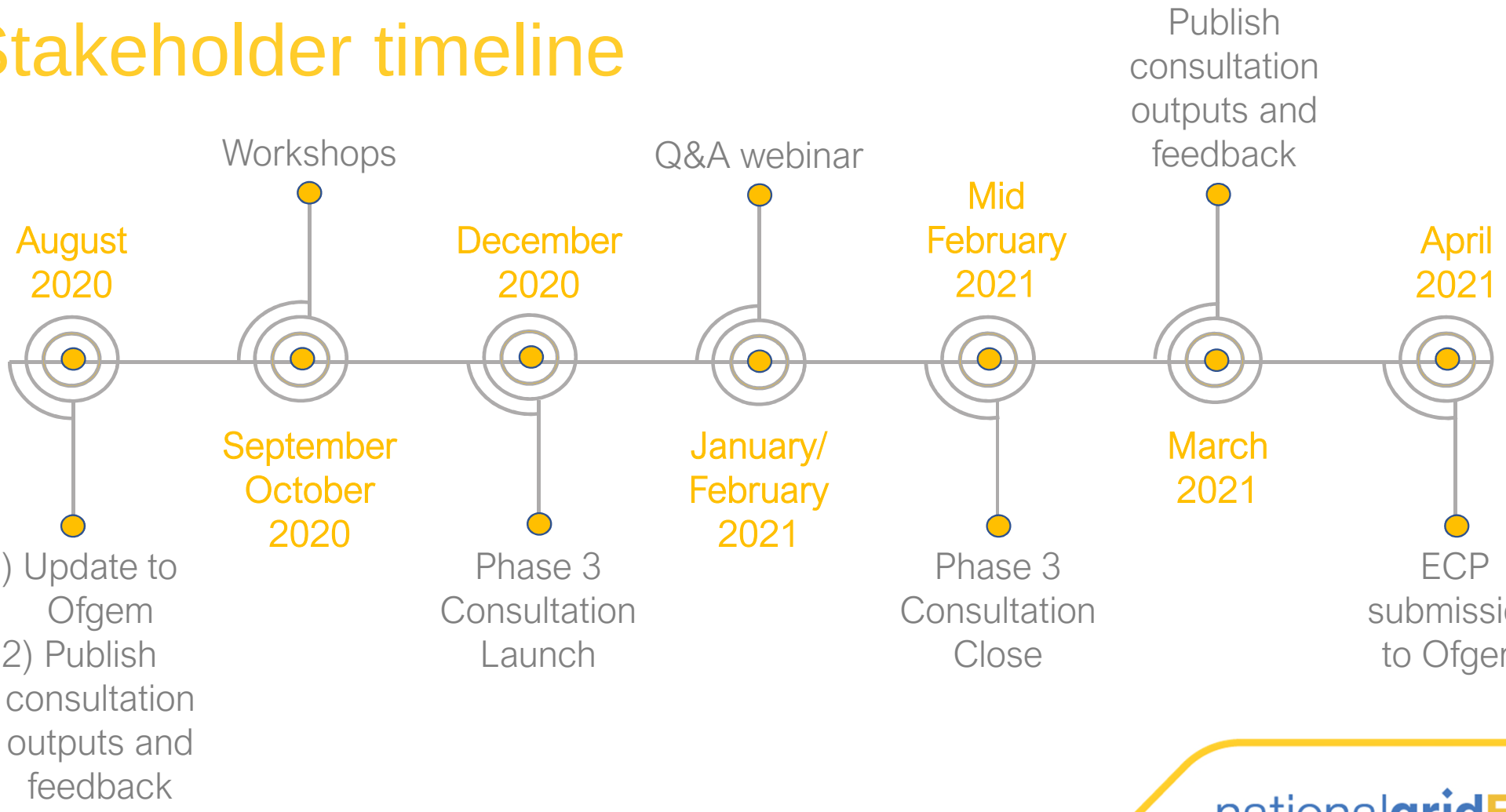
Manage and monitor obligations on any bidder issued a contract (non-network solutions)

Payment Counterparty

Will manage financial transactions between the winning bidder and the other counterparties

ofgem

Stakeholder timeline



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Get in touch:
Box.earlycompetition@nationalgrideso.com

https://www.nationalgrideso.com/future-energy/projects/early-competition-plan

Q&A

Please provide feedback via slido.com
Code: #N1120

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SQSS modification GSR027: update

Matt Magill

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Key objectives

Reminder of E3C actions

5.7. Action (1): The ESO, in consultation with the industry, should undertake a review of the SQSS requirements for holding reserve, response and system inertia.

5.7.1. This review should consider:

- The explicit impacts of distributed generation on the required level of security
- Whether it is appropriate to provide flexibility in the requirements for securing against risk events with a very low likelihood, for example on a cost / risk basis
- The costs and benefits of requiring the availability of additional reserves to secure against the risk of simultaneous loss events

5.7.2. The ESO, as the party required to operate to the standard, should carry out this review and raise modification proposals to the SQSS Panel by April 2020. This would provide the appropriate channels for industry scrutiny and transparency, and for an ultimate Ofgem decision on any required changes to the standard.

Overview of proposal

Frequency Risk and Control Report

- Flexible framework to cover period of change as we move to zero-carbon
- Produced at least once per year, but can be more often if appropriate

- Methodology is created by NGESO, and consulted with industry
- Covers the events, impacts, controls and principles for assessing cost vs. risk
  - Defines what is in scope and out of scope
  - Allows new risks and opportunities to be identified and raised
  - Allows prioritisation of improvements to the FRCR
- SQSS Panel are recommender (must seek appropriate advice and guidance)

- NGESO to implement the Methodology to create the Report
- Presents options for total level of cost vs. risk, including which events will and will not be mitigated, with a recommendation based on industry consultation of metrics (e.g. cost limit, reliability limit, cost-per-event)
- SQSS Panel are recommender (must seek appropriate advice and guidance)
- Ofgem approve the Report

- NGESO operate to the approved Report

Overview of proposal

Clarify baseline standards

- Definition of ***Loss of Power Infeed*** updated to clarify this only includes things connected to the ***National Electricity Transmission System***

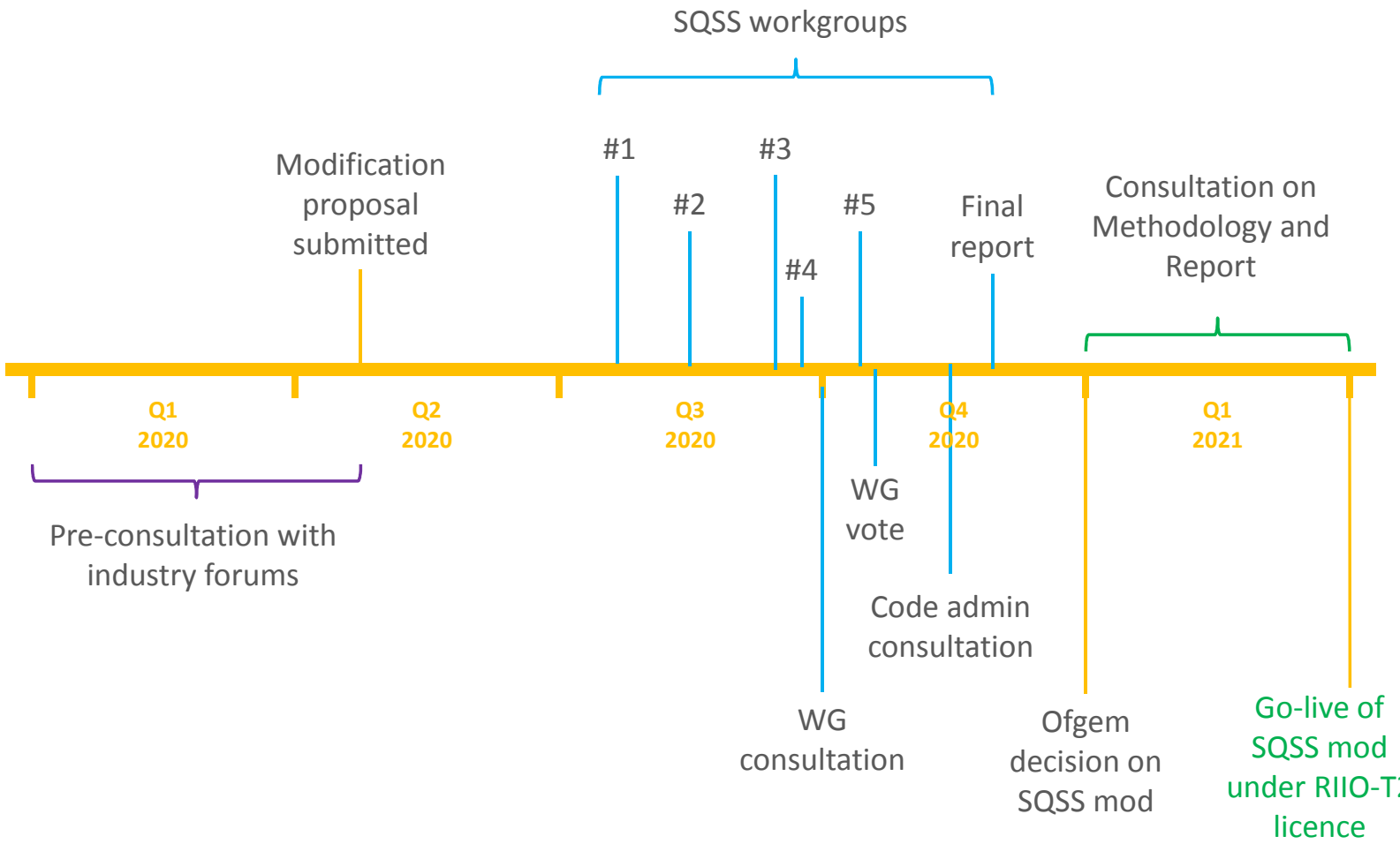
- Definition of ***Loss of Power Outfeed*** added to clarify role of demand losses, mirroring the definition of ***Loss of Power Infeed***

