

RIIO-ED2 Decarbonisation and the Environment Working Group: session 9



RIIO-ED team
17 September 2020

Aims of session:

- Ofgem to provide learnings from assessment of EAPs in other sectors; and update on proposed approach to PCBs.
- DNOs to a) provide update on suitability of baseline standards; b) set out initial options for measuring areas in scope of EAP and potential for common metrics for AER.

Timings	Agenda item
12:30 – 12:45	1. Intro and aims of the session
12:45 – 13:30	2. Ofgem to provide learnings from assessment of other sector EAPs 3. Ofgem to provide update on PCBs
13:30 – 14:30	4. EAP action: suitability of baseline standards
14:30 – 14:45	Break
14:45 – 16:30	5. EAP action: suitability of baseline standards (continued) 6. AOB and next steps

Learnings from assessment of EAPs in other RIIIO-ET2

Output categories

- Although the EAP is a compulsory requirement, it is largely a bespoke part of BP – actions/commitments that companies include in their EAP will depend on specific challenges and opportunities they face to address impact areas
- In the EAPs we found a big difference in how networks applied the RIIO-2 output categories and in the justification underpinning these
- Key considerations
 - for bespoke ODIs: is it material in terms of what stakeholders/consumers want? Can company set a target relative to a baseline that is relevant and verifiable? Is there a measure of company RIIO-1 performance in this area, and does proposed target performance merit a reward? Is proposed incentive rate well-justified? Is mechanism providing incentives to achieve baseline as well as target? How sensitive is mechanism and does this seem reasonable?
 - for PCDs: is there a compelling need/benefits case for deliverable? Is expenditure material enough to warrant a PCD? Has company provided sufficient detail on the specific deliverables and timings to specify PCD in licence?
- A lot of good proposals in EAPs that don't necessarily meet criteria for PCD or ODI. As part of review we came up with concept of EAP commitments. These are not part of formal RIIO-2 output framework but we intend on formalising these through the Annual Environmental Report licence condition.

Benefits

- Lots of room for improvement in demonstrating that the ambition in EAPs is appropriate. The best EAPs benchmarked their targets to their past performance and activities, to the targets of their peers, and the targets of other utilities/industries. In addition, some went further and got feedback from relevant expert agencies on their proposed targets.
- Encourage you to look at incorporating a marginal abatement curve in your BPs to demonstrate the cost/benefit trade off of your RIIO-2 EAP.

Funding

- For many of the EAP commitment, companies didn't make explicit funding requests. Costs often embedded in closely associated indirects and project related costs. Important to highlight and provide detail on where additional activity is covered to deliver EAP commitments otherwise there could be problems further down line with benchmarking not accounting for these new areas of spend.

Must have

- Map where in the EAP you are covering the minimum requirements, particularly important for an efficient assessment of stage 1 of the BPI.
- The EAP does cover a number of new areas compared to RIIO-1. For some companies, it might be difficult to set targets in some of these but advice is to clearly explain the action to be taken in RIIO-2 to build capacity and contribute during the next price control.

Any questions on the above points?

EAP actions updates

Priority areas for discussion in WG ahead of SSMD:

- Suitability of baseline standards
- Consistent and comparable measurement of EAP areas (including common BCF methodology)
- How to ensure the AER functions effectively as an ODI R

Initial questions to answer for each area in scope

1. Overview of DNOs' current activities in this area; what progress has been made in RIIO-ED1 to date and how is this currently being measured and reported?
2. What metrics are being used in the other sectors? Are there common principles and assumptions that we could apply from the other sectors?
3. We expect the minimum standards proposed to be achievable within baseline allowances. Do you consider any of the minimum levels of ambition would represent significant, as opposed to incremental, expenditure?
4. If significant, what would be the cost implications?

Action: Group to answer above questions and provide a view on appropriateness of proposed baseline standards in the EAP.

We assigned coordinators to areas in scope of the EAP. Coordinators are not necessarily responsible for completing all actions for the area they have been assigned, but are responsible for engaging with relevant stakeholders, progressing actions and coordinating responses for presentation to Ofgem and the working group.

Environmental area	Proposed coordinator (DNO)
Business Carbon Footprint (BCF)	WPD
Losses	SPEN
Embodied carbon	ENWL
Sulphur Hexafluoride (SF6)	WPD and SSEN
Supply chain management	UKPN
Resource use and waste	UKPN
Biodiversity and/or natural capital	NPg
Fluid-filled cables	SSEN
Noise pollution	NPg
NOx and air quality	UKPN

Business Carbon Footprint

ED2 BCF Common Methodology

Sept 2020

BCF Methodology - progress to date

ED1 DNO BCF methodology review;

Common understanding and consistency in use of DECC conversion factors, apportionment and general assumptions;

- Scope 1 – SF₆ / Operational Transport / Combustion
 - Common approach to calculation
 - A few discrepancies in source data e.g. SF₆
- Scope 2 – Building energy use / Losses
 - Common approach to calculation
 - Calculations for electricity use electricity generation conversion factor (location based approach)
 - ED2 need to consider market based approach as purchased power from renewables is not accounted for in current RIGs
- Scope 3 – Business Transport / Contractor emissions
 - Common approach to calculation for business transport (mileage claims / travel bookings)
 - Varied approach to contractor emissions, will need to agree contractor activity to be included as a minimum; suggest dig & lay, logistics, generators, tree trimming and waste management



BCF Methodology – Metrics & SBT's

BCF - Metrics

- ED1 absolute data reported no intensity ratio required, difficult to compare.
- Intensity ratio now required for all business's complying with SECR e.g. tCO₂e per employee (WPD); tCO₂e per £ turnover, tCO₂e per m² of building space.
- DNO's will need to agree whether an intensity metric is appropriate for ED2, and if so which one.

Science Based Targets (SBT's)

- Purpose not necessarily to achieve net zero rather limit global temperature increase, targets will stretch beyond 2028
- Should include losses and possibly Scope 3 (Purchased Goods and Services if >40% of total BCF)
- Methodology should reference SBT's and requirement for them to be approved by the Science Based Target Initiative (SBTi) but not provide details on how they should be set and monitored for each DNO.



