The webinar will start at 3.32pm

If you have any issues joining the webinar please email us directly at demandflexibility@nationalgrideso.com

Demand Flexibility Service

Winter 2023/24 Webinar

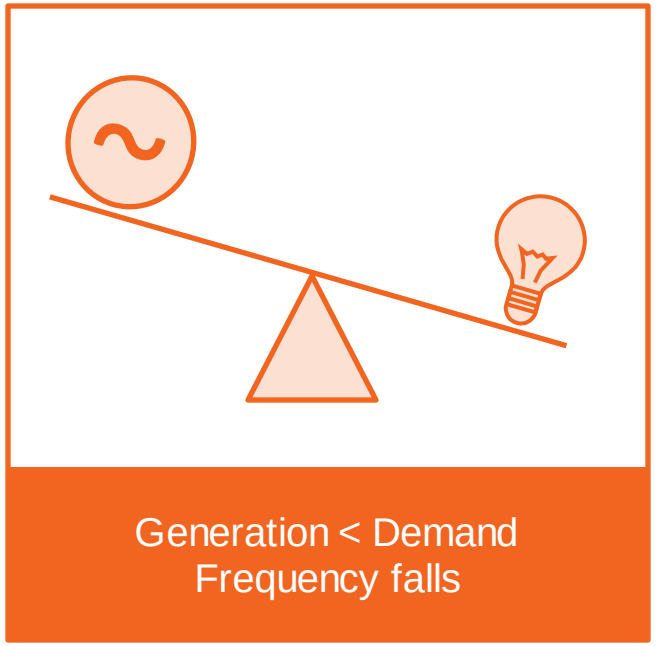
7th September 2023

ESO

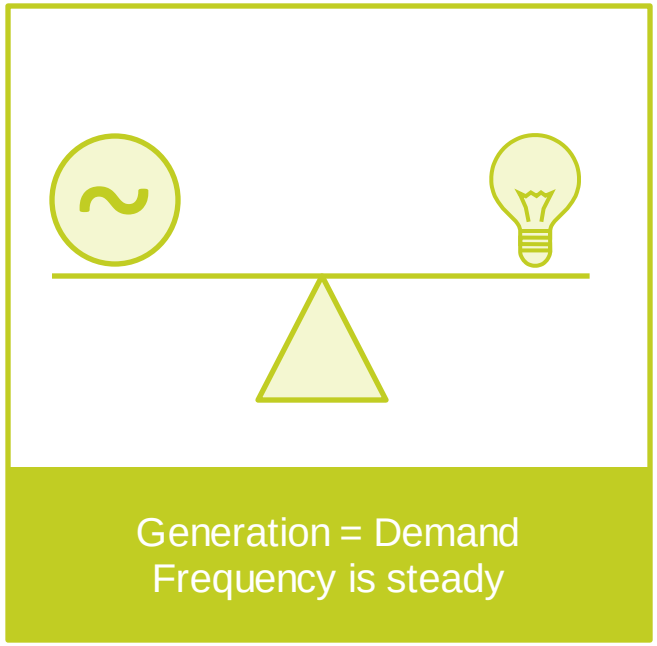
What is DFS?