- ***Unacceptable Frequency Conditions*** updated to:
  - explicitly acknowledge the size of frequency deviations (previously implicit), in addition to the duration and how often they occur, and
  - reference the ***Frequency Risk and Control Report*** for quantifying those impacts (i.e. what combination of the three metrics is "unacceptable")

SQSS operational chapters (5. Onshore and 9. Offshore)

- Additional clauses referencing the ***Frequency Risk and Control Report*** for assessing the cost vs. risk benefit of going above or below the baseline set out in the SQSS, and explicitly referencing consequential loss of DER

Timeline


SQSS workgroups
#1
#2
#3
#4
#5
Modification proposal submitted
Final report
Consultation on Methodology and Report
Q1 2020
Q2 2020
Q3 2020
Q4 2020
Q1 2021
Pre-consultation with industry forums
WG vote
Code admin consultation
WG consultation
Ofgem decision on SQSS mod
Go-live of SQSS mod under RIIO-T2 licence

Summary of changes

SQSS operational chapters (5. Onshore and 9. Offshore)

- Additional clauses referencing FRCR for going above or below the baseline set out in the SQSS

Terms and definitions

- “Frequency Risk and Control Report” defined
- “Frequency Risk and Control Report methodology” defined
- “Unacceptable Frequency Conditions” updated to reference FRCR
- “Fault outage” updated to make scope clearer
- “Loss of Power Infeed” updated to make scope clearer
- “Loss of Power Outfeed” as additional definition to cover demand losses

Process and governance

- Detailing the process for periodic update, consultation and approval of the methodology and the FRCR

Q&A

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Lunch Break
Back at 13:20

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Dynamic Containment

Andy Rice

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Dynamic Containment

What is Dynamic containment?

Dynamic Containment is the ESO's new frequency product that was launched at the start of October 2020. The initial soft launch of DC was for low frequency response only.

How does Dynamic containment respond

- The service has a sub second response time to changes in frequency.
- The main delivery of the service it at 0.2 deviation.
- Maximum duration the service is 15mins

Procurement of Dynamic

- Daily competitive tenders with providers who have passed all the Pre qualification criteria

Dynamic Containment – How to participate

.

To be able to participate in dynamic containment you need to have completed the following:

- Read and understood the contractual documents and then sign and submit Contract forms A & B and received a signed form C from the ESO
- Understood the technical specification of the service
- Have tested and passed the asset/s in line with the DC testing guidance that you wish to tender in to deliver the service
- Have completed testing and be connected up to systems that allows the submission of performance monitoring data.

Dynamic Containment – story so far and next steps

.

1st Month of Dynamic containment

- DC soft launch delivery started on the 2nd October with 90MW contracted on day one.
- 1 month into operation 295 MW are tendering into DC
- Over this period we have seen the average price of £17/MW/hr

Next steps

- ESO will be publishing a Soft Launch Developments Document in the coming weeks.

Contacts

Any further questions , please contact us

Commercial.operation@nationalgrideso.com – Contract Front Desk

Or visit our website at

https://www.nationalgrideso.com/industry-information/balancing-services/frequency-response-services/dynamic-containment?market-information

Q&A

Please provide feedback via slido.com
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Black Start Tender Update

Steve Miller

nationalgridESO

Black Start

What is Black Start?

Black Start is the procedure we use to restore power in the event of a total or partial shutdown of the national electricity transmission system.

During a Black Start event

- the service requires the provider to start up its main generator(s),
- carry out initial energisation of sections of the NETS and Distribution network,
- and support sufficient demand to create and control a stable ‘power island’

Procurement of Black Start

- Bilateral agreements with existing providers who have inherent capability or retrofitting existing generators.

South West & Midlands Black Start Tender

This is the first Black start competitive procurement event in the UK and we have been delighted with the response, many of which are new providers and technology types and meets our ESO forward plan commitments to deliver competitive markets.

- We have awarded six contracts for five years at cost in the region of **£84m**.
  - Five of the contracts are with new provider's of Black Start.
  - Different technology types.
- The decision to award the six contracts meets our
  - Service requirements to meet current restoration time;
  - Economic Purchase Obligations;
  - Logistical and operability limitations over the contract term.
- Successful providers will be offered a contract to commence by 1st July 2022 and terminate 30th June 2027. Providers can commence their service earlier (anytime from 1st Oct 2021) and would benefit from a longer contract term.

Northern Tender Update

Covering Scotland, North West and North East regions

- ITT Part 2 – 14 submissions from multiple technology types
- Technical and Commercial submissions 29th Jan 2021
- Contract award expected March 2021
- Service start date from April 2022*

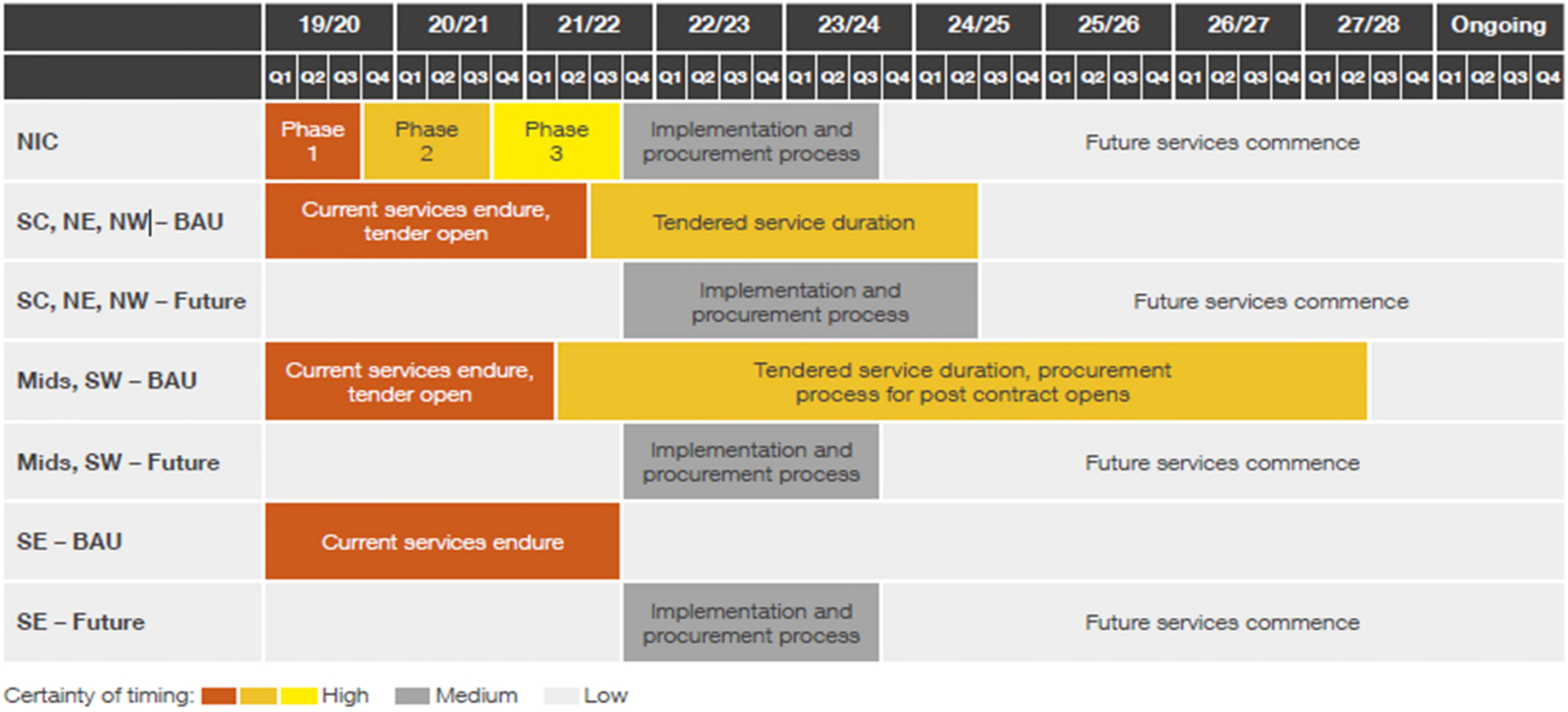
*opportunity for providers to start as early as Oct 2021

SE Tender Update*

Dates	Activity
May 2021	Expression of interest opens for SE Mini Tender
July 2021	Expression of Interest closes for SE Mini Tender
Sept 2021	Invite providers to present FS1 and Scope FS2
Dec 2021	FS1 and FS2 Scope closes
Feb 2022	**Review FS1 and FS2 Scope and move providers to next stage**
Aug 2022	F2 and Commercial Submissions
Oct 2022	Contract Award
Dec 2022	Service commences
Dec 2025	Service expires

**From the published Black Start Strategy and Procurement Methodology 2020/21*

Further Tender opportunities



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Distributed Re-Start Update

The project is exploring how distributed energy resources (DER) could be used to restore power in the highly unlikely event of a Total or Partial Shutdown of the National Electricity Transmission System.