BCF Methodology - development

Collaboration at ENA Environment Committee

- ENA Environment Committee – 15th September. Present general principles of methodology and outline draft methodology document.
- Separate ENA working group to review draft and feedback.
- Draft methodology cross checked against current RIG's with differences highlighted in separate review / appendix.
- Draft to be forwarded to ENA SHE Committee for approval by DNO Senior SHE management
- Methodology to be certified externally for compliance with ISO14064-1 (Quantification and Reporting of GHG) and GHG Protocol
- Methodology to be published as an ENA document.



BCF – DNO's and Other Sectors

DNO's

- All DNO's have fed back to WPD regarding current BCF methodology – consensus from ENA Environment Committee that a BCF common methodology for ED2 is appropriate
- Most considering Scope 1 & 2 Science Based Targets (unclear if losses are included)
- All have achieved significant reductions throughout ED1 to date via similar activities.

Other Sectors

- Significant drive and focus on achieving net zero ahead of the UK Government 2050 target. General ambition is to achieve net zero in 2030's.
- Many organisations now considering Science Based Targets (SBT's) either at a Company or Group level
- Minimal detail on sector wide common methodologies for calculation of BCF.



BCF – Outstanding issues

To be agreed amongst DNO's

- BCF Scope 1 – SF₆ source data
- BCF Scope 3 – contractor emissions minimum requirements
- Additional Scope 3 requirements – waste and water
- Use of intensity metric as per SECR
- Level of detail to be included for SBT's – 1.5C or <2C target
- Clarification on inclusion of losses and Scope 3 emissions in SBT's.
- External verification of the methodology to recognised reporting standards



Losses

Thank you

RIIO-ED2 DEWG Environmental Action Plan- Losses

September 2020

Environmental Action Plan – Losses DNO Activities in RIIO-ED1

SPEN	UKPN	WPD	ENWL	NPG	SSEN
<ul style="list-style-type: none"> • Reduction of over 70GWh of lost energy • Replaced Ca. 500 high loss transformers with Eco-Tier 2 units • Work to reduce electricity theft with member embedded in Police • Rebalancing of loads on HV Network • Embedding losses consideration within the approval process for our network investment schemes 	<ul style="list-style-type: none"> • Replace existing transformers with Eco Design specification units(UKPN) • Deployment of new amorphous steel transformers(UKPN) • Work to reduce electricity theft • Rebalancing of loads on HV Network 	<ul style="list-style-type: none"> • Proactive replacement of distribution transformers(WPD) • Design intervention for losses on new installations(WPD) • Amorphous Steel Core Pole Mounted Tx • 3 Phase LV Domestic Connections. 	<ul style="list-style-type: none"> • Work to reduce electricity theft • Installation of larger capacity cables • Opportunistic replacement of primary & Pole Mounted transformer units with low loss Eco standard units. • Proactive replacement of pre-1990, 100kVA and 800kVA, distribution transformers with low loss Eco standard units 	<ul style="list-style-type: none"> • Installation of larger capacity cables • Developing losses forecasting reference network model with Newcastle University to better understand and quantify losses • Purchase lower loss transformers • Replacement with oversized assets to minimise losses • Distribution transformers with dedicated wind and solar generation connected 	<ul style="list-style-type: none"> • Understanding Losses profile to determine which emissions scope they should fall in • Reviewing LCT impact on carbon value associated with losses • Replacing High Loss Tx with Eco-Tier 2 units

How Losses are measured and reported in RIIO-ED1

- Licence Condition 49 – to manage losses to a level as low as reasonably practicable and to Publish Losses Strategy.
- Report Losses activity in RRP and annual Environment & Innovation Report.
- Submit 3 Tranches of Losses Discretionary Reward applications.

Activities are broad, diverse, innovative and require a common assessment.



Environmental Action Plan – Losses in Other Sectors

Losses are difficult to compare with other sectors...

- No comparison with Gas or Water in GB
- No International comparison due to structure of GB energy Sector:

Procurement?	DNOs do not procure losses and are separate entities to energy generators or retailers.
GWh Output?	DNOs have limited influence over absolute losses; influenced by customer behaviour.
BCF?	DNOs have very limited influence over carbon intensity of the generation on their networks.

Electricity Transmission

SPT	Implement T2 Losses Reduction Strategy to reduce losses on the network by an estimated 14,500 MWh (circa 3% of 2018/19 losses), limiting losses to a lower level than would otherwise be the case, where this is economic and provides benefit to customers.
NGET	Continue to report annually on the actions we have taken to reduce the transmission losses induced by our network as well as any activities that have impacted on the losses.
SHET	Grid/Super Grid Transformer procurement with whole lifetime costs consideration, Losses Monitoring and Annual Reporting Review, Pilot Losses Assessment in the Reinforcement Projects



Environmental Action Plan – Losses in Other Sectors

Electricity Transmission (Draft Determination)

- Requirement to implement a strategy for loss reduction
- Retain Licence condition but with reporting via AER.
- Energy used to control the building environment in substations contributes to overall losses on the transmission system. In the SSMD, Ofgem said they would consider trials around metering energy efficiency at substations, as appropriate.
- In line with Business Plan Guidance (BPG) on EAP minimum requirements, all three TOs have set or committed to implementing a programme of measures in older substations to create low carbon buildings, where these provide value for consumers.

Application in RIIO-ED2

- Retaining a Losses Licence Condition
- Reporting should be consistent, comparable and recognise company ambition and delivery
- CBA incentive to manage losses via proactive investment e.g. low-loss assets and planning for Net Zero.
- A **Reputational Scorecard** is one component, CBAs and Licence Condition strengthen this in ED2.
- DNOs should be clear on the specific activity they intend to carry out within losses strategies.



Environmental Action Plan – Losses Baseline Standards

Impact of Baseline Standards

Losses

- Develop and **commit to implementing** a strategy to efficiently **manage both technical and non-technical** losses on the **DNO's network over the long term. This should include specific actions and performance measures to track the impact of actions in RIIO-ED2.**
- **Commit to reporting on the progress** of implementing the losses strategy and **associated performance measures.**
- Contribute to evidence base on proportion of losses that network companies can influence/control

Initial Assessment of Baseline Standards

- The level of losses related activity in ED2 will likely be comparable with historic levels as Losses Strategies will continue to be implemented and economic investments adopted.
- Losses Strategies and AER provide the framework to report on progress and associated performance measures (these should be consistent and comparable, e.g. GWh).
- The requirement to contribute to the evidence base will be managed through ENA working groups and reporting; increasing network monitoring is unlocking some insights into network characteristics.