Energy balancing 101

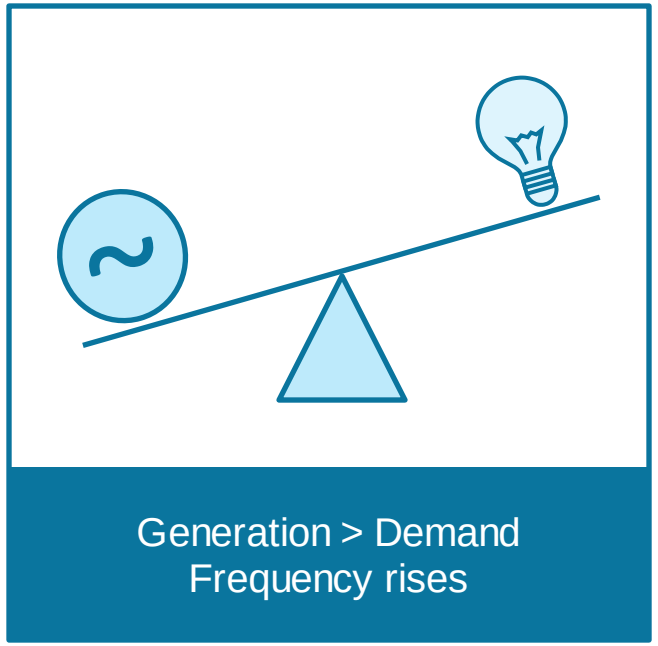
- One of the most fundamental requirements of an electricity system is that supply and demand are always balanced, to preserve the overall integrity of the system for everyone
- For us to achieve this energy balancing we need flexibility, in both supply and demand, adjusting both sides to ensure they always match
- The wholesale market currently provides the majority of system balancing during the day, with the ESO performing the residual balancing and balancing on a second-by-second basis



Generation < Demand
Frequency falls



Generation = Demand
Frequency is steady



Generation > Demand
Frequency rises

DFS context

- Due to the risks and uncertainties for winter 2022/23, we developed a package of winter contingency options to ensure we were well prepared to maintain safe and secure operation of the electricity system
- We took the opportunity to accelerate the transition to a smart, flexible power system and launched the Demand Flexibility Service in November 2022
- Our award-winning service was a nationwide demonstration of a demand reduction service, enabling domestic consumers, industrial and commercial users to be incentivised for shifting demand to avoid the peak
- 1.6 million households and businesses supported the service by shifting demand, saving over 3,300MWh of electricity - enough to power ~10 million homes across GB.

Role of DFS in winter 2022-23

Order of Action: Winter 22

Everyday Actions	Order	Comments
Reconfigure Transmission Network to reduce network congestion, including: Change substation running arrangements, Tap Quad Boosters, to control flow of energy and Making use of enhanced ratings	Normal operating practice – no cost	Changing daily operating conditions can result in different network configurations to reduce congestion
Review and refine reserve requirement within day dependent on system conditions	Normal operating practice – no cost	Changing system conditions can relieve requirements for reserve or increase requirements. This can change at any time as the conditions change.
All deliverable Offer action on all available BM participants	#1 based on Cost	Scheduled from Day Ahead, action taken in real time – some offers may not be available due to networkcongestion
Issue warming instructions to cold BM participants including Winter Contingency units	#1 based on Cost	Scheduled from Day Ahead, action taken in real time
Buy energy from continental Europe	#1 based on Cost	Scheduled from Day Ahead, action taken from Day Ahead to 4hrs ahead of time by ESO Traders
Reconfigure CCGTs to increase available energy (e.g.sync additional GTs)	#1 based on Cost	Scheduled from Day Ahead, managed within the control timescales within day
SO-SO trade in cost order	#1 based on Cost	SO to SO trade with other SO in Europe/ Ireland