Key milestones this year:

- Distributed Re-Start Conference held in London, in January, with over 100 attendees
- Virtual Conference held across three days with over 200 attendees each day in July
- Assessment of power engineering aspects of Black Start from DER report published in July
- Organisational, Systems and Telecommunications (OST) Design stage I report published in October with the Design stage II report to be published in December
- Procurement and Compliance (P&C) A high level outline of commercial and regulatory arrangements report published in October
- Live trials are beginning to get underway to test and demonstrate the Black Start from DER concept

Please see the Distributed ReStart webpage for more detail.

Contacts

Any further questions , please contact us

steve.k.miller@nationalgrideso.com	Senior Contracts Manager
holly.lake@nationalgrideso.com	Contracts Manager

www.nationalgrideso.com/black-start

Q&A

Please provide feedback via slido.com
Code: #N1120

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Despatch Efficiency

Mark Jones

nationalgridESO

Commitment

Continue to manage existing balancing services markets, develop future markets and make improvements to facilitate greater transparency, participation and competition.
[Riio-2 Business Plan]

Increase the transparency of operational decision making in the Balancing Mechanism.
[Forward Plan 2020/21 deliverable]

Operational Transparency

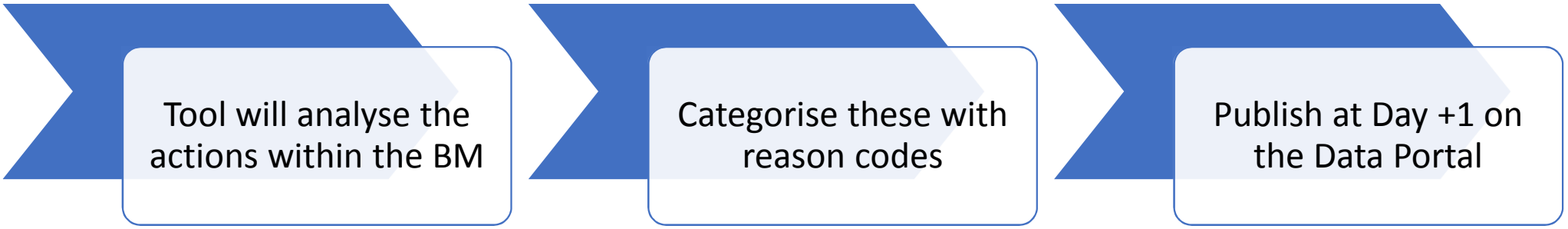
Industry feedback suggests that many would like to have a deeper understanding and hence greater clarity about the drivers of our operational decision making.

It is clear and simple when we take actions in cost order.

However, sometimes the option that works electrically is not the next in the price stack.

… that's where Despatch Efficiency comes in

Despatch Efficiency Tool



Despatch Efficiency Work Stream

Tool

- Internal tool currently being written

Data

- Internal draft reporting & assurance- Q3 2020/21

Publish

- Publish on the Data Portal – Q4 2020/21

Despatch Efficiency

This tool will provide greater clarity on reasons for Operational Decisions making.

With improved clarity we will look at improving areas as appropriate.

Throughout we will be engaging externally with the Operational Transparency Forum webinars and Operational Forum meetings.

Q&A

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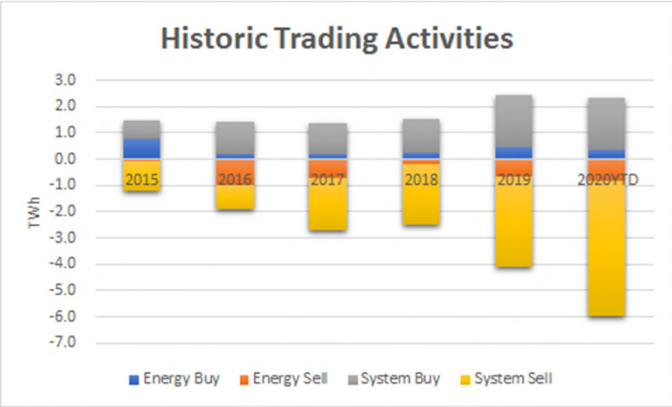
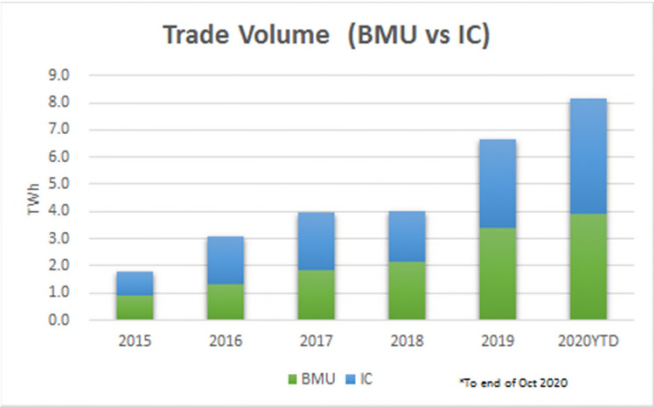
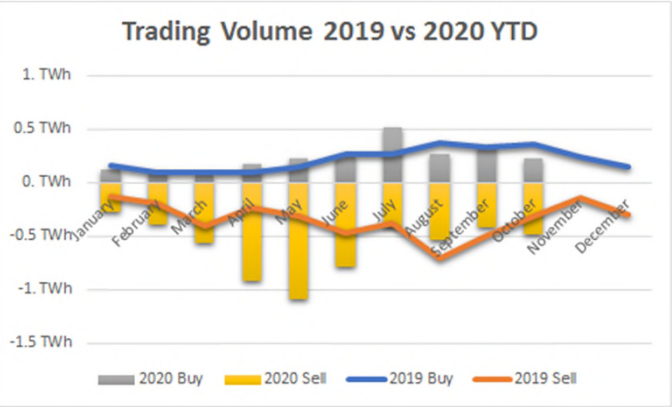
Trading Update
Rachel Turner
nationalgridESO

Trading activity







- Increase in trading activity, year on year, particularly since 2018
- Vast majority of trading is carried out to manage system issues

- Increase in trading activity on both interconnectors and BMUs

- March/April/May/June: demand reduction due to lockdown led to an increase in the volume of sell trades to manage downwards flexibility and ROCOF

Trading transparency update

- Presented our ambitions for transparency at the Weekly Transparency Forum on 19th August
- Launched a survey to collect feedback from the industry
- Received 30 responses to the survey (last one received 12th October), still live
- This has helped us to understand the priorities for industry
- Finalising the delivery plan, making final checks, testing etc….
- Aim to deliver the top 5 priorities for industry between now and June 2021
- Provide information as well as data
- Reviewing all comments to see what else would be useful for industry
- Aim to provide and gather regular feedback through the Weekly Transparency Forum

Trading transparency update

More Detail

Present the current trades but in greater detail

- Include name of Counterparty
- Include name of BMU
- Include system reason (thermal/voltage/margin)

Better Presentation

Improve the presentation of the current data

- Have list of trades with start and end times, instead of Volume-by-SP
- Have historic trades downloads available
- Have data available in different formats
- In Universal Time format

More information

Publish more of the actions taken by Trading

- Include balancing service contracts (used for solving thermal/voltage constraints)
- Include SO-SO actions
- Include SEL reduction contracts (super SEL)
- Include upcoming requirements

Trading transparency survey results

	Deliverable
1	More Detail: BMU id
2	More information: Balancing Services contracts enactment
3	More information: Upcoming interconnector requirements
4	More Detail: Reason (voltage/thermal)
5	More information: Upcoming voltage requirements
6	More Information: Include SO-SO actions
7	More information: Super SEL
8	Better format: Historic trades
9	More Detail: Counterparty name
10	Better format: Each trade in one line rather than time span
11	Better format: Different download formats
12	Better format: Using Universal Time (UTC)