The scope and form of AER assessment must be robust and meaningful.



Embodied carbon



Environmental Action Plan: Embodied carbon

DEWG Presentation
September 2020

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- Relatively new activity / consideration among the DNO's and so little or no activity in terms of reporting or measuring embodied carbon, but considerations include:
- **UKPN** have started using lower carbon concrete in construction sites
 - Are working with the **Carbon Trust** to assess materiality of UKPNs embodied carbon
 - Looking at supply chain and developing a carbon tool for consumables and items so they can target the most impactful products
- **SEN** are working with the supply chain to determine circular economy benefits
 - Reviewing existing agreements to account for carbon reporting improvements on existing contracts
- **SPEN** are at the early stages of setting the baseline and are working with the **Carbon Trust** to set Scope 3 SBT by 2023
- **ENWL** are currently assessing embodied carbon for new builds, including looking at reducing the embodied carbon footprint of substation construction in relation to all materials used
 - Engaged with **Salford University** to undertake a carbon evaluation exercise for both a typical new build and for a typical in-situ switchgear replacement where we re-use existing buildings
 - In exploratory discussions with contractors regarding low carbon concrete



Company	Commitments
NGET	<ul style="list-style-type: none">- Have an existing baseline from 2015/16 (50% reduction achieved by 2018/19).- Net zero construction by 2026 by using PAS 2080 and PAS 2060.
SHET	<ul style="list-style-type: none">- Review baseline data and establish an appropriate embedded carbon reduction target by 2023/24.- PAS 2080 compliance by the end of the RIIO-T2 price control period- Identify, trial and embed sustainable design solutions as business-as-usual- Work with other TOs and infrastructure companies to define and develop the frameworks across the lifecycle of assets
SPT	<ul style="list-style-type: none">- Work with suppliers and continue to collaborate with other TOs – throughout T2- PAS 2080 – ‘Carbon Management in Infrastructure’- Collaborate with supply chain and other TOs to introduce embodied carbon measurement tool and metrics to track performance – by 2023- Pilot the tool on select T2 projects to set targets for post-T2 delivery

Summary:

- Use the PAS 2080 Standard for ‘Carbon Management in Infrastructure’ as a means of reducing the carbon emissions associated with the infrastructure
- Work with supply chains to reduce embedded carbon in materials they supply
- Develop and adopt tools to measure embedded carbon in major/specific new projects



Company	Commitments
Cadent	<ul style="list-style-type: none">- Target reductions in the embedded carbon, per km replaced.- Delivering the recommendations of a report to be published by 31 March 2021.- For major capital delivery projects, establishing a methodology for carbon calculation for all new RIIO-2 projects.
NGN	<ul style="list-style-type: none">- Following identification of an appropriate measurement method and a period of baseline monitoring (during 2020/21 and 2021/22), establish an embodied carbon baseline and reduction target to be achieved by end RIIO-2.
SGN	<ul style="list-style-type: none">- Develop a mandatory requirement for suppliers to report on the carbon emissions of the materials they provide.- Measure embedded carbon in new projects (with a contract value of £20m) – use the first set of results as a baseline and then set reduction targets for the next project.- Develop a methodology for calculating embedded carbon for some of the key materials used within our operations.
WWU	<ul style="list-style-type: none">- Develop tools to collate BCF data for internal / external use, including calculating embodied carbon for specified projects.- Undertake whole life carbon assessments on projects to drive reductions.

Summary

- Work with other gas networks to investigate the opportunities for changing specifications for PE pipe to permit wider use of recycled materials, if strength, safety and other requirements can be met
- Work with other gas networks to drive change in behaviours within common suppliers to drive best practice
- Work with supply chains to report on and reduce embedded carbon in materials they supply
- Develop and adopt tools to measure embedded carbon in major/specific new projects
- Develop baselines by 2021/22 and subsequent reduction targets



- This is a relatively new activity, so some unknown investment costs will be required at the onset.
- Potentially impact on unit cost which in turn may impact on cost assessment, particularly where higher costs are borne for lower levels of embodied carbon.
- Cost implications could also be significantly increased if DNO's work independently

However:

- All DNO's use similar plant and installation processes – is there an opportunity for collaboration on the measurement of embedded carbon for specific activities or operations.
- Engagement with manufacturers of plant to determine embedded carbon could also be done collaboratively

Metrics:

- Absolute data – difficult to compare
- tCO₂e per employee
- tCO₂e per m²
- tCO₂e per £

Agreement will be required as to whether an intensity ratio is appropriate, particularly given it is a new activity

SF6

SF6 – SSEN / WPD Update

11 September 2020



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DNO Response Summary

Current DNO activities - ED1

- Investment and replacement of most significant contributors to SF6 losses on the network
- Innovation projects looking at alternatives to SF6 underway
- Investigation into more efficient repair options
- Use of FLIR camera to locate leaks
- Consideration of minimising emissions by de-gassing in situ
- Investigation into causes of SF6 leakages
- Installation of low leakage SF6 equipment
- Use of stringent high specifications at lower voltages to reduce SF6 leakage rates
- DNO collaboration via the ENA SF6 working group
- Understanding and compliance with FGas Regulations and contributing to the EU Consultation

DNO Responses – ED1 Reporting and ED2 Proposals

Reporting - ED1

- Total network SF6 bank and losses (kg) reported annually via RRP Reporting Pack / Environment & Innovation Reports
- Losses accounted for from SF6 top-ups, decommissioned units and manufacturer returns

Proposal for Discussion for ED2

- Reputational Incentive (ET IIG Incentive unsuitable for ED?)
- An IIG strategy for RIIO-2 as part of the DNO EAP.
- Commitment to procuring equipment with IIG alternatives with lower GH warming potential than SF6, where/when commercially available.
- Further engagement with manufacturers on the development and trials of alternative insulation mediums
- Common methodology to be developed
- Continue with ED1 activities
- Re-opener when the update of the Fgas Regulations is known – 2023.

Further comments for discussion – “A minimum ambition should not include removal of assets or SF6 bank targets as this risks driving uneconomical behaviours and is not in customers greatest interests. This could lead to a step-change in required investment which may not realise environmental benefit and is not the intention of the baseline standard.” “Where targeted replacements are identified baseline funding could be provided to deliver specific agreed reductions.”