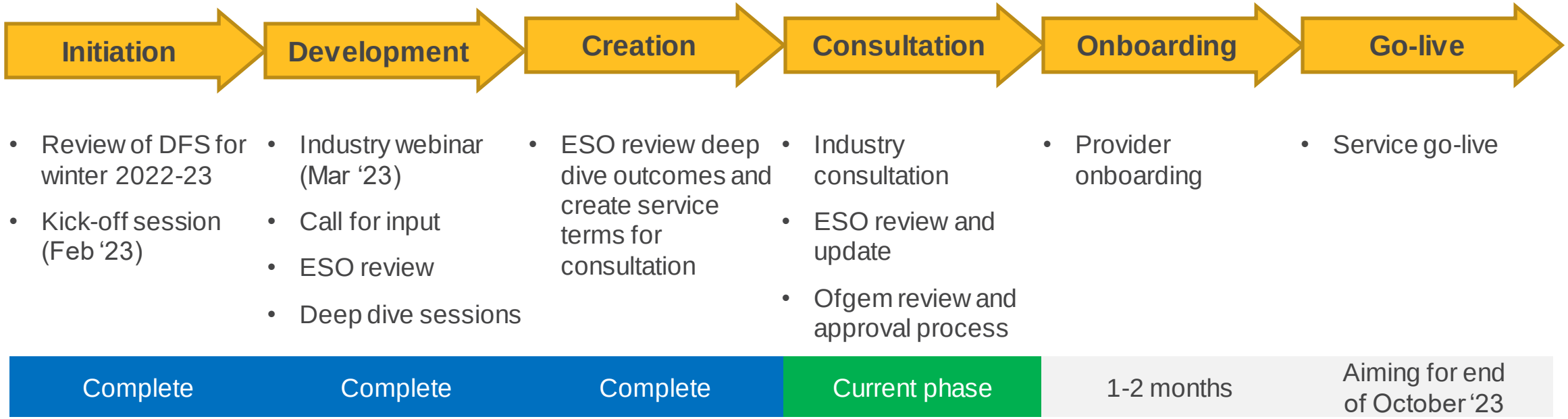
Enhanced Actions (if everyday actions are insufficient)	Order	Comments
Recall TO assets from outage to increase network availability and increase available capacity	#2	Anytime through to control room timescales, depending on ERTS (Emergency Return to Service) time
Plan use of Emergency Assistance (EA) from other SO	#3	Enacted close to real-time. Only applicable if capacity is available on interconnectors. EA can be withdrawn at any time
Instruct Demand Flexibility product	**#4**	**Decision made at timescales as determined by product created (instruction at 24 hours)**
Instruct Winter Contingency Units	**#5**	**Decision made at timescales as determined by dynamic parameters (warming at 12-48hrs)**

Emergency Actions (if enhanced actions are insufficient)	Order	Comments
Emergency Instruction (EI) to other SO	#6	including MaxGen
OC6 demand control instructions to DNOs	#7	This could be via voltage control or demand control (disconnecting customers)
Recommend to BEIS to implement ESEC	#8	Ongoing conversations prior to this so all parties would be aware of risk

Notices are issued at any time as required	Comment
Issue Electricity Margin Notice (EMN)	Request to market to increase available energy or reduce demand. Likely to be issued at Day Ahead. Updated regularly
Issue a High Risk of Demand Reduction (HRDR) system warning	Warning network operators of high likelihood of demand control. Further request to market to increase available energy or reduce demand. Closer to real-time than ENM
Issue Demand Control Imminent (DCI) system warning	If possible, this system warning will be issued 30 minutes prior to demand control. Warning to network operators
AUTOMATICALLY TRIGGERED: A Capacity Market Notice (CMN) is automatically triggered to alert CM participants	Driven by calculation of Market data at 4 hours ahead of real time

Development of the service

Stages of service development



Consultation summary

- Thank you for your detailed responses
- 120 pages of feedback sent to Ofgem
- General themes:
  - Baselines – within-day adjustment
  - Baselines – Half-Hourly Settlement
  - Sub-metering
  - Boundary Meter data
  - Opt-in and Opt-out
  - Stacking
  - MPAN duplication
  - Procurement timescales
  - Process improvements & automation

Changes and improvements

Role of DFS

Winter 2023-24

- DFS will continue as an enhanced action for winter 2023-24
- This allows us to deliver both test events and, where necessary, live events, allowing us to:
  - focus on maximising volumes
  - continue to learn about demand flexibility
  - incentivise new demand flexibility
  - help to bridge the gap to Market-wide Half-Hourly Settlement and entry in to our Ancillary Services

Beyond winter 2023-24

- We have not put a defined end-date into the terms, to allow for future development of the service through further collaborations and consultations
- We will continue to support providers and end consumers to transition into other ancillary services and through innovation projects
- We will support bridging the gap to Market-wide Half-Hourly Settlement

Significant updates since last winter

Procurement

- Added within-day dispatch options, as an alternative to day ahead (14:30 DA, 09:00 ID & 12:00 ID), bringing DFS closer to real-time dispatch

