Open Networks programme

Dissemination Forum

22nd September 2022

Thank you for joining the September Open Networks Dissemination Forum

This meeting will commence at 10:00

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- All microphones have been set to mute to avoid background noise.
- Please ask questions or make comments **via the chat function** throughout the meeting.
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- The slides from the webinar will be made publicly available on ENA's website.
- If you would like any further information about the Open Networks programme or have any feedback you would like to submit, please get in touch with us at opennetworks@energynetworks.org.

Agenda

Item	Start	Finish	Time	Item	Presenter
1	10:00	10:05	5	**Welcome**	Sotiris Georgiopoulos (Chair of ON Steering Group, UKPN)
Flexibility Services (WS1A)					
2	10:05	10:15	10	**Flexibility Services overview**	Avi Aithal (Head of ON, ENA)
3	10:15	10:35	20	**Procurement Processes (WS1A P2)**	Steve Miller (Product co-lead, NG-ESO)
4	10:35	10:50	15	**Standard Agreement** (**WS1A P4**)	Andy Rice (Product lead, NG-ESO)
5	10:50	11:10	20	**Carbon Reporting (WS1A P7)**	Sam Do (Product lead, UKPN)
6	11:10	11:20	10	**Break**	
Whole Electricity System Planning & T-D Data Exchange (WS1B)					
7	11:20	11:30	10	**Whole Electricity Systems overview**	Ian Povey (Chair of Whole Electricity System Workstream, ENWL)
8	11:30	11:50	20	**DER Visibility and Data sharing (WS1B P6)**	Odilia Bertetti (Product Lead, UKPN)
9	11:50	12:10	20	**Operational Data Sharing (WS1B P7)**	Malcolm Grisdale (Product team member, NPg)
Wider Open Networks programme					
10	12:10	12:15	5	**Wider programme updates**	Avi Aithal (Head of ON, ENA)
11	12:15	12:20	5	**Latest & upcoming ENA events**	Emily Jones (Head of Stakeholder Engagement, ENA)
12	12:20	12:25	5	**AOB**	Sotiris Georgiopoulos (Chair of ON Steering Group, UKPN)

Flexibility Services overview (WS1A)

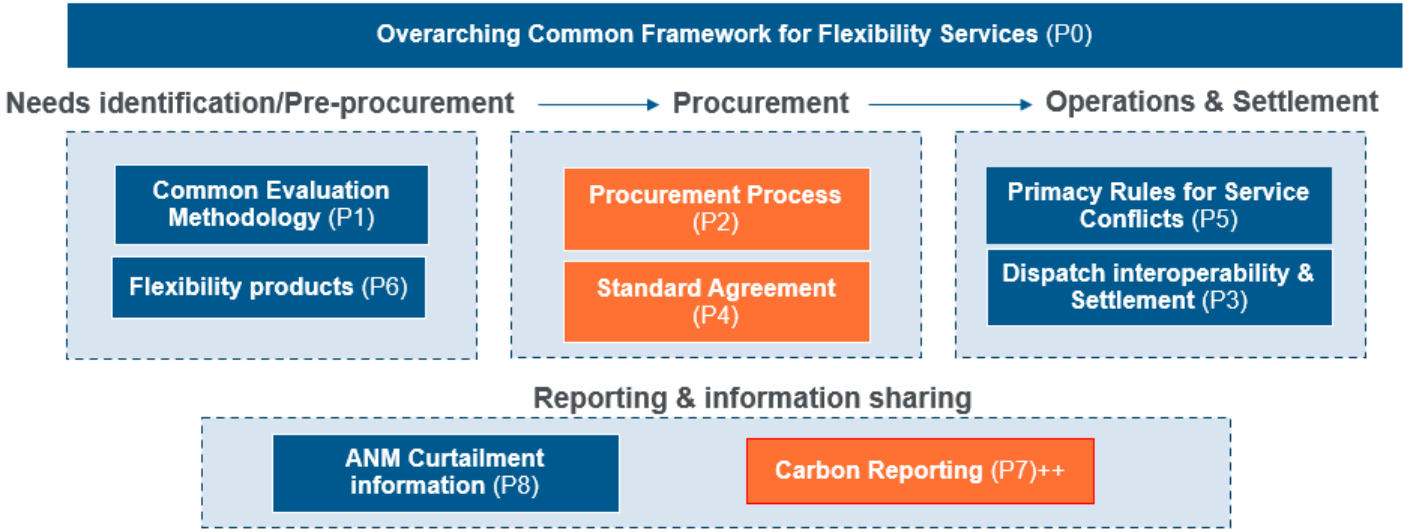
Avi Aithal (Head of ON, ENA)

Flexibility Services overview (WS1A)

- Supporting delivery of actions from Smart Systems & Flexibility Plan,
- Facilitating the development of local flexibility markets through more standardisation (across DNOs and with the ESO), simplification, and transparency in decision-making.

Recent Area

- UK-wide flex figures were published in July 2022, showing 3.7GW of flexibility tendered at a 31% increase from 2021.
- Open Networks response to the recently closed flexibility consultation will be published at the end of November 2022.
- Improving transparency and alignment in DNO processes by publishing
  - a draft common framework for flexibility,
  - a common methodology for carbon reporting,
  - a common methodology for providing curtailment estimates,
  - recommendations for further alignment of the Standard Agreement
  - recommendations for alignment of pre-qualification processes.



Products in orange will be discussed in more detail at this session.

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Procurement Processes (WS1A P2)

Steve Miller (Product co-lead, NG-ESO)

ON WS1A P2 Procurement Processes

Background

- **Previously delivered alignment across DNOs on activities related to the procurement of flexibility services, including how and when tenders are assessed by DNOs.**
  - In 2021 the focus was on potential further alignment of procurement timescales between DNOs and ESO.
  - Conclusion was to see alignment across other process areas (pre-qual , tech spec…) and real-time procurement.

2022 Aims

- Recommendations for the standardisation of Pre-qualification Processes.
- Outline short, medium and long term steps for DNO Evolution towards real-time procurement.

P2 Deliverable 1 – Steps to Real-time Procurement

- Paper published February 2022 on the ENA website.
- Current DNO procurement processes and future development plans were reviewed and steps across the short, medium and long term were identified.
- The P2 will undertake further work in Q4 this year to produce a timeline for these steps, consultation feedback will directly contribute.

Short Term

<12months – Knowledge Gathering

Remove conflicts and minimize network risk

- **Planning Constraints;** ERP2/7
- **Feasibility Assessment;** CEM Tool
- **Compliance with Procurement Law;** UCR

Dependencies on Open Networks Outputs; P0, P1, P4

Medium Term

1-3 years - Planning

Prepare for operating closer to real-time

- **Products;** Design and approach to new variables
- **Processes;** contract structure, timescales for procurement and decision making
- **Systems;** Internal systems, Digitalisation & Automation, Data management, Marketplace interactions

Dependencies on Open Networks Outputs; P2, P3, P6

Long Term

1-5 years - Implementation

Implementation Strategy

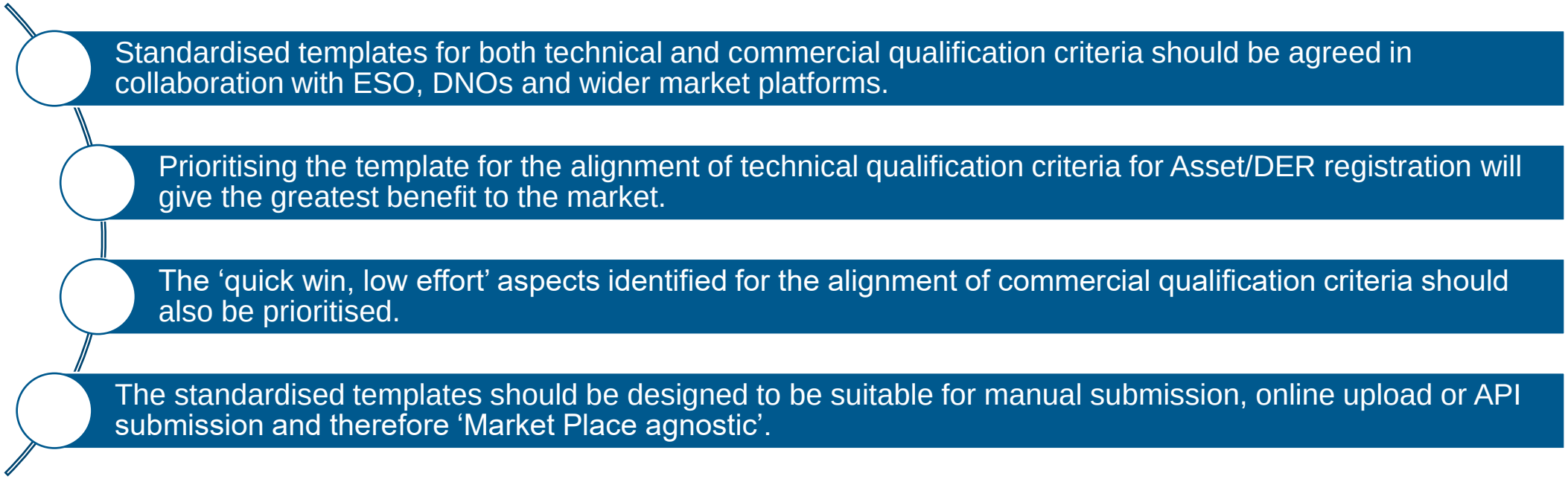
- **Rate of Evolution;** Informed by complexity and liquidity
- **Transparency;** Standardised market information

Dependencies on Open Networks Outputs;

P0. Wider dependency on DNO C31e reporting.