Trading transparency delivery plan

Sept 2020	➢ SuperSEL contracts
Nov/Dec 2020	➢ Balancing services contracts • Fixed price and index linked contract enactment – move to data portal; publish historic information; investigating publishing BMU ID and CP name early • Reviewing other contracts to publish on the data portal (eg contracts for managing localised constraints) – confirm process, check confidentiality issues. Hope to publish by end of year. ➢ Upcoming interconnector requirements – publish requirement on data portal and information on how requirement was filled – can subscribe to an alert service on data portal ➢ Historic trades, each trade in one line – ready. In future, automate a daily update of previous days trades
Mar 2021	➢ Trade migration project – publish trade data on the data portal ➢ Including the trade reason – will include voltage, thermal, ROCOF ➢ Include upcoming voltage requirement – will also include thermal and ROCOF
In line with P399 delivery ~June 2021	➢ P399 delivery date ➢ Publish BMU ID and counterparty name on data portal with other trade data ➢ SO to SO trades - tbc
Ongoing	➢ Different download formats (data portal API, download as CSV) ➢ Using Universal Time format (all data published on data portal is in this format)

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Trading transparency – Interconnector trading info

From	To	Auction ID	Auction Lot ID	Buy Sell	Volume	Unit	Bid Deadline	Default Price	Clearing Price	Best Price	VWA Price	IFA Volume	BN Volume	NEMO Volume	Published DateTime
2020-10-21T22:00:00	2020-10-21T23:00:00	2020_10_21-18_41	2020_10_21-18_41-1	Sell	200	BN/IFA/NEMO	2020-10-21T18:30:00	45							2020-10-21T18:41:40
2020-10-21T23:00:00	2020-10-22T00:00:00	2020_10_21-18_41	2020_10_21-18_41-2	Sell	1100	BN/IFA/NEMO	2020-10-21T18:30:00	45							2020-10-21T18:41:40
2020-10-22T00:00:00	2020-10-22T01:00:00	2020_10_21-18_41	2020_10_21-18_41-3	Sell	1200	BN/IFA/NEMO	2020-10-21T18:30:00	45							2020-10-21T18:41:40
2020-10-22T01:00:00	2020-10-22T02:00:00	2020_10_21-18_41	2020_10_21-18_41-4	Sell	1000	BN/IFA/NEMO	2020-10-21T18:30:00	45							2020-10-21T18:41:40
2020-10-22T02:00:00	2020-10-22T03:00:00	2020_10_21-18_41	2020_10_21-18_41-5	Sell	1500	BN/IFA/NEMO	2020-10-21T18:30:00	45							2020-10-21T18:41:40

From	To	Auction ID	Auction Lot ID	Buy Sell	Volume	Unit	Bid Deadline	Default Price	Clearing Price	Best Price	VWA Price	IFA Volume	BN Volume	NEMO Volume	Published DateTime
2020-10-21T22:00:00	2020-10-21T23:00:00	2020_10_21-18_41	2020_10_21-18_41-1	Sell	200	BN/IFA/NEMO	2020-10-21T18:30:00	45	32.1	32.1	32.1	200			2020-10-21T20:29:40
2020-10-21T23:00:00	2020-10-22T00:00:00	2020_10_21-18_41	2020_10_21-18_41-2	Sell	1100	BN/IFA/NEMO	2020-10-21T18:30:00	45	14.09	25	20.32	950	150		2020-10-21T20:29:40
2020-10-22T00:00:00	2020-10-22T01:00:00	2020_10_21-18_41	2020_10_21-18_41-3	Sell	1200	BN/IFA/NEMO	2020-10-21T18:30:00	45	13.61	23.22	18.88	995	205		2020-10-21T20:29:40
2020-10-22T01:00:00	2020-10-22T02:00:00	2020_10_21-18_41	2020_10_21-18_41-4	Sell	1000	BN/IFA/NEMO	2020-10-21T18:30:00	45	14.81	20.18	16.59	800	200		2020-10-21T20:29:40
2020-10-22T02:00:00	2020-10-22T03:00:00	2020_10_21-18_41	2020_10_21-18_41-5	Sell	1500	BN/IFA/NEMO	2020-10-21T18:30:00	45	1.1	19.02	12.58	1210	290		2020-10-21T20:29:40

Q&A

Please provide feedback via slido.com
Code: #N1120

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ESO Operational Transparency Forum

11th November 2020

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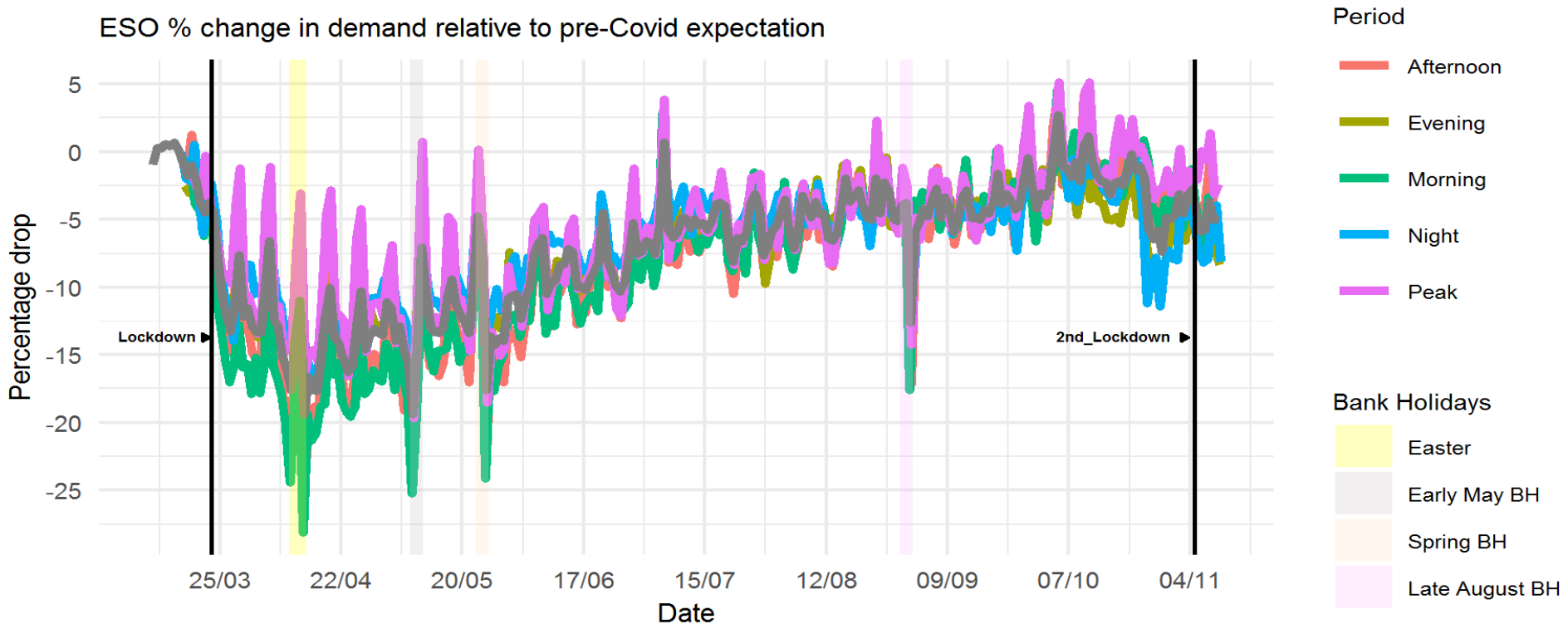
Demand | Latest demand suppression assessment



Estimated overall demand drop over last 7 days of **4.4%** compared to pre-COVID expectations