Delivery & process

- Removed the domestic in-day baseline adjustment to mitigate peverse incetives
- Allowing opt-out (net reduction settled) as well as opt-in (only positive reduction settled)

Tests

- Replaced “onboarding” and “regular” tests with “DFS tests”, for all providers on the same day
- Role of tests, number of tests and GAP has been laid out in Market Information Report

Automation

- MPAN duplication
  - Introducing automation for daily checks
  - Introducing rule that latest sign-up “wins”
- Introducing automation option for bid submission

Participation

- Allowing asset metering in place of boundary metering, where certain criteria and conditions are met
- Requiring HH-settlement for all meters, except providers participating on a domestic boundary meter and Profile Class 3&4, to mitigate peverse incentives

Other changes since last winter

Minor updates

- Ability to update the Weekly Indicative Forecast
- Adding contractual obligation to evenly apportion individual MPAN over- and under-delivery between units
- Removing ABSVD from domestic non-supplier HH-settled volume, due to process and data issues
- ABSVD at MPAN level for Industrial and Commercial HH Settled volume (via P354)
- Using the relevant clauses to ensure providers are meeting contract terms (e.g. growing volumes to above the minimum unit size of 1MW)
- Adding contractual obligation to share consumer incentives
- Addition of clauses requiring providers to have policies or procedures in place to mitigate potential gaming behaviour at a portfolio level
- Removal of the updated volume forecast (within-day) submission

No change

- No stacking with other services (except ANMs)
- Allow increased export as well as reduced import
- HH metering, 30 minutes service windows, Pay-as-bid, national aggregation, no penalties, 100MW maximum unit size

Industry consultation

Updates after industry consultation

- Several contractual clarifications *(e.g timestamp granularity and defining process.)*
- Expanded the exception on HHS to cover Profile Class 3 & 4, aligning small I&C with the principle for domestic
- DFS Tests – ESO to outline which periods providers can bid to handle system step change
- MPAN Schedule effective from clarification. 90-day rule if asset moves into other services.
- Reporting/monitoring of perverse behaviour – shifted focus to a portfolio level
- Communications principles – explicit section on marketing consent.

Detailed Consultation Responses

- Baselines & perverse incentives
  - Within-day adjustment
  - Half-hourly settlement
- Sub-metering (a.k.a. asset metering)
- Boundary meter data for audit
- Opt-in and opt-out
- MPAN duplication process
- Stacking
- Process improvement and automation

Publications and next steps

What we have published

- Service terms
- Procurement rules
- Consultation change summaries – service terms *and* procurement rules
- Communication principles
- Participation Guidance
- Market Information Report – detailing number of tests and GAP
- Year 1 report

All documents can be found on the DFS pages of the website:

https://www.nationalgrideso.com/industry-information/balancing-services/demand-flexibility-service-dfs

Market Information Report update

- The ESO expects to run 12 test events between November 2023 and March 2024.
- The Guaranteed Acceptance Price (GAP) for the first 6 tests will remain at £3,000/MWh.
- Remaining tests from 1 Jan 24 will either continue to be underpinned by the GAP or be competitive, subject to the total volumes participating.
- ESO will communicate the total participating volume threshold following the Winter Outlook Report. Initial indication 2-3GW.
- Updated Market Information Reports will be published throughout the Winter 2023/24 period providing further information where necessary.

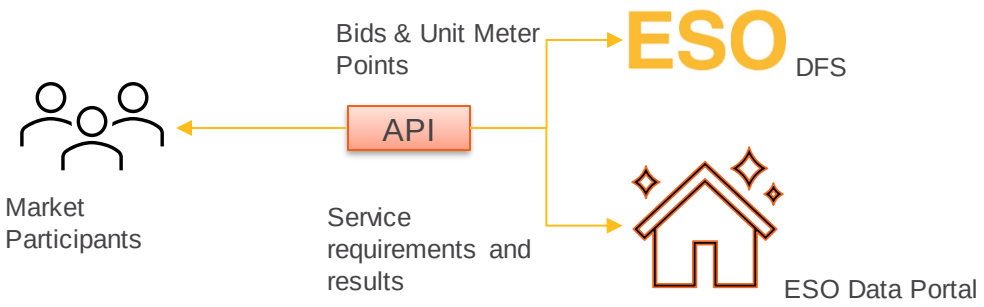
Guaranteed Acceptance Price (GAP)
£3,000/MWh
for at least 6 test events