P2 Deliverable 2 – Alignment of Pre-qualification Processes

- Paper published July 2022 on the ENA website.
- Current DNO and ESO pre-qualification criteria was collated and assessed.
- Pre-qualification falls into two broad categories – Technical & Commercial.
- Volume of questions asked significantly varied between organisations, recommendations focus on alignment and consolidation.
- The P2 will undertake further work in Q4 this year to produce a delivery timeline for these recommendations, consultation feedback will directly contribute.



Next Steps

Develop Detailed Implementation Plans Q3/4 2022

1) Steps to Real time Procurement Nov 2022

- Collate and review stakeholder feedback from; Open Networks Consultation, Challenge Group and Dissemination Group ·
- Agree implementation actions/targets/milestones/signposting
- Agree implementation plan

2) Alignment of pre-qualification processes Dec 2022

- Collate and review stakeholder feedback from; Open Networks Consultation, Challenge Group and Dissemination Group ·
- Agree implementation actions/targets/milestones/signposting
- Agree implementation plan

Open Q&A

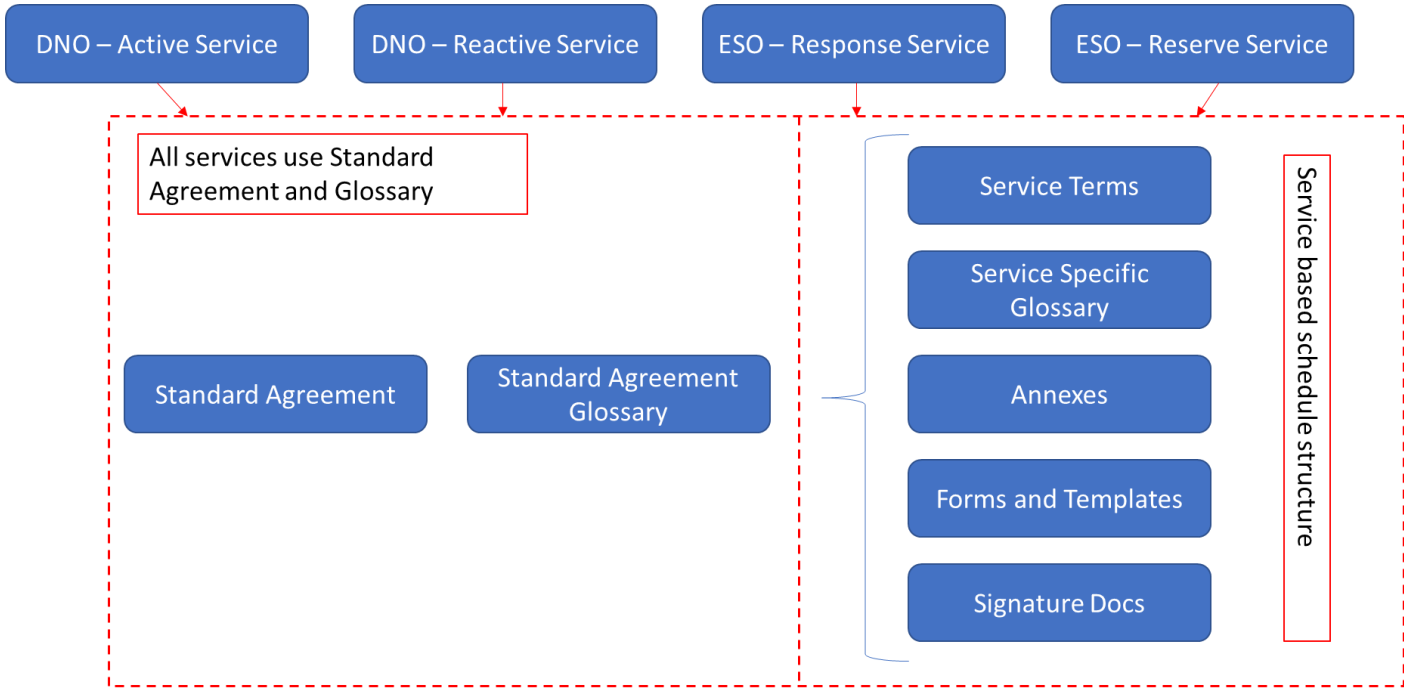
Standard Agreement (WS1A P4)

Andy Rice (Product lead, NG-ESO)

Proposed Schedule Structure

During 2022 the P4 workstream have been working to align the schedules that support version 2 of the Standard Agreement. The following proposed schedule structure are service based, initially this structure will be used for the DNO Active service, DNO Reactive service, ESO Response service and the ESO Reserve service.

The initial schedule structure content, particularly within the Service Terms, will reflect the current different approach of using ITT's and Framework Agreements.



Proposed schedule structure benefits

The initial approach to the service schedules will have the following benefits

- Flexibility - The initial schedule structure will allow for the current differences across the organisations in regard to product design, procurement and contract award.

- Forward Looking
  - Will allow organisations to easily move to a Framework approach and day ahead / intraday procurement.
  - The service based structure set the foundations for closer alignment in future P4 workload when the output of P2 and P6 (procurement process and service design alignment) are realised.
  - The proposed structure will give a recognised format for new services to be easily added

- Consistency
  - The schedules will follow the same structure and naming conventions giving a familiar look and feel to Service providers. This is also demonstrated as initially the DNO services will be broadly based on the re-alignment of the Schedules used under version 1.2 of the Standard Agreement and the ESO's current frequency contractual documents. (evolution of this on slide 4 & 5)
  - Where possible it will be the intention to use the same wording for clauses across the services saving service providers time and costs.

Initial content mapping

Service Terms – DNO Active Services

Glossary – DNO Active Services

Annexes

Forms & Templates

Signatures

New Name	V1.2 element	ESO Element	Title sections (V1.2/ESO)	Notes
Service Terms	Schedule 1 - Service Description	Service Terms	Permitted Extensions & Periods, Service Parameter Tables, Service Failure Reporting, Service Window Tables, Service Requirements. Invoicing Process (if different to Clause 11) Charges and Calculation tables, Reduction, Withholding and recovery of payment detail (if required)	
	Schedule 2 - Flexibility Service Charges			
Service Specific Glossary				
Annex's	Schedule 4 - Communications		Representatives, Process and systems for Communication, Acceptance of Instructions, Reporting and Escalations Process	DNO Communications Annex
	Schedule 5 - Performance Monitoring		Performance reporting/management process, Testing and Monitoring Process, Service meter detail, Monitoring of DER Development Projects, Auditing	DNO Performance Monitoring Annex
	Schedule 6 - System/Technical Requirements		Flexible power/API set-up etc.	DNO System/Technical Requirements
	Schedule 7 - Special Requirements		'Special' Requirements (SSEN use for Company H&S documentation, SPENs Modern Slavery additions)	DNO Special Requirements Annex
		Participation Guidance Doc		
		Tender Rules*	Q for AB - should this shift to Service Terms?	
		Testing Analysis Tool		
		Testing Analysis User guide		
		Testing Guidelines		
		Testing Analysis Tool		
Forms & Templates	Schedule 3 - Sites & DER			Site/DER Detail
	Unavailability/ Remedy Template/Form		Currently in Schedule 4 (communications)	
	Performance Report template		Currently in Schedule 5 (Performance Monitoring)	
		Provider Data Template		
		Tender Data Template		
Signatures*		Form A		New/Better name required!
		Form B		
		Form C		
	DNO Signature Page			
	Post Contract Award Notice			

Appendix – High level schedule content

Service Terms

DNO – Active /Reactive services	ESO – Response / Reserve services
Service Failure	Introduction
Service Windows	Changes to Service Terms
Service Requirements / Specific Acknowledgements	Defined Terms
Validation of Service Windows	Procurement Document references
Discretionary Flexibility Services	Service Availability
Invoicing	Service Delivery
Charges	Availability Payments
Calculation of Charges	Payment Procedure
Payment Terms	Grid Code and Distribution Code
Reduction of Charges	Maintenance of Eligible Assets
Withholding and Recovery of Payments	Third party Claims
	Provision of Other Services
	Communications
	Termination of Response Contracts
	Monitoring and Metering Data
	ABSVD
	Force Majeure
	Liability, Indemnity, and Insurance
	Records and Audit
	Assignments
	Transfer of Response Contracts
	Confidentiality
	Intellectual Property Rights
	Data Protection
	Modern Slavery, Anti Bribery and Living Wage
	Notices
	Dispute Resolution
	Governing Law and Jurisdiction
	Severance
	Third Party Rights
	No Agency or Partnership
	Waiver
	Entire Agreement
	EMR
	Capability Data Tables
	Availability Payments
	Payments Provisions

Annexes

DNO – Active /Reactive services	ESO – Response / Reserve services
Communications	Participation Guidance
- Senior Representatives	Tender Rules
- Processes & Systems for Communication	Testing Guidance
- Acceptance of Instructions	Testing user guide
-Reporting Processes & Requirements	Testing Analysis Tool
-Escalation Process	Stacking Documentation
-Form of Unavailability Notification/ Remedy Notification	Frequency Measurement Specification
	Auction Platform User guide
Performance Monitoring	Auction Algorithm Description
-Submission of Performance Report	Data Concentrator Documentation
-Testing & Monitoring	ASDP Documentation
-Service Meter	
- Monitoring of DER Development Projects	
- Auditing	
-Non-delivery and under-delivery	
Schedule 6 Despatch Systems/ Technical Requirements	
- Technical Glossary	
-DNO Flexibility Management System Details	
Special Requirements	

Forms and Templates

DNO – Active /Reactive services	ESO – Response / Reserve services
Sites and DER	Manual Unavailability Template
Unavailability / Remedy Template	Auction- Provider Template
Performance Report Template	Auction – Tender Template

Signature Docs

DNO – Active /Reactive services	ESO – Response / Reserve services
Post contract Award notice	Manual Form A
Contract Signature Page	Manual Form B
	Manual Form C

Proposed schedule structure recommendation

Following the work that the P4 Product working group has conducted this year and industry feedback from the Challenge Group the working group is now consulting with industry on the proposal to move to service-based schedules as shown in previous slides. The P4 product working group recognises that this is only the first step in the alignment of the schedules that sit alongside the Standard Agreements, however it is a key steppingstone that lays the foundations for future work as the industry moves forward.