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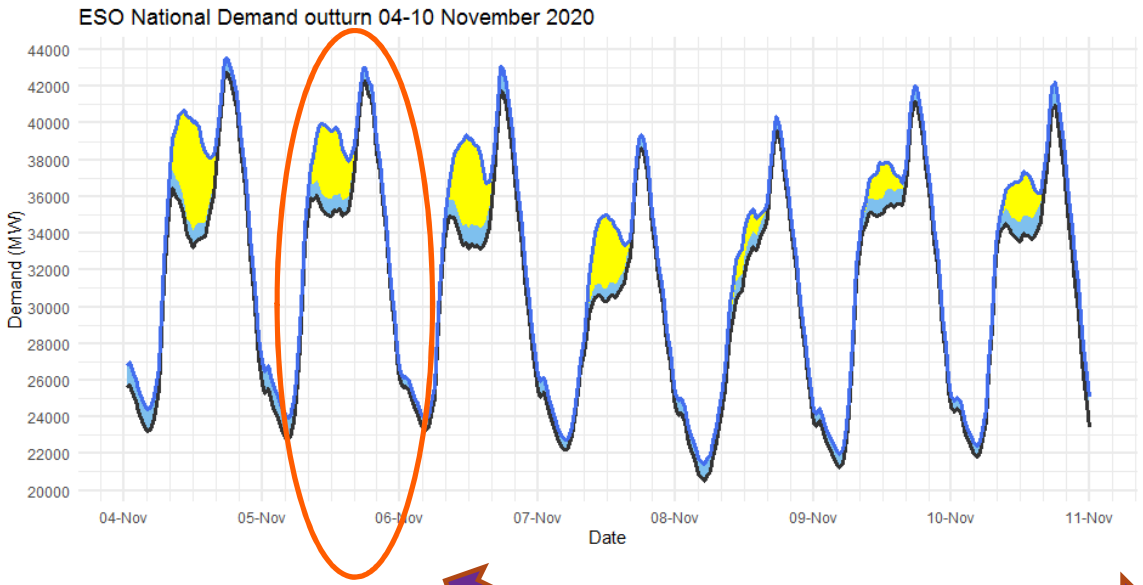
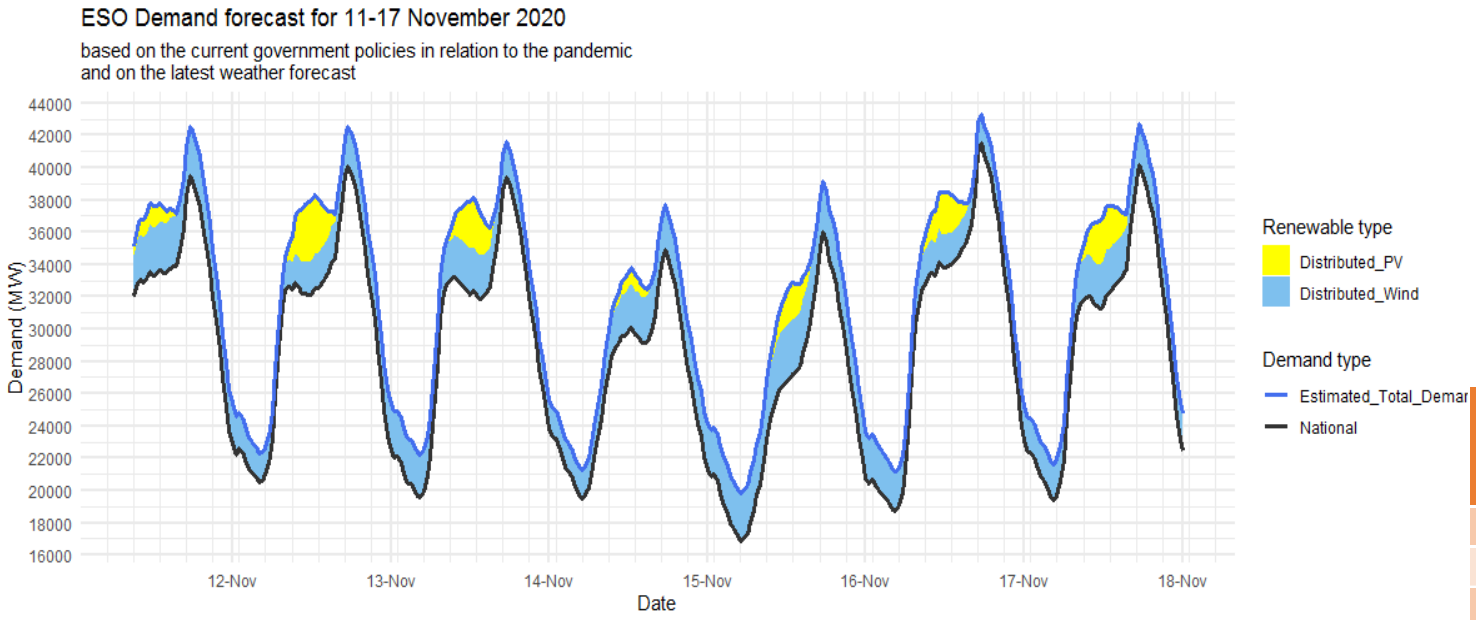
Demand | Last Weeks Outturns



First day of the second national lockdown

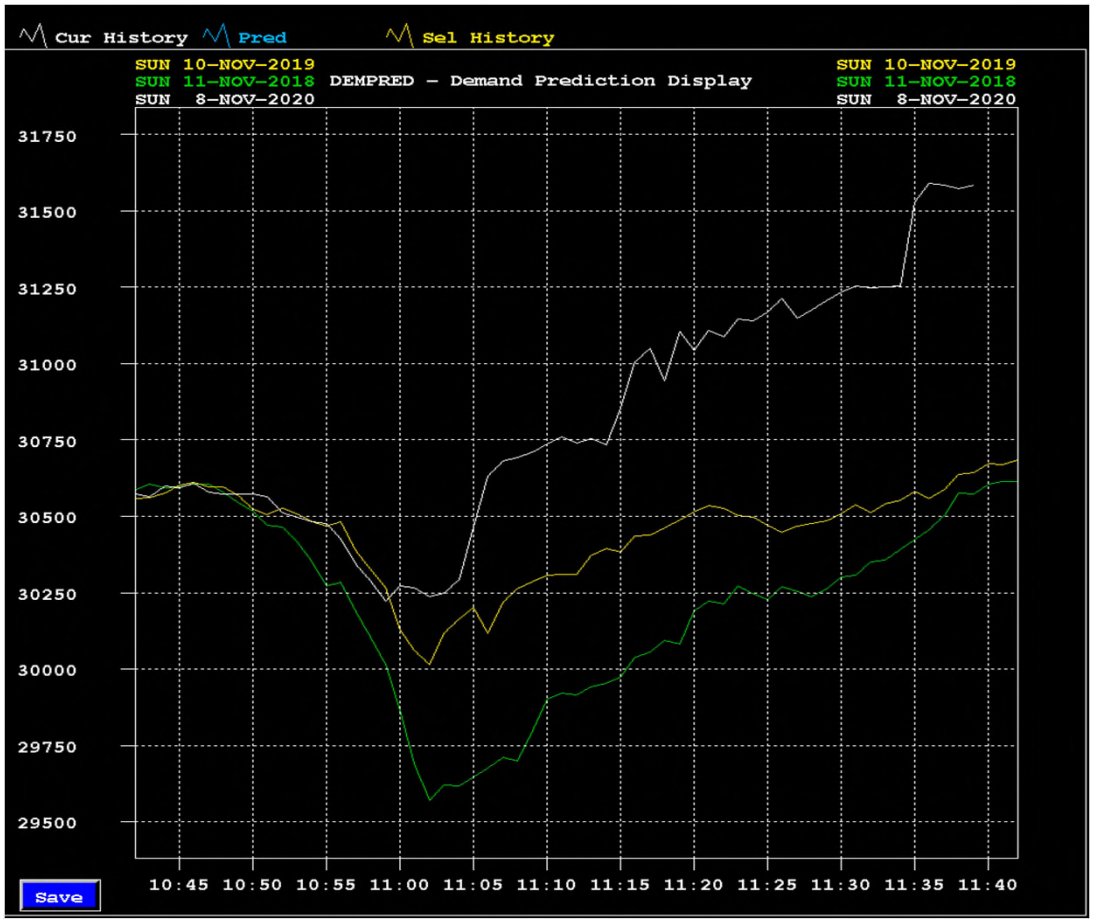
Date	Forecasting Point	FORECAST (Wed 04 National Demand (GW)	FORECAST (Wed 04 Dist. wind (GW)	OUTTURN National Demand (GW)	OUTTURN Dist. wind (GW)
04 Nov 2020	Evening Peak	43.2	0.8	42.8	0.7
05 Nov 2020	Overnight Min	22.7	1.2	22.8	1.2
05 Nov 2020	Evening Peak	42.4	0.7	42.3	0.7
06 Nov 2020	Overnight Min	23.5	0.6	23.3	0.6
06 Nov 2020	Evening Peak	41.1	1.1	41.8	1.3
07 Nov 2020	Overnight Min	22.9	0.5	22.2	0.5
07 Nov 2020	Evening Peak	37.7	0.7	38.7	0.7
08 Nov 2020	Overnight Min	21.1	0.8	20.5	0.9
08 Nov 2020	Evening Peak	37.7	1.0	39.7	0.7
09 Nov 2020	Overnight Min	20.6	1.1	21.2	0.7
09 Nov 2020	Evening Peak	41.2	1.3	41.2	0.9
10 Nov 2020	Overnight Min	21.1	0.9	21.8	0.6
10 Nov 2020	Evening Peak	41.4	0.9	40.9	1.3