DNO Responses – Other Sectors

Other Sectors

- Transmission Fewer number of larger assets with significantly higher emissions (see next slides for DD update)
- Distribution Great number of much smaller assets with significantly lower emissions
Difference needs to be acknowledged and a different approach may be required.



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ET2 Draft Determinations Summary – SF6

Proposals in TOs' EAPs

- NGET - Commitment to implement IIG strategy in RIIO-2. Bespoke UM to fund an SF6 asset intervention plan to reduce leakage by 34% by the end of 2025-26 compared to 2018-19 levels.
- SHET - Commitment to implement IIG strategy in RIIO-2 and a funding request of £4.5m.
- SPT - Commitment to implement IIG strategy in RIIO-2 and a funding request of £7.7m.

It was noted that NGET has the most significant bank of SF6 installed in the UK. Thus there was a focus on NGET for specific SF6 PCD's.

NGET provided an initial cost estimate for the asset intervention plan of £150m (since revised to a range of £190m to £325m).

OFGEM considered whether to extend NGET's bespoke PCD to the other electricity TOs. They are not proposing to do this in RIIO-2 because the proportion of SF6 emissions on their networks is much less than NGET, and there are more economically efficient pathways for SPT and SHET to make progress on their respective SBTs during RIIO-2. (NGET 2.68) (Note that for Distribution the emissions are a factor less again than SPT and SHET). Note - The IIG LI does apply to all TOs.

SPT proposed a commitment to SF6 leakage reduction and alternatives, avoiding 9,700kg of SF6, a potent greenhouse gas, being added to the network across RIIO-ET2, delivering £11.8m benefit over the life of the assets. This was rejected by OFGEM in the DD.

NGET proposed a UM to fund a large-scale programme of intervention works on network assets containing and leaking SF6. This was rejected by OFGEM in the DD.

NGET proposed undertaking an innovation programme and activities to develop SF6 alternatives, delivering £13.1m benefit, through lower carbon emissions. This was rejected by OFGEM in the DD.

SPT proposed a programme of works replacing or refurbishing assets across all voltages that are leaking SF6 gas. OFGEM in the DD proposed reducing the volumes for Circuit Breaker replacement.

SHET are looking to move away from SF6 being a primary insulation solution in the coming years, and wish to adopt alternatives where technically and commercially viable. (ambition currently published separately to the T2 DD process).

An Insulation and Interruption Gasses (IIG) leakage incentive (IIG leakage incentive) is proposed for NGET, SPET and SHET (see next slide).



ET2 DD - SF6 – IIG Leakage Incentive

An Insulation and Interruption Gasses (IIG) leakage incentive (IIG leakage incentive) is proposed for NGET, SPT and SHET.

- Purpose: To incentivise a reduction in leakage of SF6 and other IIGs from assets on the transmission network, and to support the transition to low Greenhouse Gas alternative IIGs.
- Benefits: To reduce the volume of harmful leakage of greenhouse gas emissions from GB's Electricity Transmission network

Output parameter - Consultation position

- Baseline target methodology - Set the initial baseline target using the average leakage rate from 2013-20, with a 15% improvement factor applied.
- Exceptional events materiality threshold - No materiality threshold. Licence requirement for the value of exceptional event leakage to exceed the network company's resource cost for completing the submission.
- IIG Methodology Statements - Statements to be submitted to Ofgem for review by 31 December 2020.
- Associated bespoke outputs - NGET has proposed a bespoke output relating to the reduction of SF6 within their assets. We have set out our consideration and consultation position in the NGET Annex.

The IIG Incentive is designed to incentivise network companies to reduce leakage of IIGs from their networks, by setting an annual target for leakage. Where companies have leakage below the target, they receive a reward. Conversely, if leakage exceeds the target, the network company receives a penalty. The level of reward or penalty is determined by using the value of the difference between the target and the level of emissions, using the Non-Traded Carbon Price of the relevant gas.

Background Slides



SF6 - Background – Slide 1

- SF6 Legislation is being reviewed by the EU as part of the FGas Legislation due to be updated in Spring 2023
- The ENA have worked with the member companies to develop a report that enables engagement with the European Commission (Re: Review of the F-gas Regulation 517/2014) as they consider alternatives to SF6-filled MV switchgear with a view to ensuring that any F-gas Regulation amendment is sensible and practical for UK impacted companies. The report was submitted to the EU in March 2020.
- Engagement with the UK government by the ENA on behalf of the DNO's has indicated that whatever Brexit arrangements are in place the UK will likely enact the legislation as defined by the EU in 2023 or be more stringent.
- It is anticipated that there will be several possible scenarios ranging from a ban on new SF6 equipment at particular voltage levels from a defined future date to a full ban including replacement of all existing SF6 equipment by a particular date.
- The report and work done at the ENA included analysis to understand the alternatives to SF6 that are available on the market. For the UK these are currently very limited and the DNOs will need to work with the supply chain to drive them to provide plug and play alternatives that work on the UK network and standard substation designs.
- The report also analysed costs and potential developments of SF6 alternatives from manufacturers to develop a matrix of the most effective action by voltage level to reduce SF6 emissions from equipment. In summary the higher voltages (132kv and above) have a much better payback for £ per kg of SF6 emissions saved.

SF6 - Background – Slide 2

- The potential of changes to legislation has driven the more recent conversations, however stakeholders tell us they want DNOs to go further, and drive the change, rather than legislation forcing a change. Therefore, another element, not yet covered by ENA work, is the aim and ambitions of the member companies to work to their Science Based Targets, stakeholder challenge and corporate published aims for greenhouse gas emissions reduction. This could be ambitious by replacing SF6 switchgear at higher voltages when the alternatives are available, type tested and proven as encouraged by stakeholder groups.
- The challenge for ED2 will be the replacement of SF6 assets (at higher voltage unless legislation drives otherwise?) to reduce emissions that may not fall into the usual parameters of CNAIM, etc replacement (e.g. asset health, replacing before end of useful life) in order to meet the ambitious greenhouse gas reduction targets/corporate and government aims/stakeholder led challenges.
- SF6 emissions are already included within company Business Carbon Footprint (BCF) reporting hence arguably do not need further separating out. Any discussion on incentives should consider BCF as a whole.
- Ofgem state “we consider that DNOs should be preparing themselves for the possibility of increased external obligations and reporting on SF6 emissions, such as the proposed amendments to the F Gas Regulations 2009 and Greenhouse Gas Emissions Regulations 2013 being developed by government.”