Open Q&A

Carbon Reporting (WS1A P7)

Sam Do (Product lead, UKPN)

Introduction to Carbon Reporting (WS1A P7)

1. **The Smart Systems and Flexibility Plan** – Networks and system operators to have consistent methodologies for carbon reporting by 2023. P7 formed to deliver this objective.
2. **Policy intent** – Increase transparency and consistency of carbon impact to inform future possible interventions to make consistent with net zero.
3. **P7 scope –** Consistent methodology for April 2023 C31E report submission and recommendations for future work
4. **Approach**
   - Representatives from DSOs, ESO, BEIS, input from Ofgem
   - Deliverables include an agreed scope, review of other approaches, and proposed methodology
   - Industry consultation and methodology update

Carbon impacts of flexibility services

Out of P7 scope

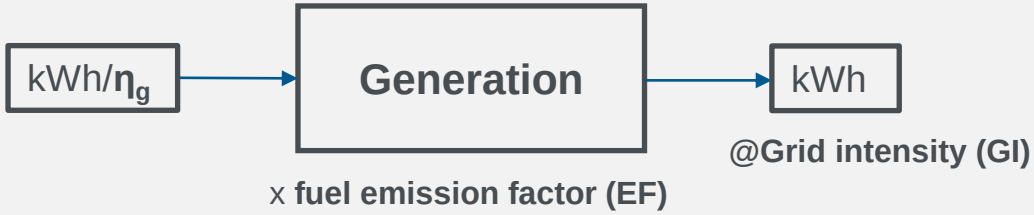
Stage in flexibility life-cycle >	Investment decision	Procurement	Pre-dispatch	Dispatch	Post-dispatch	Decommission
Counterfactual emissions	Emissions from network solution	Alternative DERs contracted	Alternative DERs contracted	Alternative DERs dispatched	Alternative DERs dispatched	Network solution or alternative DER end-of-life emissions
Attribution to DSO flexibility service (first order effects)	Emissions from flexibility services	Embedded emissions from contracted DERs Indirect	Standby emissions – e.g. part loaded DER if required on hot-standby	Dispatch emissions - e.g. fuel combustion, reduced electricity consumption. Direct		End-of-life emissions from contracted DER Indirect
Consequential	Emissions from higher network losses due to higher grid utilisation	Change in wider market e.g. wholesale, balancing.	• BESS pre-charging. • Change in wider market e.g. wholesale, balancing.	• Ramp-up/down emissions. • Change in wider market e.g. wholesale, balancing.	• Energy efficiency rebound effect. • DSR payback.	Change in wider market e.g. wholesale, balancing. Consequential

Out of P7 scope

Summary of proposed methodology

- Calculation formula varies by generation, demand, and storage
- Quantifies direct and consequential carbon impacts of flexibility services
- Uses industry standard conversion factors (mostly)
- Consistent presentation in the Distribution Flexibility Services Procurement Report
- Recommendations for future work

Calculation methodology



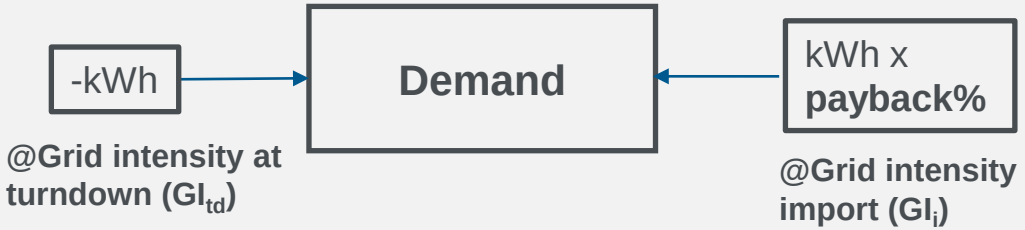
For **generation export**, the carbon impact is:

- combustion of the fuel (direct) = + **kWh/η_g x EF**
- displacing grid generation at export (consequential) = - **kWh x GI**

For bioenergy, report on both inclusive and exclusive of CO2 released during combustion.

For **storage export**, the carbon impact is:

- carbon intensity of the input energy (consequential) = + **kWh/η_s x GI_i** (if from grid), **(kWh/η_s)/η_g x EF** (if from generator)
- displacing grid generation at export (consequential) = - **kWh x GI_e**



For **demand reduction**, the carbon impact is:

- reduced grid imports during the turn-down (direct)= - **kWh x GI_{td}**
- increase in grid imports during “payback” or load shift (consequential) = + **kWh x payback% x GI_i**

*kWh is the dispatched energy, η is efficiency, GI includes losses

Open Q&A

Break

Whole Electricity System overview (WS1B)

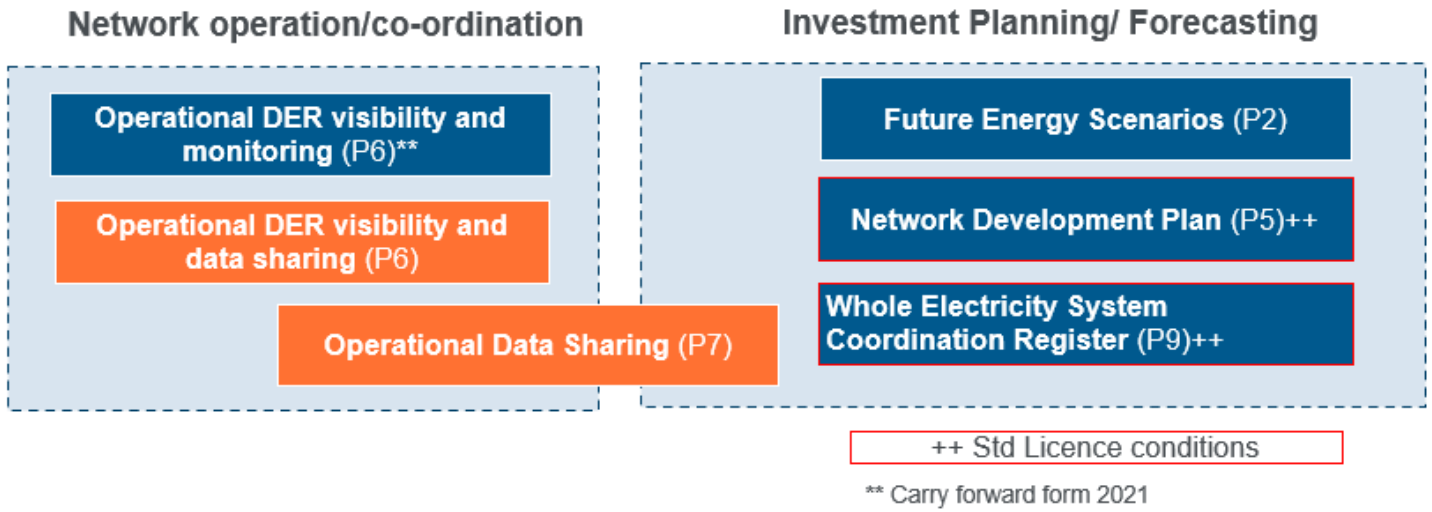
Ian Povey (Chair of Whole Electricity System Workstream, ENWL)

Whole Electricity System overview

- Optimise existing planning and forecasting processes across the Transmission-Distribution boundary, through streamlining of Future Energy Scenarios (FES) and Distribution Future Energy Scenarios (DFES) by identifying synergies and reviewing key assumptions in their building blocks.
- Develop and implement approaches to improve the quality and the consistency of data sharing in operational and planning timescales between DNOs, TOs, ESO, and non-network market participants.

Recent Area

- Continuing to improve visibility of current DNO operational data sharing as set out in the 2021 implementation plan. RAG statuses of progress against this have been published and a gap analysis is being carried out to identify further data sets of potential use to stakeholders.
- Harmonising DER monitoring and control requirements across DNOs by recommending additional data exchange points to be shared between DER customers and DNOs.