Demand | Week ahead forecast



		FORECAST (Wed 11	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
11 Nov 2020	Evening Peak	39.5	3.1
12 Nov 2020	Overnight Min	20.5	1.8
12 Nov 2020	Evening Peak	40.1	2.4
13 Nov 2020	Overnight Min	19.6	2.6
13 Nov 2020	Evening Peak	39.4	2.2
14 Nov 2020	Overnight Min	19.5	1.8
14 Nov 2020	Evening Peak	34.9	2.8
15 Nov 2020	Overnight Min	16.8	3.0
15 Nov 2020	Evening Peak	36.0	3.2
16 Nov 2020	Overnight Min	18.8	2.4
16 Nov 2020	Evening Peak	41.5	1.8
17 Nov 2020	Overnight Min	19.4	2.2
17 Nov 2020	Evening Peak	40.2	2.5

Demand | Remembrance Sunday 8th Nov



- Minutely demand curve during the 2-minute silence on Remembrance Sunday
- Due to COVID restrictions this year, we observed a smaller drop in demand (~300MW) compared to previous years
- Drop followed by a much bigger and steeper (~500MW) pick up afterwards

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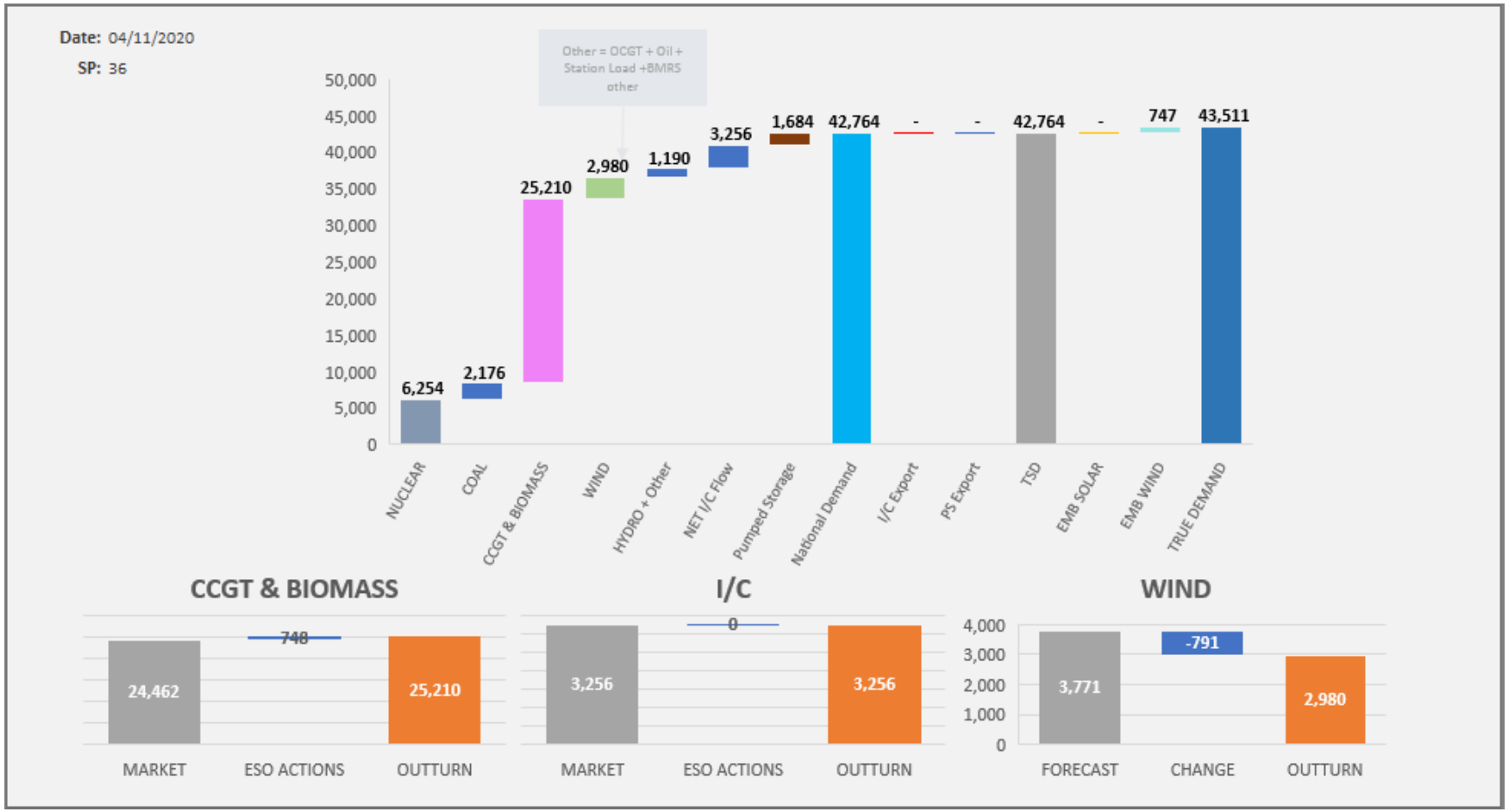
ESO Actions Weekday peak | Wednesday evening



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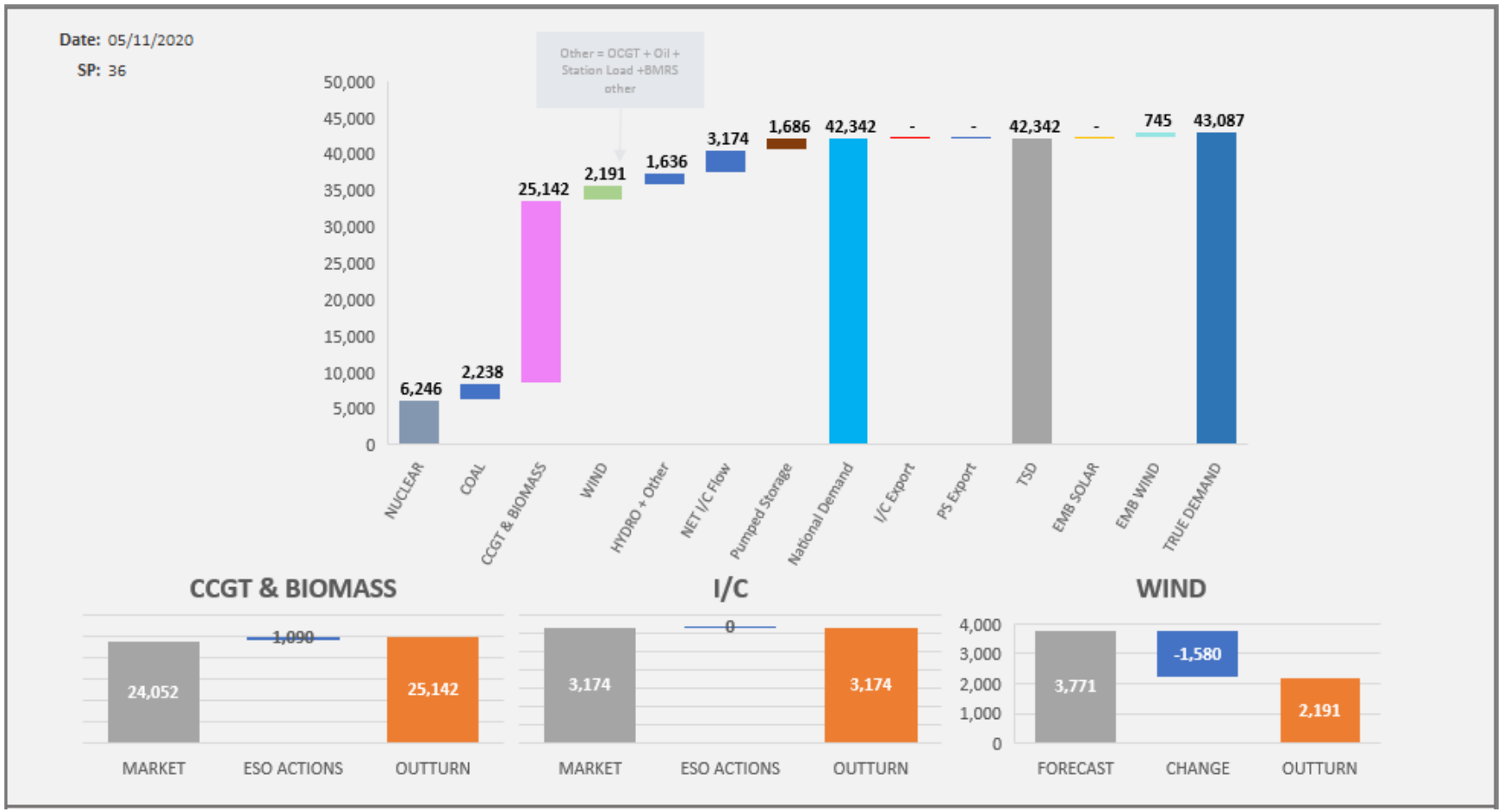
ESO Actions Weekday peak | Thursday evening