API for Bids and Unit Meter Point Schedules

In addition to the existing routes for data submission, we have made available an API for **Bid** and **Unit Meter Point Schedule** files.

Rationale:

- We received strong feedback from providers on enabling further automation to streamline their DFS interactions with ESO.
- DFS Service Requirements are published on the Data Portal, which already has API capabilities and thus can support further automation.
- Enabling API access for Bid submission allows participants to systematise certain tasks, e.g. setting up of a system to read requirements and submit bids automatically.



API for Bids and Meter Data submissions

API Onboarding Process:

- DFS Team create a NG ID for testing and production environments.
- Essential requirements to consume the API:
    - Provider Name, Email, Contact number, DFS Registered Units – These details will be captured as part of the DFS onboarding process with Single Market Platform (SMP) and DFS Contracts team.
- DFS Team will share API credentials e.g. client_id, client_secret, grant_type, username, password and tenantID (used to get the bearer token from Microsoft) to their registered email address.

API for Bids and Meter Data submissions

Response Codes Example:

Bids

Success

- Code 200: Data inserted successfully

Failure

- Code 400: Bad request – Delivery Date expected type: String, found: Integer"
- Code 401: Unauthorised – "Invalid token"
- Code 402&403: Forbidden – "Requested resource not found"
- Code 500: Internal Server Error

Unit Meter Point Schedule

Success

- Code 200: Data inserted successfully

Partial Success

- Code 206: The records in the payload which are as per the validation are accepted while the erroneous data is rejected.

Failure

- Code 400: Bad request – Submission Date expected type: String, found: Integer"
- Code 401: Unauthorised – "Invalid token"
- Code 402&403: Forbidden – "Requested resource not found"
- Code 500: Internal Server Error

API for Bids and Meter Data submissions

Further Information:

- More information on the API for DFS can be found in the API Schema document

  https://www.nationalgrideso.com/industry-information/balancing-services/demand-flexibility-service-dfs

- The document shares more details on:
  - API onboarding process
  - Authentication
  - API call data (schema or file headers, payload size, rate)
  - Response codes

- The API is already available for testing so do get in touch via demandflexibility@nationalgrideso.com for any queries related to API set up.

What's next

- APIs available for testing and onboarding - ongoing
- Provider / forum engagement and support

- Service go live **30th October 2023**
  (subject to Ofgem approval)

Ongoing collaboration via meetings and various engagement channels

demandflexibility@nationalgrideso.com

Poll

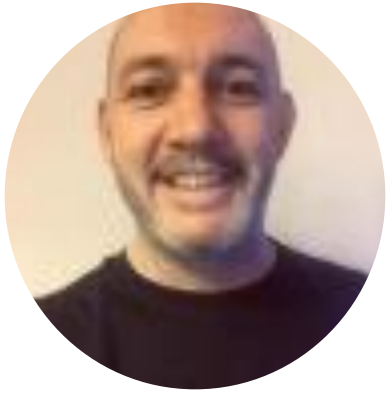
Q&A

The virtual Q&A team

Richard Hanson
Flexibility Services
Development Manager

Rob Westmancoat
Senior Strategy Analyst

Francisco Sanchez
Senior Strategy Analyst



Nigel Talboys
Balancing Markets
Development Officer

James Kerr
Power Responsive
Engagement Lead

Elizabeth Hamer
Market Development
Officer

Keep in touch

demandflexibility@nationalgrideso.com

https://www.nationalgrideso.com/industry-information/balancing-services/demand-flexibility-service-dfs