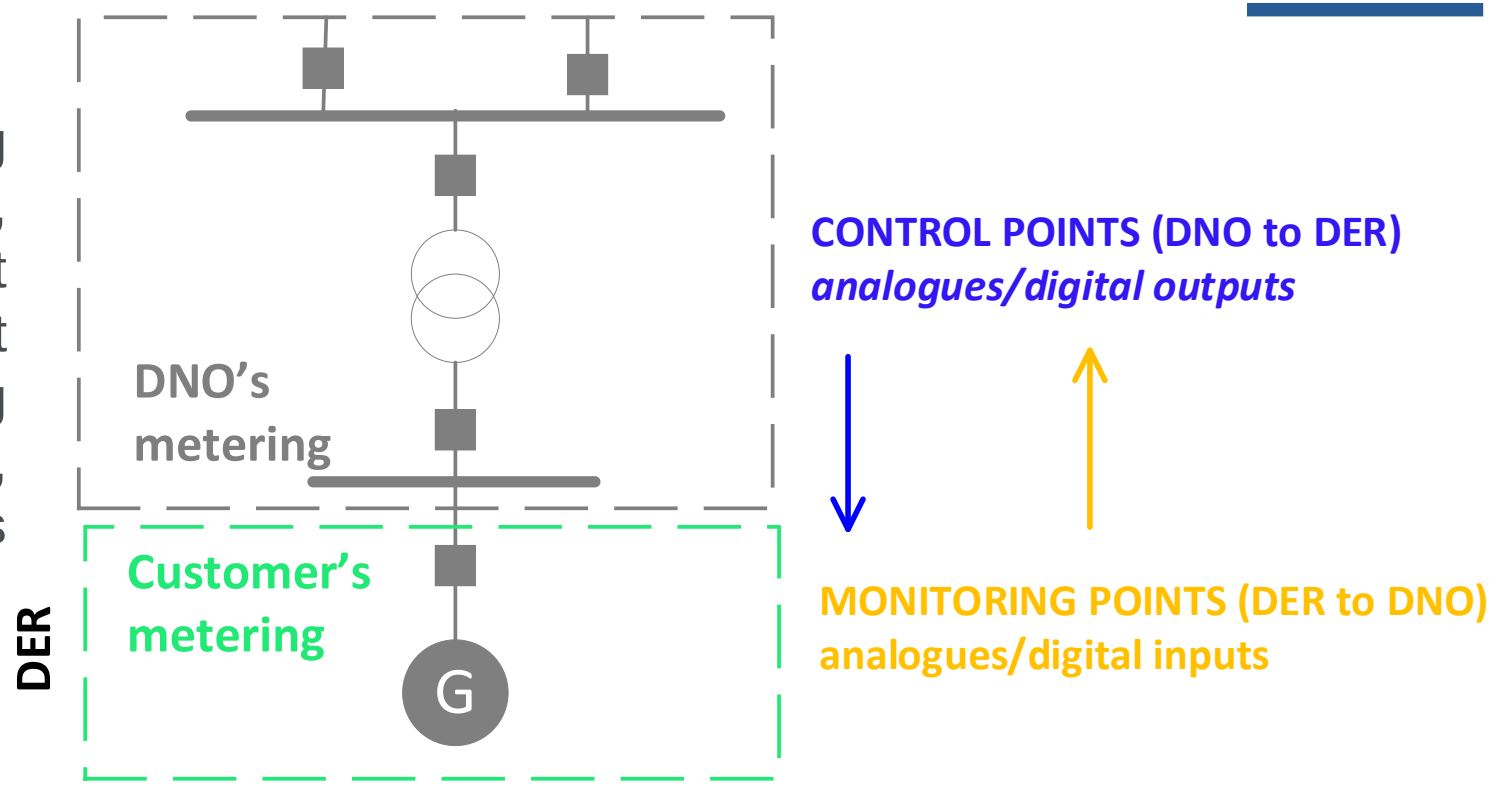
Products in orange will be discussed in more detail at this session.

DER Visibility and monitoring (WS1B P6)

Odilia Bertetti (Product Lead, UKPN)

Context and scope

Currently, developers connecting DER across different regions of GB, are required to exchange different monitoring and control data sets at the connection interface depending on the DNO area the site falls into, or whether the customer is connecting to an IDNO.



WS1B P6 has been tasked with harmonising the DER monitoring and control requirements at the connection interface for DER connections across different DNOs.

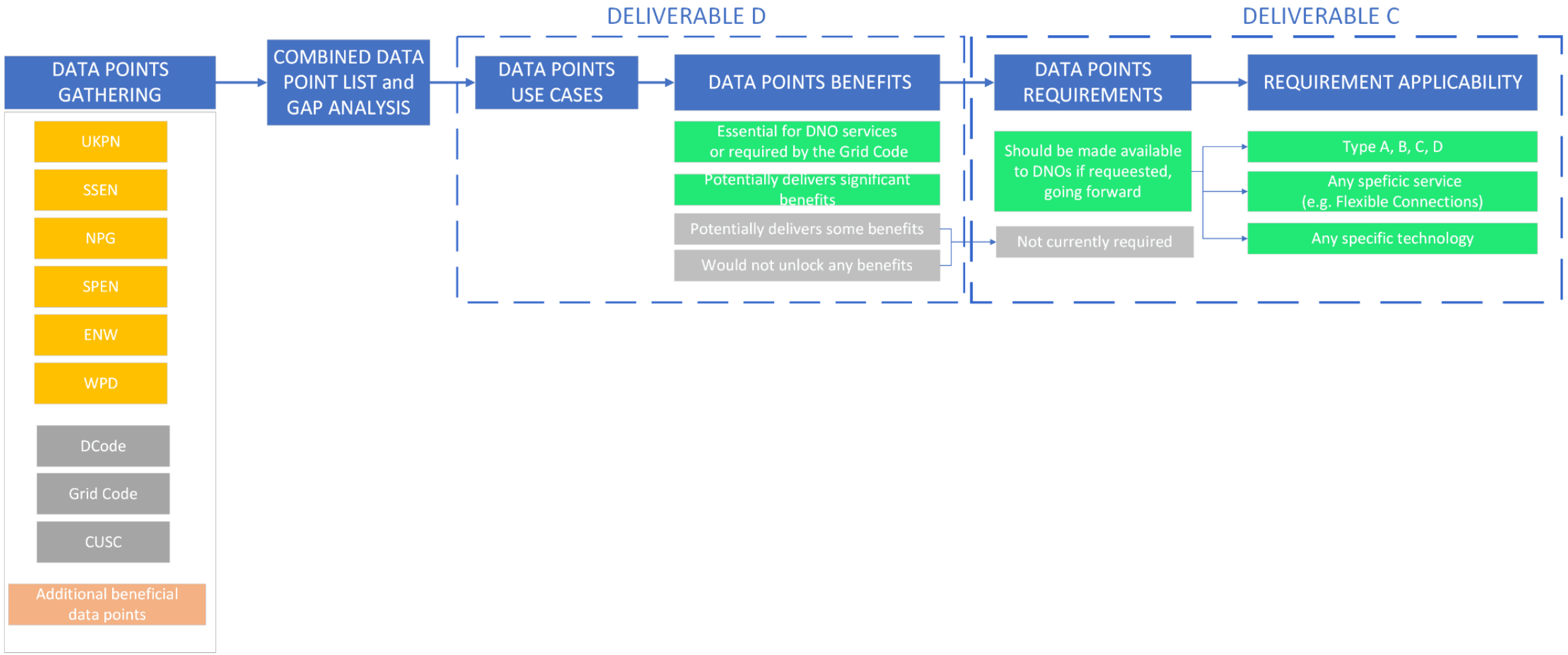
Data/DER in scope

- This refers to operational metering **data from customer's equipment** at the DER substation and exposed to the DNOs rather than data collected by the DNOs through their own equipment.
- The data in scope of ON22 WS1B P6 are **both metering points** (from DER to DNO) and **control points** (from DNO to DER).
- This refers data to be exchanged real time via SCADA rather than post event data.
- **DER Type**: Generation and Flexible Demand.
- **DER POC Voltage Level**: DERs that have a PoC voltage between 132kV kV bar at Grid Supply Points (GSP) and HV side of secondary substation
- **DER capacity**: anything connected from HV to EHV, the minimum capacity is driven by DNO specific practices (200 kW-500kW depending on the DNO)
- **DER Connection Date**: Applicable to DER connecting to the distribution network going forward

WS1B P6 - Deliverables in scope

Ref	Deliverable	Description
Deliverable C	Standardisation of DER operational monitoring and control requirements	Produce a list of operational data points to be made available if requested going forward, which may be differentiated based on capacity (type A-D), service provided and technology type, if applicable.
Deliverable D	Use Cases for the collection of DER operational Data Points	Justify the business needs for each of the DER operational data points through the definition of use cases which will provide clarity on how each of the collected data point will be used by DNOs and/or ESO.

Approach taken to standardise DNO-DER data exchange



EREC G99

Monitoring	Applies to
Measured Customer Active Power	Type C/D
Measured Customer Reactive Power	Type C/D
Measured Customer Voltage	Type C/D
Measured Customer Current	Type C/D
Measured Customer Frequency	Type C/D
Power Quality	Type C/D
Frequency Sensitive Mode data	Type C/D
Export Blocking Signal	Type A, B
Generation CB Trip	N/A
Active Power Limit	Type B, C, D

Additional data points considered

	Operational Metering points
1	Electricity Storage State of Charge
2	Service contracted and Volume
3	Service being armed and Volume
4	Service being delivered and Volume

DNO specific requirements

Beside the data points mandated by industry codes, DNOs may agree the submission of additional interface data requirements with DER customers as part of their connection agreement to meet the relevant commercial and technical obligations required by the connection