SF6 DEWG 6 OFGEM Slide

Background

There is an ongoing review of F-gas regulations by the EU commission, which is likely to enforce a ban on SF6 being installed beyond a fixed date or could even mandate retrospective replacement. In addition to this there is increased stakeholder desire for DNOs to go further to make progress in this area.

Proposals brought forward:

- SF6 should be within the proposed scope of a RIIO-ED2 Environmental Action Plan and subject to annual reporting through the EIR.
- Maintain upfront funding for ongoing replacement of SF6 switchgear and if legislation mandates no new SF6 installations, increased ex-ante allowances would be needed to enable compliance. A reopener could be introduced to enable compliance if there is a retrospective ban.
- Options for within-period arrangements could be:
 - **Reputational incentive:** ENWL proposed maintaining reputational incentive in its current form to drive continued focus on leakage mitigation in this area. Enhance the current incentive by working towards a consistent methodology for measuring leakage.
 - **Financial incentive:** ENWL also proposed that a financial ODI could be developed to drive a more proactive approach to reducing SF6 in switchgear on the network. This would require clear measurable outputs against a defined baseline.
 - **Alternative financial incentive:** Under the proposed EPI mechanism from UKPN, SF6 is considered as part of scope 1 emissions.

Ofgem initial thoughts/questions:

1. In addition to upfront funding, that is sufficient to accommodate legislative change, would retaining a reputational incentive drive sufficient progress in this area? Is there stakeholder appetite and willingness to pay to drive a more proactive approach through a financial ODI?
2. Do you think DNO methodologies can be aligned in time to design such an incentive?
3. Are there alternative approaches we should consider? For example, a PCD?

SF6 DEWG 4 Options Slide 1

Working assumption for the purposes of the action (note this is not a formal prediction or a working assumption within the ENA SF6 working group at this time):

- Legislation will likely enforce no new SF6 installed beyond a fixed date (within ED2)
- Full retrospective replacement less likely, but a possibility (and poses a significant risk)

Funding and reopener in the event of wider legislative changes:

- Funding for the ongoing replacement of SF6 switchgear will be required (as it is now)
- Unit cost differentiation will need to be a consideration and cost assessment will be affected
- If legislation mandates no new SF6 installations, ex-ante allowances, reflective of unit cost differentiation will allow companies to comply
- Outright ban on all equipment with retrospective action needed will require a reopener (this will likely be known/strongly indicated by the end of 2020 but formally put into legislation until 2023) NB this reopener may not need to be specific for SF6, could be broader to reflect other environmental requirements

Reputation incentive:

- To manage losses, ensure mitigating actions are driven and focused on
- To ensure companies are proactively considering and progressing alternative options and companies technical policies are regularly reviewed
- Reported as now through BCF reporting, Environment Report and Ofgem Annual Report.

Financial incentive:

- To drive a higher level of ambition than would otherwise exist (speed up pace of replacement or company imposed target end date). Eg proactive SF6 equipment replacement ahead of asset health or load related drivers.
- Baseline would need to be set, with clear measurable outputs
- Would need to be backed by stakeholder support and willingness to pay (if not mandated)
- Consideration of interaction with other policy areas – what priorities should be incentivised on environmental impact

SF6 DEWG 4 Options Slide 2

Continue to install SF6 switchgear

- May not be a palatable option for stakeholders or companies in the medium/long term
- Companies may already be developing or have implemented policy changes to avoid this outcome

Install all new switchgear with non SF6 alternative

- At the end of it's life
- When a new asset is installed (ie brand new asset, not replacing an existing asset)

Take a voltage led/situational approach to whether SF6 or alternative is used

- Eg all 132kv uses alternative, or all indoor switchgear uses alternative

Proactively replace SF6 switchgear before the end of it's planned asset life

- Level of ambition may be limited by Ofgem economic assessments
- Level of ambition may be limited by financial, technical, space, or delivery challenges

Increase mitigating measures to manage and reduce losses

- Should be an activity which DNOs are continually addressing and seeking improvements

SF6 DEWG 4 Options Slide 3

The regulatory mechanism needs to be appropriate to the issue

	Pros	Cons
Funding	<ul style="list-style-type: none"> Provides DNOs with necessary funding to complete BAU asset replacement activity Allowances can be set with unit cost differential in mind TIM will drive companies to strive for efficiencies 	<ul style="list-style-type: none"> No incentive to deliver increased volumes/go at a faster pace No incentive to change technical solution if unit costs are not cognisant of cost differential of alternatives
Reputational	<ul style="list-style-type: none"> Provides stakeholders with transparency on DNO performance Ensures DNOs place appropriate focus on the area Provides Ofgem with clear and consistent metrics 	<ul style="list-style-type: none"> Will need to have the right measures to drive/change behaviour
Financial	<ul style="list-style-type: none"> Drives focus to deliver against targets Ensures alignment with a longer-term target in line with Net Zero 	<ul style="list-style-type: none"> Risk of mis-alignment to customer perceived value/other environmental aspects

SF6 OFGEM Summary – September 2020

Environmental area	ED SSMC	DDs [red text sets out key differences between ED and other sectors]
Sulphur Hexafluoride (SF ₆)	<ul style="list-style-type: none"> Efficient and economic actions to reduce the leakage rates and improve the management of SF₆ assets Leakage and/or asset reduction targets Report on total SF₆ bank and reduction rates using a common DNO methodology 	<ul style="list-style-type: none"> All TOs included an IIG strategy for RIIO-2 as part of their EAP. TOs committed to procuring equipment with IIG alternatives with lower GH warming potential than SF₆, where commercially available. NGET bespoke PCD for SF₆ asset intervention proposed by Ofgem, as replacement for NGET's proposed bespoke UM. In ET, there will be an IIG common ODI-F to incentivise network companies to reduce leakage of IIGs from their networks, by setting an annual target for leakage