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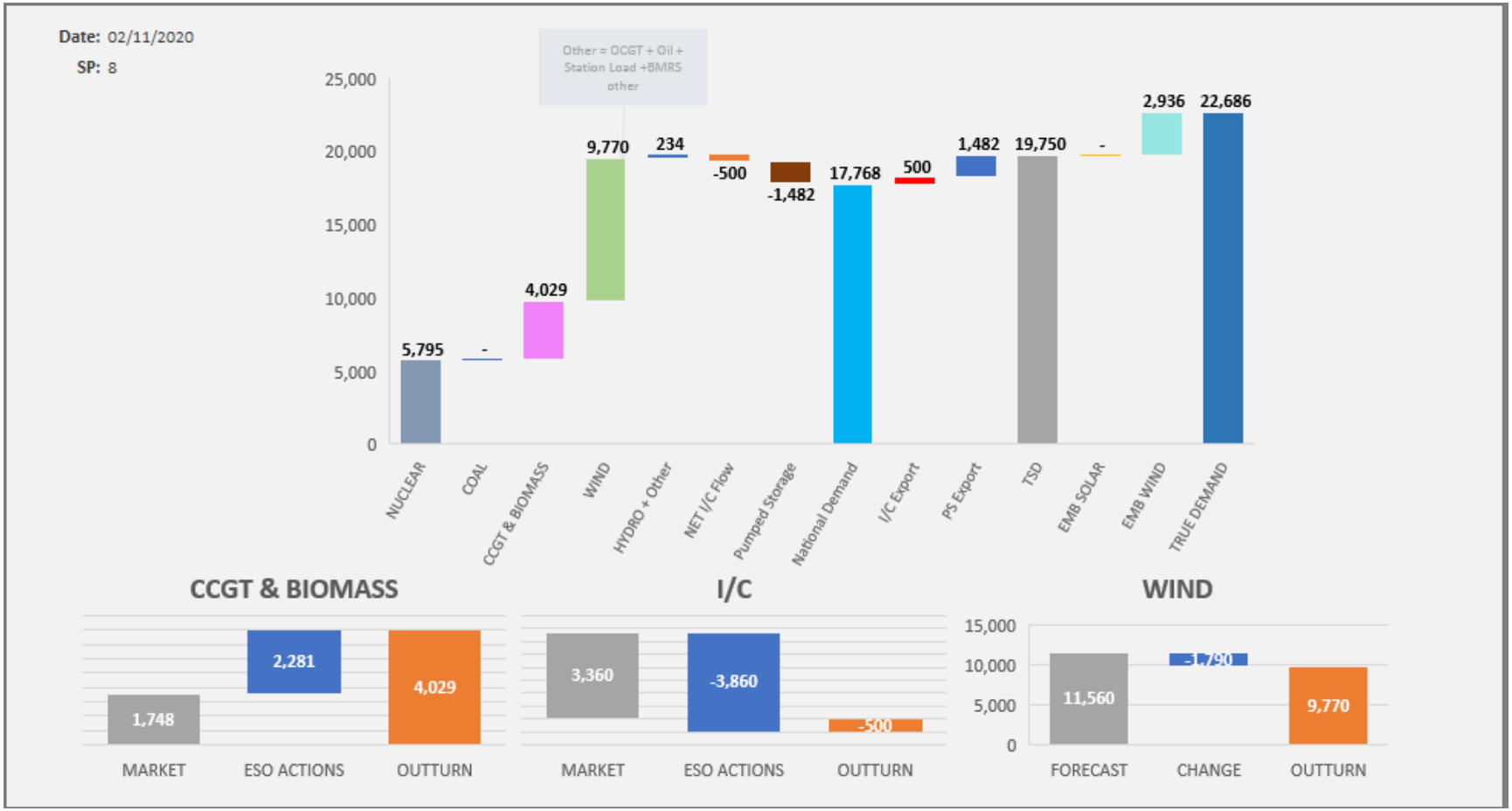
ESO Actions Weekend minimum | Monday morning



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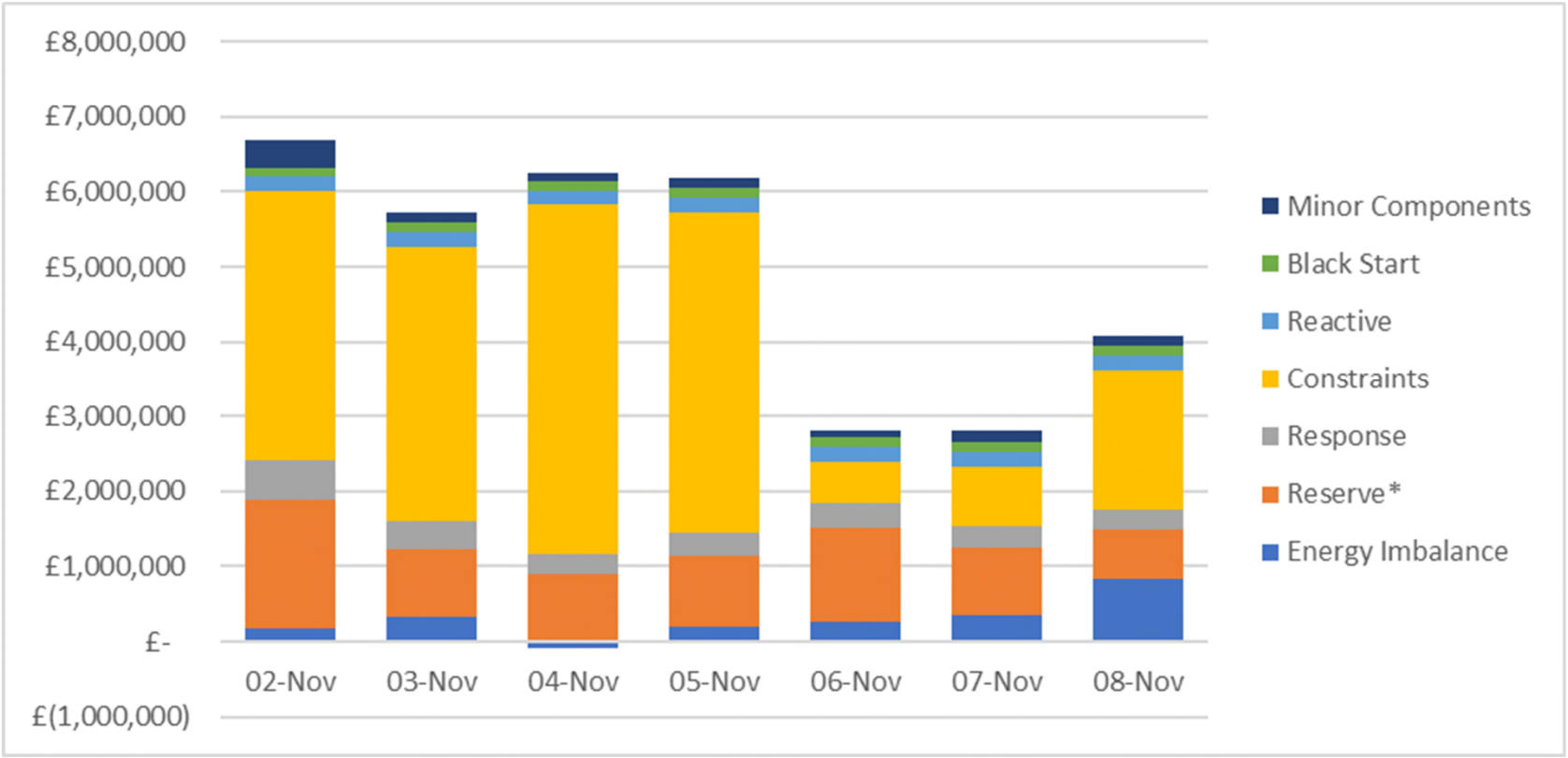
Transparency | Costs last week



*Includes operating reserve, STOR, fast reserve, other reserve, negative reserve

Note: AS costs are estimated at this timescale so small discrepancies may be observed