Monitoring and Control Data Exchange DNOs Gap Analysis

DNO' s Gap Analysis - 1

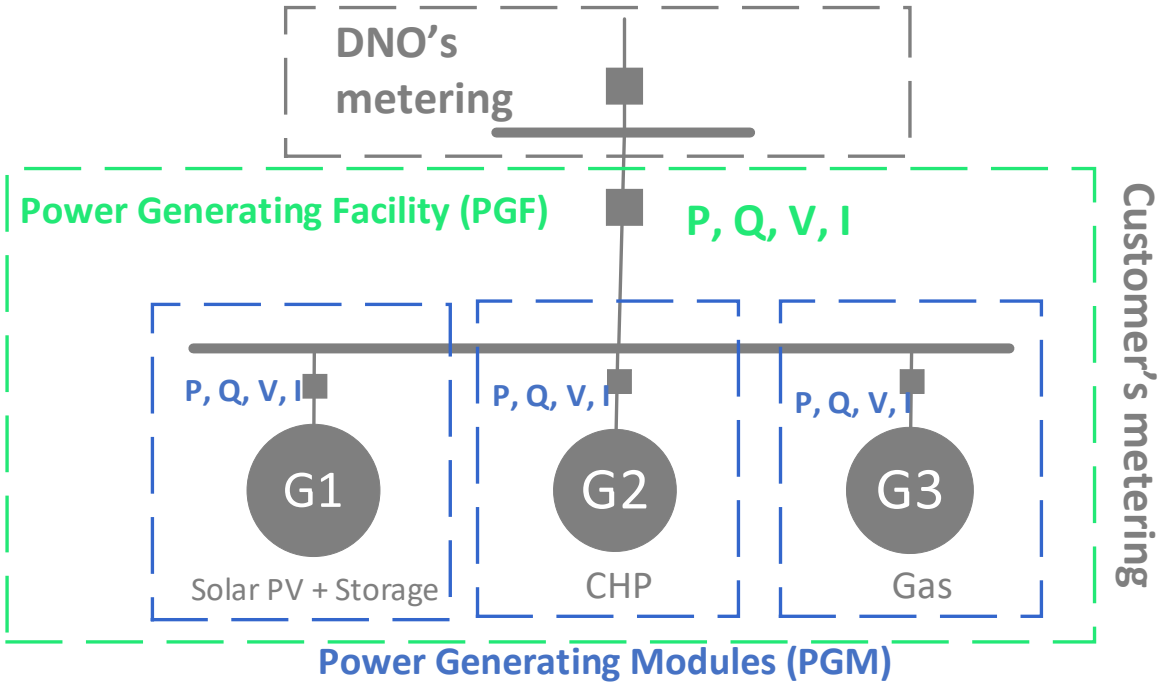
	ID	Data Point	Currently Collected						
			UKPN	SSEN	WPD	NPG	ENW	SPEN	G99
OPERATIONAL METERING POINTS									
Customer metering (net metering at the DER PoC)	M1	Measured Customer Active Power	Yes	Only Type C and D	No	Only Flex Connections	No	Type B, C, D	TYPE C/D
	M2	Measured Customer Reactive Power	Yes	Only Type C and D	No	Only Flex Connections	No	Type B, C, D	
	M3	Measured Customer Voltage	Yes	Only Type C and D	No	Only Flex Connections	No	No	
	M4	Measured Customer Current	Yes	No	No	No	No	No	
	M5	Measured Customer Frequency	No	Only Type C and D	No	No	No		
	M6	Power Quality	No	No	No	No	No	No	
Customer metering (metering from individual units)	M7	Power Park modules metering (MW, MVAr, Amps, Volts)	No	No	Yes[1]	No	No	Yes	No
	M8	Generation and demand metering (MW, MVAr, Amps, Volts)	No	No	No	No	No	No	No
	M9	Alternator MW and MVAr	No	Only Type B. CCGT technology	No		No	No	No
	M10	Unit/Station Transformer MW and MVAr	No	Only Type B. CCGT technology	No	No	No	No	No
	M11	Generator Transformer Tap Position Indication	No	Only Type B. CCGT technology	No	No	No	No	No
customer's CB status	M12	Customer generation/G99 CB	Yes	Only Type C and D	No	Yes	Yes	Yes	No
	M13	Customer CB status for flexible demand/generation	No	No	No	No	No	Yes	No
	M14	Customer Islanded Open & Close	No	No	No	No	Yes	No	No
	M15	Network Status Data	No	No	No	Yes	No	No	No
DER availability	M16	DER in service (0/1)	Yes	No	No	No	No	No	No
	M17	Installed Capacity in Service	Yes	No	No	No	No	No	No
	M18	Number of Connected generators	No	Only Wind/Tidal type C/D	No	No	No	No	No
	M19	Potential Power Available/ Real Available Capacity	No	Anything nonsynchronous (Large PS) type C/D	No	No	Yes	No	No
	M20	Reactive Available Capacity	No	No	No	No	Yes	No	No
	M21	State of Charge	No	No	No	No	No	No	No

DNO's Gap Analysis - 2

Weather Data	M22	Wind Speed	No	Only Wind/Tidal type B/C/D	No	No	No	No	No
	M23	Wind Direction	No	Only Wind/Tidal type B/C/D	No	No	No	No	No
	M24	Irradiance	No	No	No	No	No	No	No
Control readbacks	M25	Active Power Upper Limit readback	Yes	Yes	No	No	Yes	No	No
	M26	Active Power Lower Limit readback	Yes	?	No	No	?	No	No
	M27	Reactive Power Upper Limit Readback	Yes	No	No	No	No	No	No
	M28	Reactive Power Lower Limit Readback	Yes	No	No	No	No	No	No
	M29	Target Voltage readback	Yes	No	No	No	No	No	No
	M30	Flexibility service request acknowledged	No	No	No	No	Yes	No	No
	M31	contractual setpoint/Export Blocking Signal readback	Yes	Only Type B, C, D	Yes	No?	Yes	No?	No
	M32	Open breaker control readback	Yes	No	Yes	No	No	No	No
	M33	Watchdog signal received	Yes	No	No	No	No	No	No
Mode of operation	M34	DER mode of operation/ frequency sensitive mode	Yes	Only Wind/Tidal Type D	No	No	No	No	Type C/D
Service Provision	M35	Service(s) contracted and volume	No	No	No	No	No	No	No
	M36	Service(s) being armed and volume	No	No	No	No	No	No	No
	M37	Service(s) actively delivered and volume							
CONTROL POINTS									
Analogues Control Points	C1	Active Power Upper limit	Yes	Yes	Yes	Yes	Yes	Yes	Type C/D
	C2	Active Power Lower Limit	Yes	No	Yes	Yes	Yes	No	Type C/D
	C3	Reactive Power Upper Limit	Yes	No	Yes	Yes	Yes	No	No
	C4	Reactive Power Lower Limit	Yes	No	Yes	Yes	?	No	No
	C5	Voltage Target	Yes	No	No	No	No	No	No
Digital Control Points	C6	Default safe value setpoint/Export Blocking Signal	Yes	Yes	Yes	Yes	Yes	?	No
	C7	DER Breakers Trip	Yes	No	Yes	Yes	Yes	Yes	No
	C8	Flexible demand/generation CB Trip	No	No	No	No	No	No	No
	C9	Curtailment instruction request e.g., ANM Flex Connections	No	No	No	No	ANM Flex Connection only	No	No
	C10	Flexibility service request	No	No	No	No	No	No	No
	C11	P, Q, V Service Enable	Yes	No	No	No	No	No	No
	C12	Watchdog signal received from the DER	Yes	No	No	No	No	No	No
	C13	Limit Breach	Yes	No	No	No	No	No	No

Monitoring and Control Data Exchange - Use Cases

Customer metering from individual flexible units/PGM



Data

- Metering from each Power Park module (P, Q, V, I)
- Separate metering for flexible generation and demand units (P, Q, V, I)

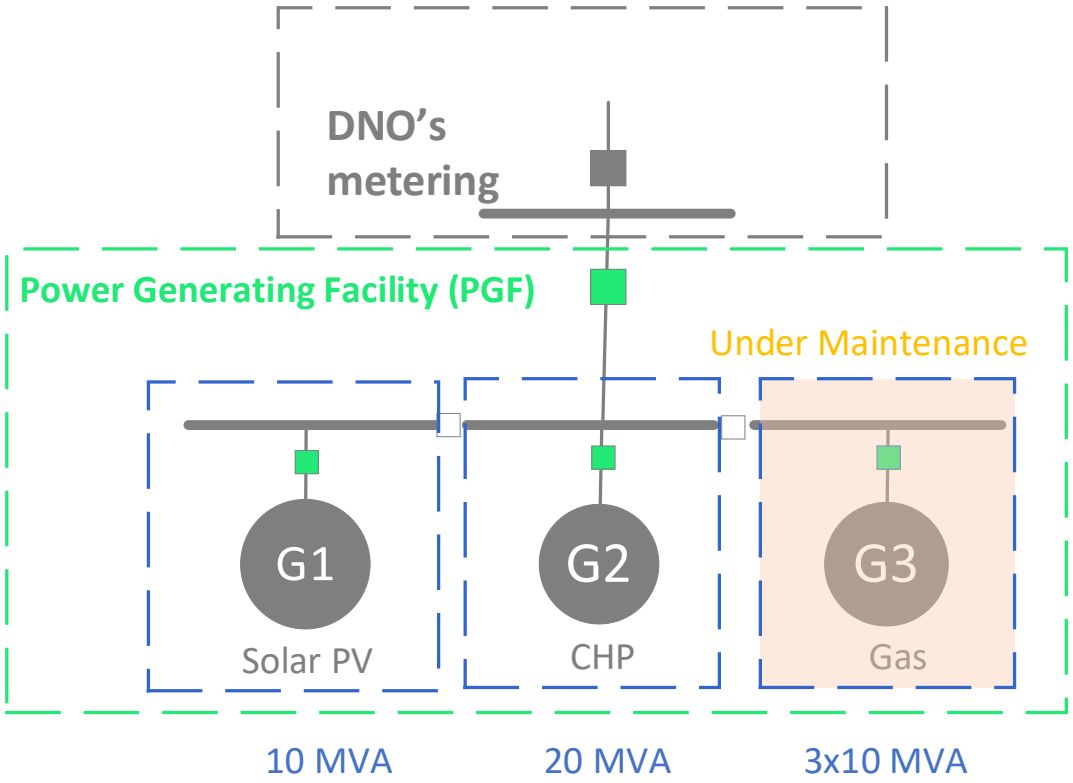
Use Cases

- Flexible Connections – managing site with multiple generators at different LIFO positions.
- Power Park modules providing different services for Service delivery/settlements.
- More accurate DNOs/ESO Operational Forecasting.
- Network Operation - visibility of pickup load/ swing after losing any unit.

Relevance of the data points

Could potentially deliver significant benefits.