Fluid filled cables



DECARBONISATION & ENVIRONMENT

Environmental Action Plan – Fluid Filled Cables

September 2020



Scottish & Southern
Electricity Networks



EAP FFC - DNO Feedback

DNO's measure and report:

- Reported on a annual basis through RRP for progress on FFC, leakage reduction and replacement and to inform NARM modelling of assets and prioritise economic and efficient asset interventions to resolve and reduce fluid leaks.
- Performance against ED1 target monitored locally and companywide via environmental KPI's and Env & Innovation Report
- Figures for fluid used to top up cables is held in a top-ups database

DNO Current Activities

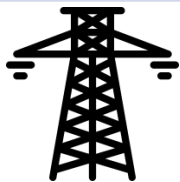
- Continually reviewing fluid filled cable asset base and monitoring all fluid top-ups.
- Use of PFT tagging to find leaks quicker and reduce loss, which will continue throughout ED2
- Removal of fluid filled cable, as will continued adherence to Operating code
- Remain focused on reducing cable fluid leakage, targeting the poorest performing circuits on our network, refurbish and replace poor condition circuits with modern solid cable
- Cross DNO collaborative work to identify new additives to cable fluid that would seal leaks where they occur without the need for leak location and excavation
- Project which reviewed the operating systems for FFCs so that cables can be operated at lower pressures without the risk of customer interruptions.
- 2 DNO's aim/aspiration is to remove all oil filled cables from their network by 2040

DNO ED1 Progress

- Detailed targets to manage FFC oil leakage as part of the Environment plan which supports the wider company Environment Strategy. This includes a 15% reduction in FFC oil leakage and replacement of 76km of FFCs by 2023.
- Work with the Environment Agency and other relevant bodies to target and improve the approach
- Volume of fluid lost has overall reduced but can be volume lost can be influenced by local environment and ground conditions
- Addressing leakage from fluid-filled cables is to replace them with alternative modern fluid-free cabling and to respond quickly to leaks on legacy circuits
- ED1 commitment to maintain a leakage rate of less than 30,000 litres per year by 2023. In 2019/20 a total of 21,616 litres fluid was used to top up cables (~2%) for one DNO.
- Detailed Data analytics to understand soil movement, climate change impacts, local variants (aquifers, water supply, SSI's, etc), age and asset health to understand risk from FFC and begin developing a mitigation/replacement plan.



Other Sectors Activities



Transmission activities

No obvious elements for the TO's in the DD's for T2



Gas activities

No obvious elements for the GDN's in the DD's for GD2. However, there was some mention of the use of improved data analytics for understanding the risk to/of underground assets and optimising replacement plans.



Other sectors activities

Oil pipelines now also have elements such as ground movement, climate, vibration (roads), etc included in the analysis of the risk of failure in addition to the traditional age and asset health elements.

Comments and Potential ED2 Implications for discussion

Currently bespoke targets/commitments on length of km of FFC replaced, Leakage reduction and PFT tagging for the DNO's for ED1.

Comment that a common approach may be needed on calculation of the FFC bank data for ED2 with a question of whether this should include all units and cylinders used for top-ups. Also comment of whether a common methodology is needed for the calculation of oil loss when leaks occur.

A high level analysis indicates that the average age of FFC on the network is 55 years.

There is a there is a memorandum of understanding with the EA (ENA) for FFC. Some DNO's have had bilateral engagement with the EA (and other related stakeholders) on their FFC strategy and specific elements of the actions required when leaks occur and where the EA would support FFC replacement.

Some DNO's are using up-to-date data analytics and analysis for the latest business strategies. As a result the understanding of the risk of FFC leakage has been able to progress significantly from what was able to be analysed for the setting of ED1 targets.

Some DNO's have identified that there are FFC locations where data analytics have enabled elements like soil movement combined with local features such as aquifers/SSI and asset health to better quantify the risk to the environment from FFC and thus begin to develop specific programmes of work that may be required in ED2 to address this potential risk.

Some DNO's mention an aspiration / aim to remove all FFC by 2040. This would require an increase in the capital programmes starting in ED2.

Supply chain, Resource use and waste, and Air quality

DEWG Action

Supply chain, Resource use
and waste, and Air quality

September 2020



Supply chain – approaches in other sectors

Sector	Examples identified
GDNs	<ul style="list-style-type: none"> • Supplier code of conduct: Cadent published its code in March 2020, with specific requirements for suppliers to manage waste and reduce energy usage. It also requires suppliers to set targets for environmental performance and to report against these. Other GDNs currently have a more limited approach to environmental performance in the supply chain – all have committed to establishing new codes for RIIO-2. • Reporting: All GDNs committed to achieving at least 80% of suppliers (by value) meeting the environmental standards in codes by the end of RIIO-2. WWU propose to also report the % of suppliers exceeding this standard, and to undertake environment focused audits focusing on the top 80% by value. • Metrics: Several GDNs committed to working in 2020 to establish baseline metrics for supply chain performance and reporting. Others signal intention to require suppliers to report on carbon emissions of the materials they provide (focusing on key inputs such as PE pipes and Asphalt).
TOs	<ul style="list-style-type: none"> • Supplier code of conduct: National Grid already have environmental standards within a group level code, with specific requirements for suppliers to manage waste and to reduce GHG emissions. It also requires suppliers to implement environmental strategies and to target improvements. SHET propose to build on their existing Responsible Procurement Charter to develop a code, whilst SPT committed to establishing new codes for RIIO-2. • Reporting: All committed to achieving at least 80% of suppliers (by value) meeting the environmental standards in codes by the end of RIIO-2. NG already achieve this at present through their work with the Carbon Disclosure Project. They propose to go further in RIIO-2 and to target 75% of their top 250 suppliers having carbon reduction targets. • Metrics: SPT and SHET committed to working to establish baseline metrics for supply chain performance and reporting. SPT also committed to developing a carbon metric for inclusion in tender evaluation. SHET report on metrics such as Carbon, Waste and Resource Use and Local Content.
Water	<ul style="list-style-type: none"> • Supplier code of conduct: Severn Trent have established a Sustainable Supply Chain Charter signed by all priority suppliers – this accounts for around 56% of supply chain spend. Compliance is compulsory for all new suppliers and is within terms and conditions. Wessex has environmental sustainability considerations embedded within its supply chain approach. • Metrics: Severn Trent agree sustainability related KPIs with suppliers for individual contracts. A dedicated contract management team ensure performance is monitored and improvements made where necessary. Anglian Water have achieved PAS2080 (Carbon Management in Infrastructure) verification and were involved in its development. • Reporting: Severn Trent report against their supply chain strategy quarterly to senior management, and to their Corporate Sustainability Committee annually. Anglian have developed a carbon capture tool to support reporting through its supply chain.