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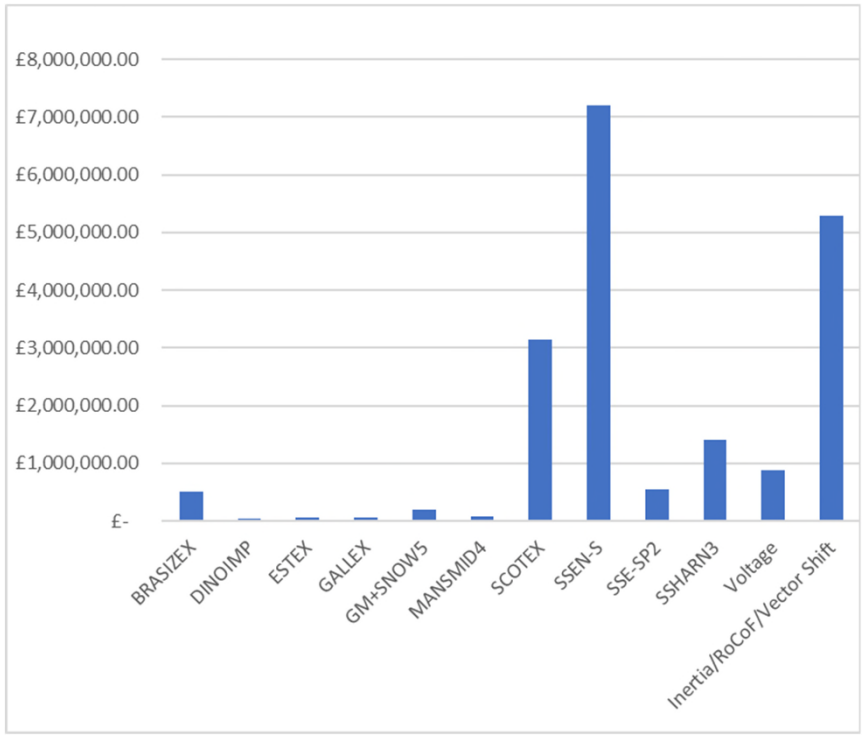
Transparency | Constraints Information

	Main drivers for constraint spend		
	System Inertia	Voltage	Key costing boundaries
2 Nov	x	x	SSHARN3 – North England boundary BRASIZEX – Export boundary in East Anglia GM+SNOW5 – Greater Mersey and North Wales export boundary
3 Nov	x	x	SCOTEX – Boundary between Scotland and England & Wales
4 Nov	x	x	SSE N-S – Export boundary in North of Scotland SCOTEX - Boundary between Scotland and England & Wales
5 Nov	x	x	SSE N-S - Export boundary in North of Scotland SSE-SP2 – Export boundary between SSE and SP Transmission networks
6 Nov	x	x	Internal localised Scotland constraints
7 Nov	x	x	Internal localised Scotland constraints
8 Nov	x	x	Internal localised Scotland constraints



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Transparency | Hornsea Windfarm Trip

On 30th Oct at 11:10, Hornsea Windfarm tripped whilst generating 1200MW

Close to the maximum ROCOF that was being managed at the time

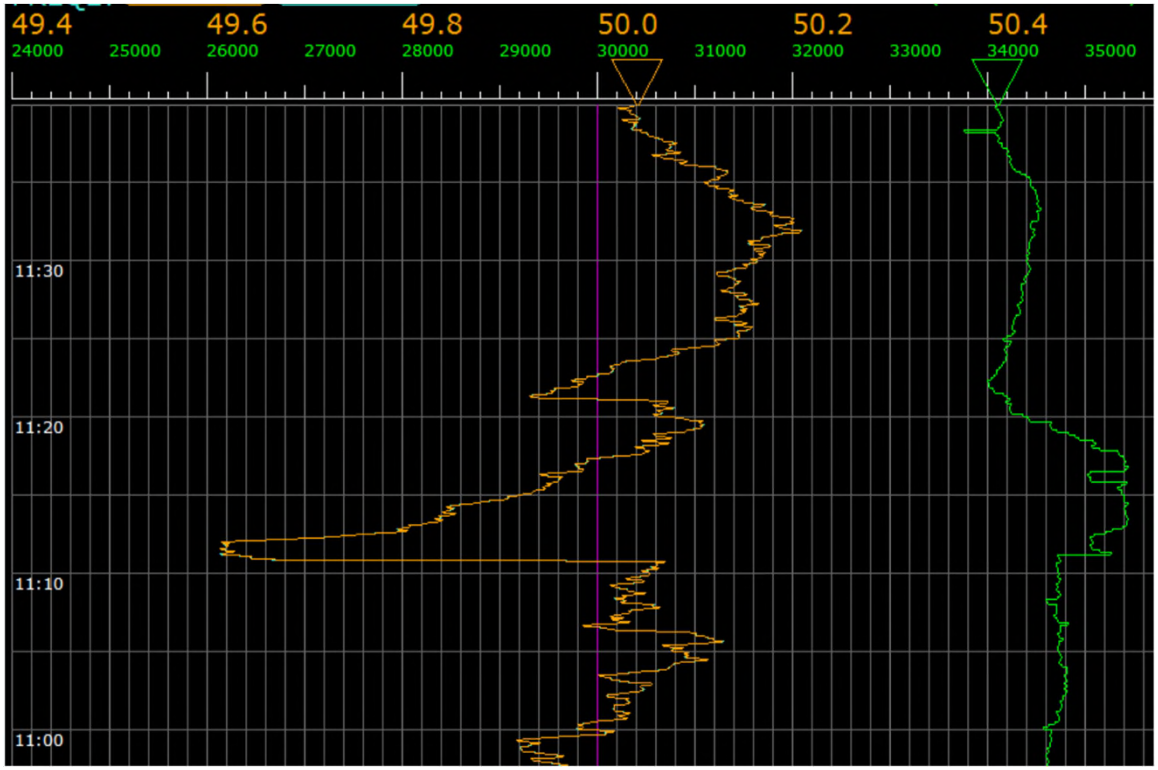
Frequency fell to 49.604Hz

ROCOF measured at 0.123Hz/s

About 1400MW of actions taken to recover the frequency

Frequency back within operational limits within 3 minutes and back to nominal in about 7 minutes

Frequency response and Dynamic Containment delivered in line with expectations



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Transparency | Western Link HVDC Trip

Western HVDC Link is a subsea cable that connects the transmission network in Scotland with England and Wales.

It has a transmission capacity of 2,250 MW.

On 25th Oct at 04:41, the link tripped whilst carrying 1950MW North to South

The system frequency dropped from 49.98 to 49.71 Hz and was restored in around 10 seconds to operational limits

Energy flowing on the link at the time of the trip transferred on to the rest of the transmission network, which caused a brief system disturbance

The system disturbance resulted in a loss of embedded generation and hence the drop in system frequency

To re-secure for the next fault, approximately 1500MW of additional wind bids were required

The loss of embedded generation was in line with our expectation for Loss of Mains for this type of event

Q&A

Please provide feedback via slido.com
Code: #N1120

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Performance Monitoring Report

Ben Smith

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Performance Monitoring Report

- We have now published our first performance report covering the period from June to August 2020, which will be updated on a quarterly basis moving forwards.
- Our performance monitoring of Balancing Services provides the industry with details on the actions we are taking to provide greater transparency over how we proactively monitor and manage performance of balancing services
- It is initially focused on Short Term Operating Reserve (STOR), Firm Frequency Response, Enhanced Frequency Response and Optional Downward Flexibility Management (ODFM), but over time our ambition is to expand the coverage to other services that we procure

What have we done

- STOR - We have now established bespoke reports to identify under-performance and Events of Default (EOD) and a monthly process for proactive engagement with providers. We wrote out to a number of providers in September to follow up on underperformance to establish any root cause problems.
- For Firm Frequency Response, we have proactively increased the frequency of performance monitoring
- For new services such as Optional Downward Flexibility Management (ODFM) which is a time limited service, we have been reviewing the performance of all contracted units and their utilisation, recovering payments for non-delivery.
- Through proactive Performance monitoring, we continue to drive consumer value. Over the 3-month period between June to August 2020 we have recovered nearly £1.8m from committed contract spend.

Moving forwards

We welcome feedback on this report. Please drop us your ideas and comments @ commercial.operation@nationalgrideso.com

A full version of the report can be found here:

https://www.nationalgrideso.com/document/178996/download

Q&A

Please provide feedback via slido.com
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Reserve Product Reform

Adam Sims

nationalgridESO

Background

- Reserve reform has had to take a back seat to frequency response reform and operational issues
- Some progress has still been made over the summer
- We are now able to dedicate more resource to move reserve reform forward
- Scope: deliver a standardised suite of upward and downward reserve product(s) that work holistically with new frequency response products and reserve replacement products (TERRE) and can be procured at day ahead through an auction held on the Single Market Platform

Project scope

- Deliver a standardised suite of upward and downward reserve product(s) that work holistically with new frequency response products and reserve replacement products (TERRE) and can be procured at day ahead through an auction held on the Single Market Platform

- This includes IT systems for monitoring and dispatch, integrated with the Control Room systems

- Timescales: we will procure new reserve products at day ahead by end of March 2022, as per RIIO-2 commitment

Key Dependencies

Single Market Platform – this will be the platform through which we procure the new reserve products

Auction algorithm – the algorithm is required to clear the market held on the SMP

ASB replacement – the delivery of the new settlement system is required to enable us to pay for the new products and impose performance penalties

Balancing Programme – there will be BM systems upgrades that are required first

Next steps

- Control Room survey to gather qualitative feedback – November
- Data logging project to gather quantitative data – ongoing
- Industry workshops to explore problem statement - December

Q&A

Please provide feedback via slido.com
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Thankyou for attending

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