DER Availability



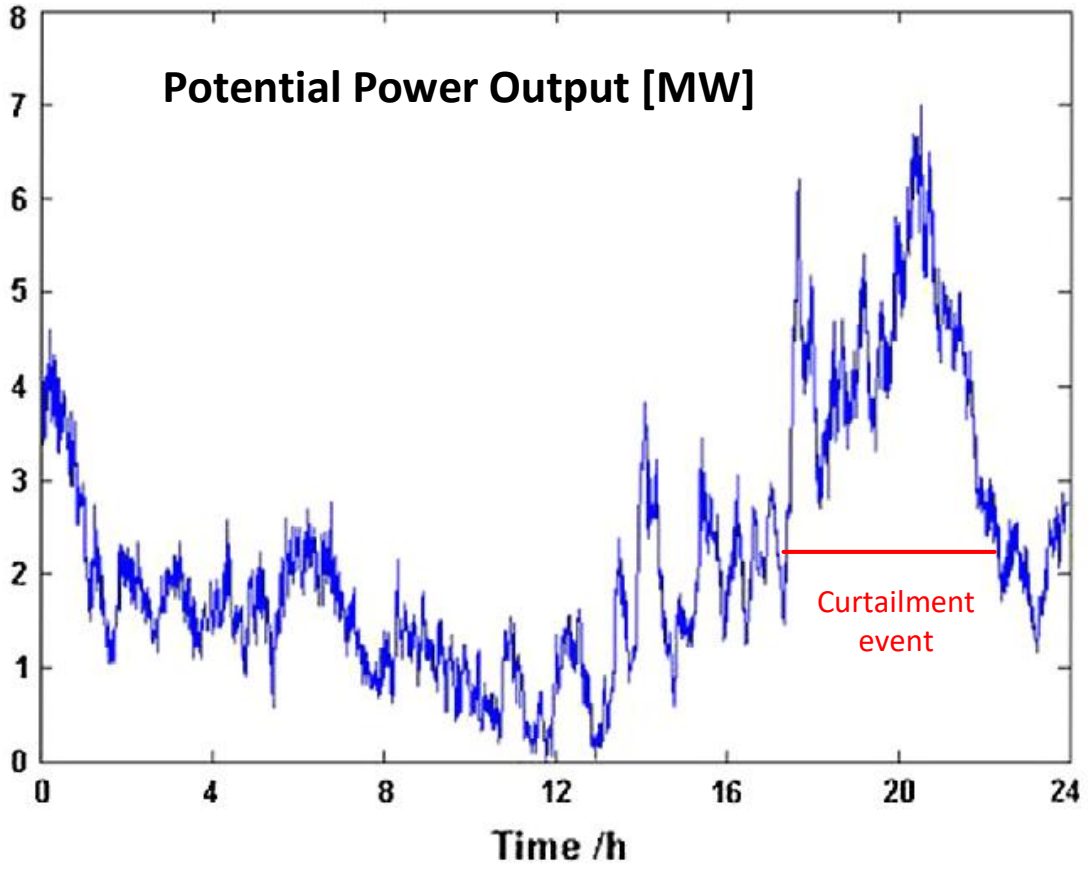
Total installed capacity: 60MVA
Total installed Capacity in service: 30MVA

Data
-Installed Capacity in Service [MW]

Use Case:
- Better modelling of the (real time) capacity that can be offered/controlled for different DNO/ ESO services.
- Better accuracy of DNOs/ESO operational forecasting
- Avoiding service conflicts.
- Flexible Connections - Optimise curtailment thresholds.

Relevance of the data points
Could potentially deliver considerable benefits

Potential Power Available



Data

Potential Power Available

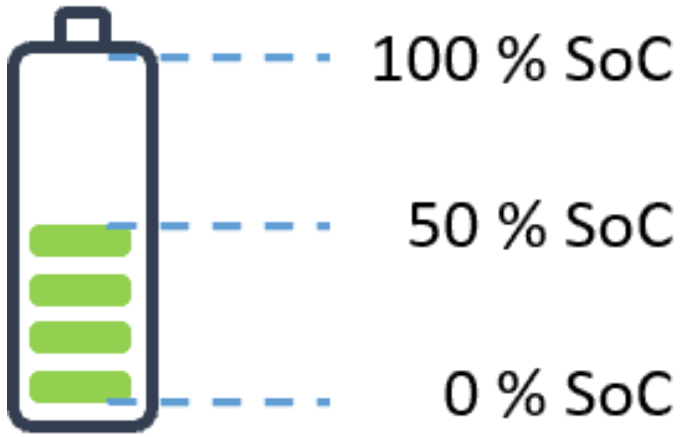
Use Case:

- Visibility of post-curtailment DER output.
- Real time network operation: visibility potential sudden MW volume increase seen on the network.
- Flexible connections - optimise curtailment thresholds.
- ESO ancillary and balancing service – visibility of sudden potential MW volume for system balancing.
- More accurate DNOs/ESO Operational Forecasting.

Relevance of the data points

Could potentially deliver considerable benefits

Electricity Storage State of Charge



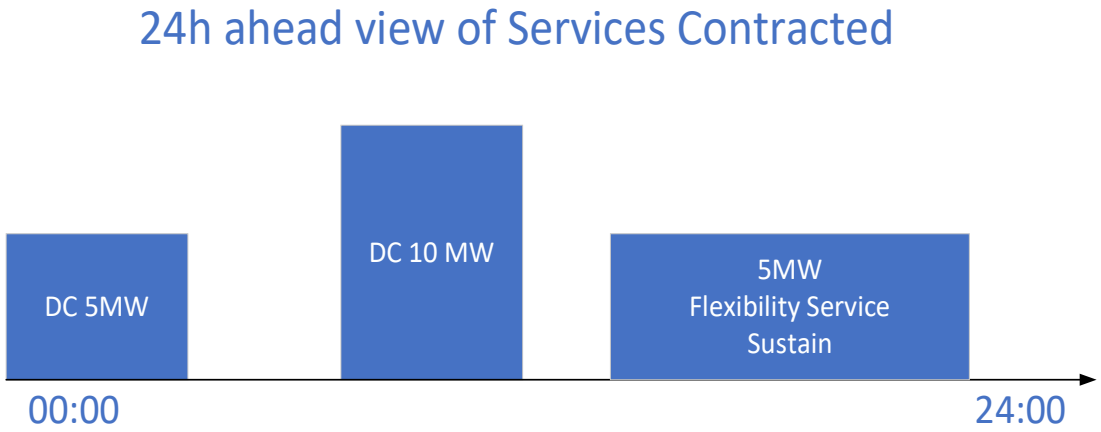
Data
Electricity Storage State of Charge

Use Case:

- Operational Forecasting – allow to better model storage operational behaviour. E.g. is SoC 0%, the storage site is not going to be exporting even if the electricity prices are forecasted to be high.
- DNO/ESO services – visibility of duration service can be provided for.

Relevance of the data points
Could potentially deliver considerable benefits

Services Provision



Data

- Service contracted and Volume
- Service being armed and Volume
- Service being delivered and volume

Use Case:

- Operational Forecasting – better modelling of generation output providing services to the ESO/DNO.
- Conflict Service Avoidance .
- Visibility of the volume that can be offered for post fault products (Dynamic/ Restore).

Relevance of the data points

Could potentially deliver considerable benefits

Recommendation on Data Points to be requested going forward to DERs

Inputs points (DER –> DNO)

Category	Data Point	New/existing in G99
Customer metering (Net metering at the DER PoC	Measured Customer Active Power	Existing requirement
	Measured Customer Reactive Power	Existing requirement
	Measured Customer Current	Existing requirement
	Measured Customer Voltage	Existing requirement
	Measured Customer Frequency	Existing requirement
	Power Quality	Existing requirement
Customer metering (Metering from individual units)	Metering from each Power Park module (P, Q, V, I)	New requirement
	Separate metering for flexible generation and demand units (P, Q, V, I)	New requirement
Customer's CB status	Customer generation/G99 CB	New requirement
	Customer CB status for each power generating modules?	New requirement
	Customer Islanded Open & Close	New requirement
	Network Status Data	New requirement
DER availability	Installed Capacity in Service	New requirement
	Potential Power Available	New requirement
	State of charge	New requirement
Readbacks	Active Power Upper Limit readback	New requirement
	Active Power Lower Limit readback	New requirement
	Reactive Power Upper Limit Readback	New requirement
	Reactive Power Lower Limit Readback	New requirement
	Target Voltage readback	New requirement
	Flexibility service request acknowledged	New requirement
	Contractual setpoint/Export Blocking Signal readback	New requirement
	Open breaker control readback	New requirement
	Watchdog signal received	New requirement
Service Provision (real time)	Service(s) contracted and volume	New requirement
	Service(s) being armed and volume	New requirement
	Service(s) actively delivered and volume	New requirement

Open Q&A

Operational Data Sharing (WS1B P7)

Malcolm Grisdale (Product team rep, NPg)

What was the aim

Review all the different data being shared in the industry between parties

2021 Scope

- Identify data and agree changes that DNO/DSO provide to the market / customers

2022 Scope:

- Identify data being shared between
  - ESO to DNO/DSO
  - DNO/DSO to ESO
  - ESO to the market / customers
- Continued improvement to the data identified in 2021 scope and ensure rollout

What has been achieved

- Overall view of all current data sharing and coordination of industry working groups dealing with data