Focus on Supplier Codes.

Work on reporting and targets for Suppliers to improve environmental performance.

Supply chain – current DNO approaches

- All DNOs have sustainable procurement embedded
- Ongoing contracts have sustainability management which varies by type of contract/goods/services
 - In some cases mandatory ISO14001 requirement
- Ongoing engagement with supply chain to improve environmental performance and ability to report including use of Science Based Targets where possible

**Largely covered by requirement to have Supplier Code
Coordinated approach to use of supplier reporting in other areas?**

Resource use and waste – approaches in other sectors

Sector	Examples identified
GDNs	<ul style="list-style-type: none"> • Zero waste to landfill commitments: Networks commitments focus on avoidable waste. Cadent already aim to reach a goal of zero avoidable waste to landfill by 2021/22. WWU aim to be a zero-waste company by 2050, and to send zero waste to landfill by 2035. NGN propose zero disposal of recyclable or recoverable waste to landfill by 2025/26. SGN propose to achieve zero waste to landfill across office, depots, reinstatement, major projects, and gas holder dismantlement for non-hazardous waste by 2026. • Regulatory measures: Networks already perform against targets for excavated spoils waste sent to landfill and virgin aggregate used for backfill. All propose to continue improving performance (with several aiming reduce spoil to landfill to 0%). • Plastic: Several networks aim to remove use of single use plastic in their offices/depots by the end of RIIO-2. Cadent extend this to target zero avoidable plastic in the supply chain. • Circular economy: All networks have committed to increasing focus on the circular economy within their supplier codes.
TOs	<ul style="list-style-type: none"> • Zero waste to landfill commitments: NG propose to target zero waste to landfill for construction projects by the end of RIIO-2 (currently achieving 97-98% in the two transmission businesses). SPT propose to divert 95% of waste from landfill by Dec 2023, with the aim to recycle or reuse 100% of waste by 2030, and zero waste by 2050. SHET propose zero waste to landfill (excluding compliance waste) by the end of the RIIO-T2. • Plastic: NG propose to remove single use plastics from offices by 2020/21. SHET propose to include a specific measure on use of single use plastics. • Reporting: Metrics proposed by TOs include breakdowns of waste produced, disposal routes, carbon saved from landfill diversion, water usage, number and type of assets refurbished, embedded carbon savings from refurbishment, and waste intensity on construction projects. • Circular economy: All have committed to increasing focus on the circular economy within procurement. NG propose measuring the number of pilots implementing circular economy principles.
Water	<ul style="list-style-type: none"> • Zero waste to landfill commitments: Anglian are targeting zero waste – in 2018/19 they sent 14,093 tonnes of waste to beneficial use. Severn Trent have focused on waste streams from facilities management and operational waste, Biosolids and IT hardware – landfill diversion rates are as high as 99% in some areas. They have an aspiration to achieve zero waste to landfill. Wessex in 2019/20 averaged 99.75% of all waste diverted from landfill – they are the only water company that has committed to ensuring all possible waste from the business avoids landfill. • Plastic: Severn Trent have removed single use plastics from head office and plan to roll this out to other sites. Wessex screen water recycling centres for plastic. Thames is installing over 100 fountains in London to reduce single use plastic.

Focus on commitments of zero waste to landfill, reduction in plastic use and waste and use of circular economy principles.

Resource and waste – current DNO approaches

- All are working to reduce overall volume of waste includes:
 - Work to reduce initial levels of waste
 - Recycling and re-use where possible
 - Working with waste contractors to reduce waste to landfill
- Examples of work with suppliers to reduce packaging
- Examples of working with contractors to improve data reporting to help manage waste processes

**Work on a common metric/methodology/reporting around waste diverted from landfill?
Could metrics separate for operational vs office/depot waste?**

NOx and air quality – approaches in other sectors

Sector	Examples identified
GDNs	<ul style="list-style-type: none"> Fleet: Networks commitments focus on the impact of their fleets on air quality, often identified as a large component of their business carbon footprints. All are starting from a position where a high proportion of fleet is made up of diesel/petrol vehicles – all make commitments introduce ULEV where possible, and to refresh existing fleets to Euro VI compliant vehicles across ED2. All GDNs also make commitments to increase proportion of ULEVs in company cars. Wider commitments: Several GDNs link their bio-diversity commitments to air quality - this tends to focus on commitments to plant trees in RIIO-2. Others commit to organize work to avoid areas that have larger impacts on air quality, or to consider the impact on vulnerable customers.
TOs	<ul style="list-style-type: none"> Fleet: Networks commitments focus on the impact of their fleets on air quality, often identified as a large component of their business carbon footprints. SPT propose to decarbonize 100% of it's operational fleet (72 cars and vans) by the end of RIIO-2. NG propose to decarbonise 100% of their operational fleets where viable market alternatives exist as of today. All TO's also make commitments to reduce emissions from business travel. Wider commitments: NGGT propose to reduce NOx emissions through compressor emission compliance. They propose to replace 2 compressor units in RIIO-2.
Water	<ul style="list-style-type: none"> Fleet: Anglian are encouraging the adoption of EVs and hybrids as company cars and are adding to an existing 52 charge points. They are expanding their electric van fleet to close to 100 in the next 12 months. Severn Trent are now only purchasing electric cars. They are installing over 300 charge points across 65 sites over the next 18 months. They are aiming for 100% electric cars by 2026 and 100% electric vehicles by 2030 (if available). For HGVs and tankers, Severn Trent are working with electric vehicle suppliers to speed up the process of achieving availability of electric tankers. They are also exploring alternative low-carbon options such as hydrogen and biogas.

As expected, strong focus on emissions from fleets but also other links to areas such as biodiversity. Gas transmission identified compressors as a source of NOx with plans to improve through compliance and replacement.