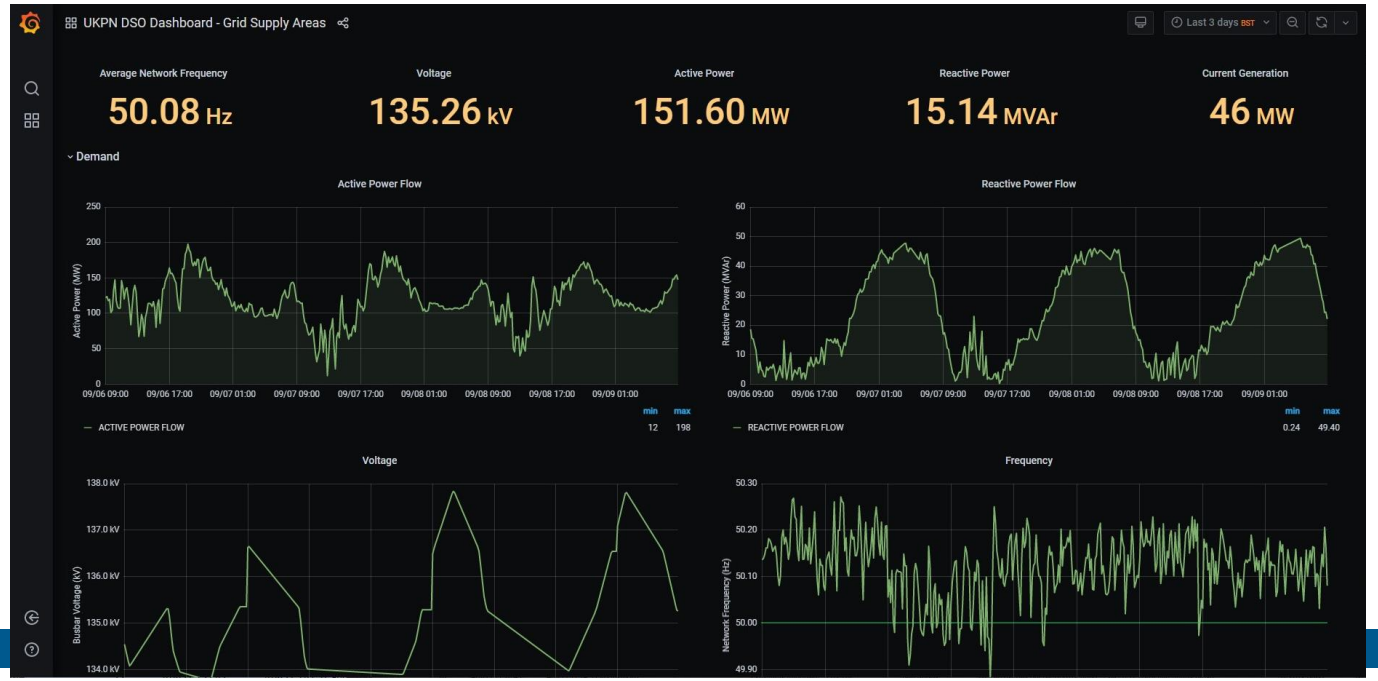
- Agreed set of data to be published by DNOs for the market/customers
  - Mechanisms not standardised to allow DNOs to publish quickly

- Roadmap for future data sharing proposals

What has been achieved

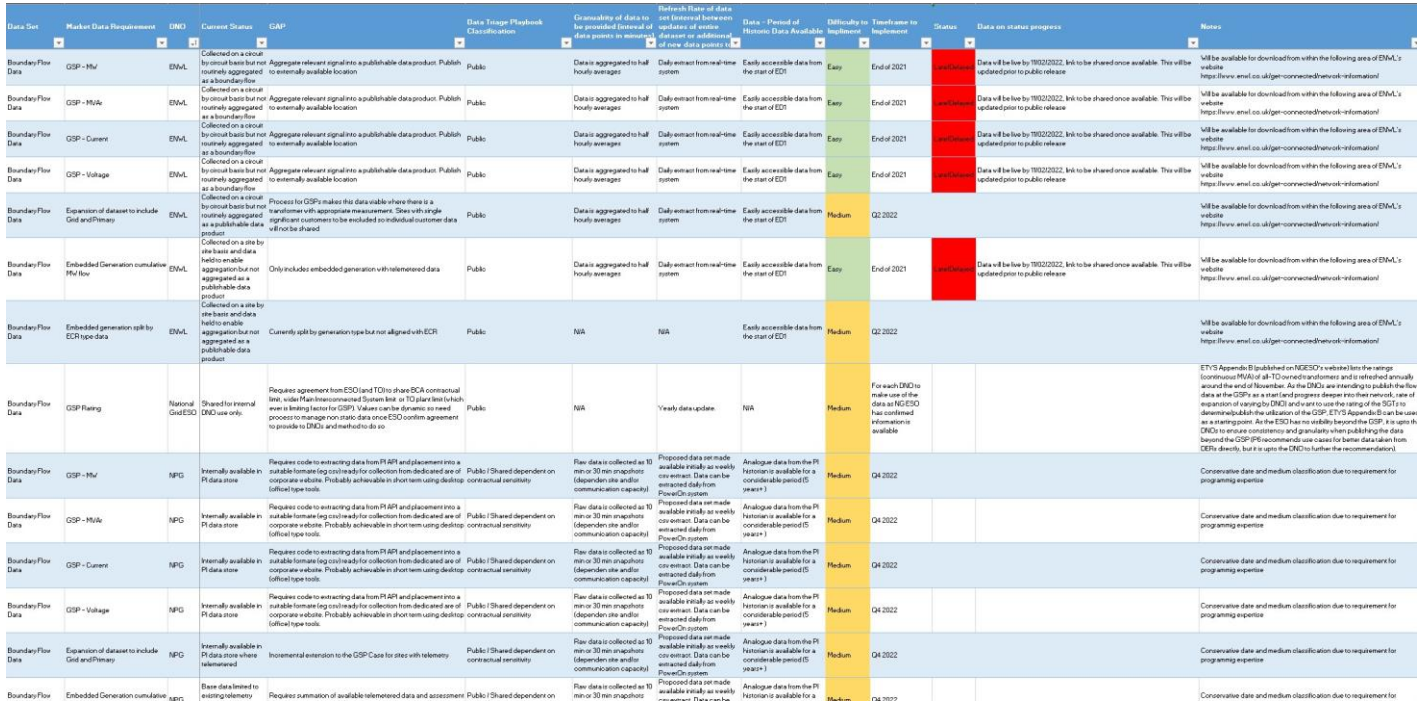
Initial data sharing provided as “DNO’s to publish the data they have available”

- Ensures data is provided but minimal investment/resource requirement removes delays
- Industry feedback will then shape how this changes

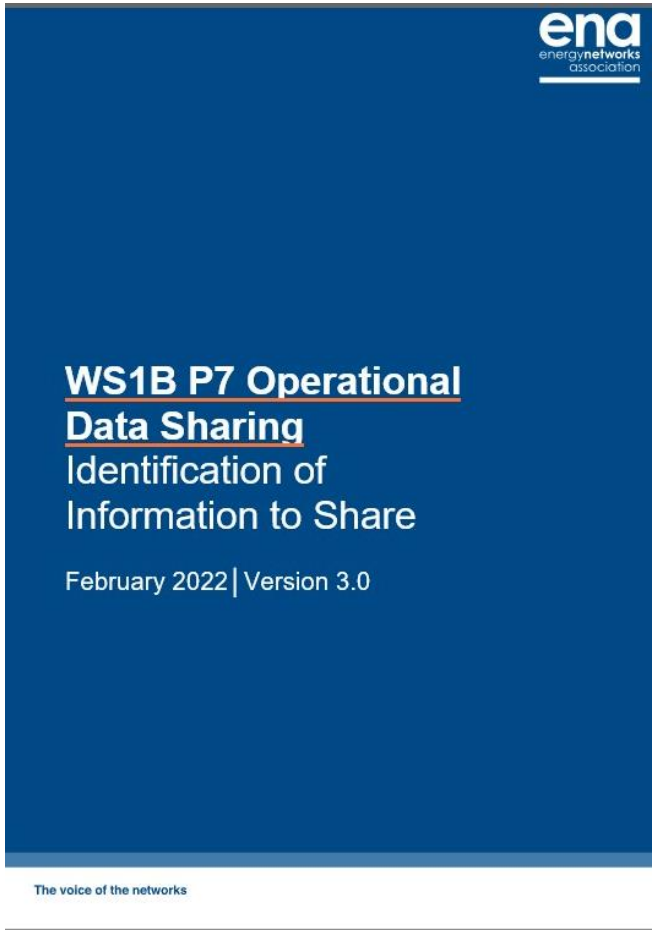


What has been achieved

- RAG status and report updated with current status of data sharing for each DNO.



Data Set	Market Data Requirement	DNO	Current Status	GAP	Data Triage Playbook Classification	Granularity of data to be provided (interval of data points in minutes)	Refresh Rate of data set (interval between updates of entire dataset or additional of new data points to	Data - Period of Historic Data Available	Difficulty to Implment	Timeframe to Implement	Status	Data on status progress	Notes
Boundary Flow Data	GSP - MW	ENWL	Collected on a circuit by circuit basis but not routinely aggregated as a boundary flow	Aggregate relevant signal into a publishable data product. Publish to externally available location	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Easy	End of 2021	Late/Delayed	Data will be live by 1902/2022, link to be shared once available. This will be updated prior to public release	Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	GSP - MVAr	ENWL	Collected on a circuit by circuit basis but not routinely aggregated as a boundary flow	Aggregate relevant signal into a publishable data product. Publish to externally available location	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Easy	End of 2021	Late/Delayed	Data will be live by 1902/2022, link to be shared once available. This will be updated prior to public release	Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	GSP - Current	ENWL	Collected on a circuit by circuit basis but not routinely aggregated as a boundary flow	Aggregate relevant signal into a publishable data product. Publish to externally available location	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Easy	End of 2021	Late/Delayed	Data will be live by 1902/2022, link to be shared once available. This will be updated prior to public release	Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	GSP - Voltage	ENWL	Collected on a circuit by circuit basis but not routinely aggregated as a boundary flow	Aggregate relevant signal into a publishable data product. Publish to externally available location	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Easy	End of 2021	Late/Delayed	Data will be live by 1902/2022, link to be shared once available. This will be updated prior to public release	Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	Expansion of dataset to include Grid and Primary	ENWL	Collected on a circuit by circuit basis but not routinely aggregated as a publishable data product	Process for GSPs makes this data viable where there is a transformer with appropriate measurement. Sites with single significant customers to be excluded so individual customer data will not be shared	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Medium	Q2 2022			Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	Embedded Generation cumulative PN/ flow	ENWL	Collected on a site by site basis and data held to enable aggregation but not aggregated as a publishable data product	Only includes embedded generation with telemetered data	Public	Data is aggregated to half hourly averages	Daily extract from real-time system	Easily accessible data from the start of EDI	Easy	End of 2021	Late/Delayed	Data will be live by 1902/2022, link to be shared once available. This will be updated prior to public release	Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	Embedded generation split by ECR type data	ENWL	Collected on a site by site basis and data held to enable aggregation but not aggregated as a publishable data product	Currently split by generation type but not aligned with ECR	Public	N/A	N/A	Easily accessible data from the start of EDI	Medium	Q2 2022			Will be available for download from within the following area of ENWL's website https://www.enwl.co.uk/get-connected/network-information/
Boundary Flow Data	GSP Rating	National GridESO	Shared for internal DNO use only.	Requires agreement from ESO (and TO) to share BCA contractual limit, wider Main Interconnected System limit or TO plant limit (which ever is limiting factor for GSP). Values can be dynamic so need process to manage non static data once ESO confirm agreement to provide to DNOs and method to do so.	Public	N/A	Yearly data update.	N/A	Medium	For each DNO to make use of the data as NGESO has confirmed information is available			ETYS Appendix B (published on NGESO's website) lists the ratings (continuous MVA) of all-TO owned transformers and is refreshed annually around the end of November. As the DNOs are intending to publish the flow data at the GSPs as a start (and progress deeper into their network, rate of expansion of varying by DNO) and want to use the rating of the SGT's to determine/publish the utilisation of the GSP, ETYS Appendix B can be used as a starting point. As the ESO has no visibility beyond the GSP, it is upto the DNOs to ensure consistency and granularity when publishing the data beyond the GSP (PS recommends use cases for better data taken from DERs directly, but it is upto the DNO to further the recommendation).
Boundary Flow Data	GSP - MW	NPG	Internally available in PI data store	Requires code to extracting data from PI API and placement into a suitable formate (eg csv) ready for collection from dedicated are of corporate website. Probably achievable in short term using desktop (office) type tools.	Public / Shared dependent on contractual sensitivity	Raw data is collected as 10 min or 30 min snapshots (dependen site and/or communication capacity)	Proposed data set made available initially as weekly csv extract. Data can be extracted daily from PowerOn system	Analogue data from the PI historian is available for a considerable period (5 years+)	Medium	Q4 2022			Conservative date and medium classification due to requirement for programming expertise
Boundary Flow Data	GSP - MVAr	NPG	Internally available in PI data store	Requires code to extracting data from PI API and placement into a suitable formate (eg csv) ready for collection from dedicated are of corporate website. Probably achievable in short term using desktop (office) type tools.	Public / Shared dependent on contractual sensitivity	Raw data is collected as 10 min or 30 min snapshots (dependen site and/or communication capacity)	Proposed data set made available initially as weekly csv extract. Data can be extracted daily from PowerOn system	Analogue data from the PI historian is available for a considerable period (5 years+)	Medium	Q4 2022			Conservative date and medium classification due to requirement for programming expertise
Boundary Flow Data	GSP - Current	NPG	Internally available in PI data store	Requires code to extracting data from PI API and placement into a suitable formate (eg csv) ready for collection from dedicated are of corporate website. Probably achievable in short term using desktop (office) type tools.	Public / Shared dependent on contractual sensitivity	Raw data is collected as 10 min or 30 min snapshots (dependen site and/or communication capacity)	Proposed data set made available initially as weekly csv extract. Data can be extracted daily from PowerOn system	Analogue data from the PI historian is available for a considerable period (5 years+)	Medium	Q4 2022			Conservative date and medium classification due to requirement for programming expertise
Boundary Flow Data	GSP - Voltage	NPG	Internally available in PI data store	Requires code to extracting data from PI API and placement into a suitable formate (eg csv) ready for collection from dedicated are of corporate website. Probably achievable in short term using desktop (office) type tools.	Public / Shared dependent on contractual sensitivity	Raw data is collected as 10 min or 30 min snapshots (dependen site and/or communication capacity)	Proposed data set made available initially as weekly csv extract. Data can be extracted daily from PowerOn system	Analogue data from the PI historian is available for a considerable period (5 years+)	Medium	Q4 2022			Conservative date and medium classification due to requirement for programming expertise
Boundary Flow Data	Expansion of dataset to include Grid and Primary	NPG	Internally available in PI data store where telemetered	Incremental extension to the GSP Case for sites with telemetry	Public / Shared dependent on contractual sensitivity	Raw data is collected as 10 min or 30 min snapshots (dependen site and/or communication capacity)	Proposed data set made available initially as weekly csv extract. Data can be extracted daily from PowerOn system	Analogue data from the PI historian is available for a considerable period (5 years+)	Medium	Q4 2022			Conservative date and medium classification due to requirement for programming expertise
Boundary Flow Data	Embedded Generation cumulative	NPG	Base data limited to existing telemetry	Requires summation of available telemetered data and assessment	Public / Shared dependent on	Raw data is collected as 10 min or 30 min snapshots	Proposed data set made available initially as weekly csv extract. Data can be	Analogue data from the PI historian is available for a	Medium	Q4 2022			Conservative date and medium classification due to requirement for

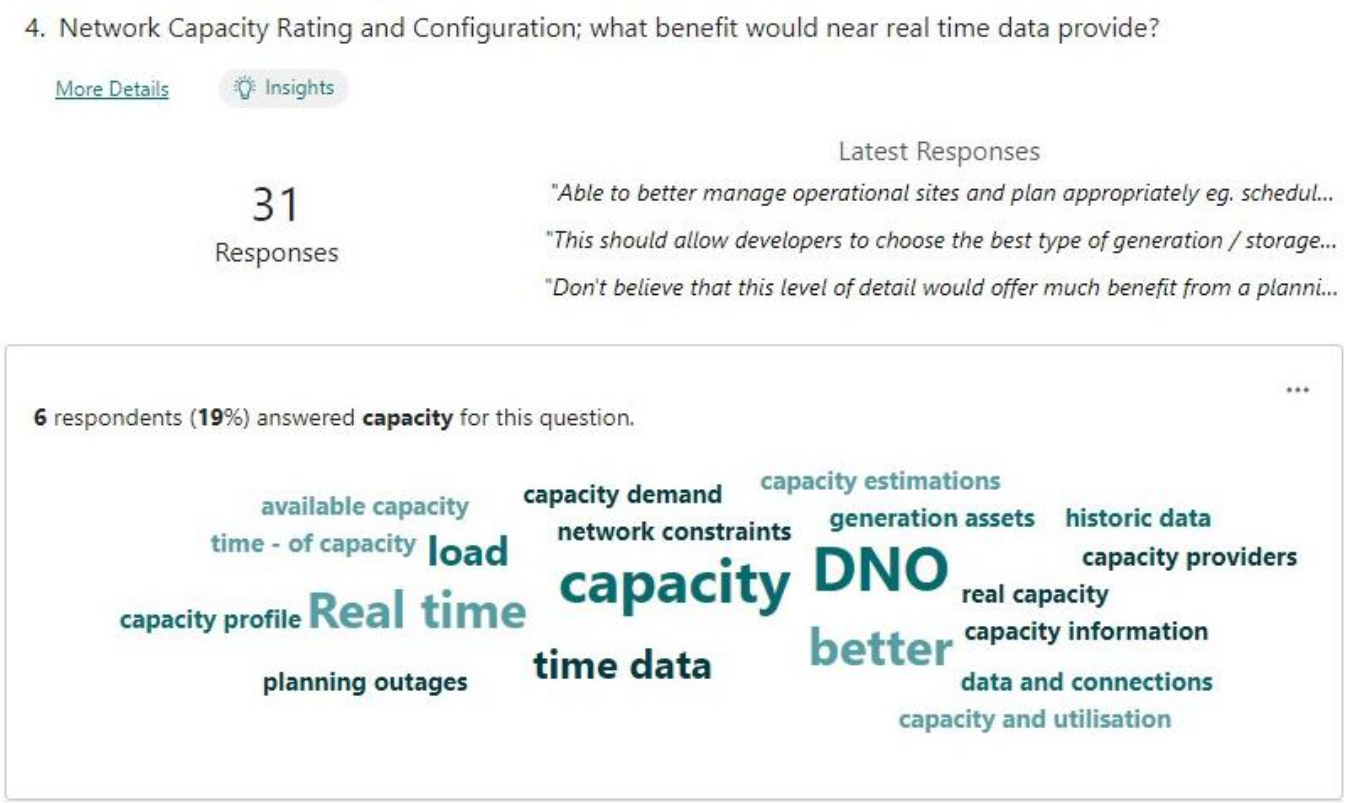


Engagement

Working with other industry groups to align processes and data

Seeking feedback from varying sources

- Dissemination event (today)
- Survey of DNO customer base (completed end of 2021)
- ENA Survey in 2022 Q4



Open Q&A

Wider programme updates

Avi Aithal (Head of ON, ENA)

Wider programme updates

Recent activities

Evolution of Open Networks
Review of the programme scope and governance for 2023 continues, factoring in stakeholder feedback and key industry developments.

Upcoming activities

Flexibility consultation response
ENA response to feedback received in the recent consultation will be published at the end of November 2022.

Implementation planning
Translating recommendations into short-medium term implementation plans for actioning across GB.

A full timeline of deliverables to date can be found here.
We remain on track to deliver the 2022 programme in full.

Latest & upcoming ENA events

Emily Jones (Head of Stakeholder Engagement, ENA)

Latest & upcoming ENA events

Recent events:

- **Flexibility consultation webinar**
  16th August, recording available on ENA's YouTube channel.
- **Business Green flexibility panel session**
  24th August
- **Community Energy Forum: Transitioning to a smarter, more flexible grid**
  8th September

Upcoming events:

- **Energy Innovation Summit**
  28th – 29th September, Glasgow
  Registration details are available online.

More information on upcoming events is available on the ENA website.

AOB

Sotiris Georgiopoulos
(Chair of ON Steering Group, UKPN)

Useful Links

Programme Scope for 2022

2021 End of Year report

Stakeholder events & supporting material

Open Networks homepage

We welcome feedback and your input

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