NOx emissions – current DNO approaches

- Only one example of consistent measurement and reporting of NOx specifically
- Strong links with BCF of vehicle fleet
- Areas with significant contribution to NOx (i.e. fleet) have been targeted for improvements either through vehicle type or fuel use
- Some examples of improvements being targeted on temporary generation

Could we work on a common metric on NOx or NOx reduction? (Noting links with BCF)

Biodiversity and Noise

DEWG: Environmental Action Plan

Biodiversity & Noise

September 2020



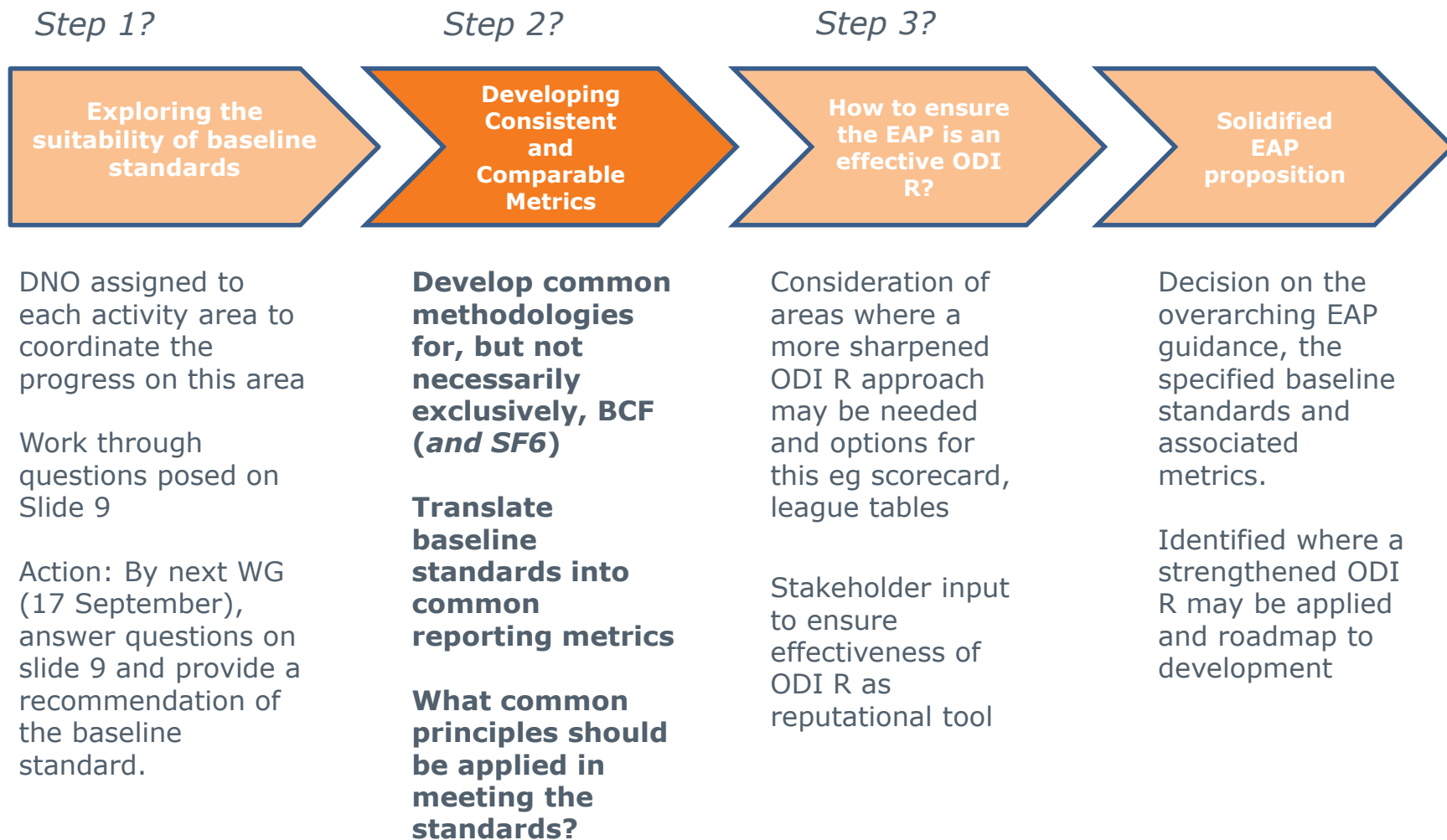
Biodiversity

- Biodiversity is a relatively new area for DNO's:
 - Some work has previously been undertaken to enhance local ecosystems and support pollination strategies but not formally under the guise of biodiversity or net gain
- No standardised methodology for DPCR5 or ED1 – DNO's chose own methods of developing ecosystems and data capture / reporting.
- Models and frameworks to determine level of biodiversity net gain do exist.
- Methodology for ED2 should be based on DNO utilising the same model / framework to determine biodiversity levels and relative net gain.
- Model to be used by DNO's should be determined by DNOs via ENA Environment Committee to pick the model most suited to our requirements.
- Methodology should include agreed biodiversity criteria specific to our land and its use.

Noise

- Current methodology reactive to customer complaints and enquiries received.
- Generally speaking very few interventions per year:
 - *Northern Powergrid Northeast had only 16 interventions during DPCR5 and 12 so far in ED1*
 - *Northern Powergrid Yorkshire had only 12 interventions during DPCR5 and 13 so far in ED1*
- Methodology for ED2 likely to be similar to that of ED1 – i.e. reactive to customers reporting noise issues
- Suggestions for improvements may be to:
- Establish clear trigger points for intervention to be formally captured as such
- Establish escalation procedure leading DNO to take action to resolve noise issue
- Establish clear data capture and reporting methodology

AOB and next steps



Proposed focus of next session (8 October):

- What is the appropriate scope and design of an **environmental reopener**?
- How to determine the funding pot for the **visual impact allowance**?
- **Business Plan Data Templates (BPDTs)** – need to reflect the proposed approach in the BPDT, including any common methodologies

Our core purpose is to ensure that all consumers can get good value and service from the energy market. In support of this we favour market solutions where practical, incentive regulation for monopolies and an approach that seeks to enable innovation and beneficial change whilst protecting consumers.

We will ensure that Ofgem will operate as an efficient organisation, driven by skilled and empowered staff, that will act quickly, predictably and effectively in the consumer interest, based on independent and transparent insight into consumers' experiences and the operation of energy systems and markets.