

RIIO-ED2 Decarbonisation and the Environment Working Group: session 10



RIIO-ED team
8 October 2020

Aims of session:

- Continue development of EAP minimum requirements and of potential metrics
- Update on key issues raised and suggested next steps on environmental reopener and visual amenity
- Update and next steps on Business Plan Data Templates

Timings	Agenda item
10:00-11:00	1. Updates on actions from previous DEWG (A) <ul style="list-style-type: none"> - Criteria for an IIG strategy (SSEN) - Perspective on losses from SHE Transmission - Criteria for a losses strategy (SPEN)
11:00-11:30	2. Updates on actions from previous DEWG (B) <ul style="list-style-type: none"> - Applicability of metrics for embodied carbon (ENWL) - Update from WPD on work by Anthesis on embodied carbon (WPD) - Proposed approach to FFC, Supply Chain, Resource Use and Waste, Air Quality and Biodiversity (UKPN and NPg)
11:30-11:45	3. Business Plan Data Templates (Ofgem)
11:45-12:00	Break
12:00-12:30	4. Environmental reopener and visual amenity (Ofgem)
12:30-12:45	5. AOB and next steps

Updates on actions from previous DEWG (A)

SF6 – IIG Strategy

8th October 2020



Scottish & Southern
Electricity Networks

DNO IIG Strategy – EAP Options

- SF6 EAP sections to consider:
 - Overall volume of installed SF6 (Bank)
 - Overall leakage of SF6
 - Installed SF6 bank by voltage band
 - Leakage of SF6 by voltage band*
 - Carbon equivalent of IIG Gases installed on the network (bank inc SF6 and new alternative gasses)
 - Volume of SF6 substituted by alternatives
 - Carbon equivalent reduction by substituting with alternatives
 - SF6 leakage reduction as a percentage of installed bank

*need to confirm if at low voltage sealed unit level is measurable

DNO IIG Strategy

- Key next steps:
 - ENA group to develop the overall strategic approach for SF6, develop a common methodology and understand the legislative scenario impacts (timetable to be determined)
 - Work with manufacturers to develop sustainable and economic alternatives to SF6 switchgear that work on the UK network
 - Target voltages and applications where an alternative is possible and the benefit from replacing SF6 is greater than the carbon footprint and is cost efficient
 - Combine with load growth and asset replacement due to LCT / Net-Zero (strategic investment, NARMS, etc) for balanced programme
 - For existing equipment improve leakage detection and remediation techniques
 - DNO Science Based Targets to include SF6/IIG
- Options for DNO's to consider:
 - Install all new switchgear with SF6 alternatives where possible
 - Have voltage led approach for replacement/installation of SF6 switchgear alternatives
 - Proactive programme to replace SF6 switchgear ahead of the end of useful life
 - Continue to install SF6 and increase mitigation measures and leakage prevention

Lessons learned from T2

Lessons learnt from setting our Science Based Target

8th October 2020

Alex Sutton, Sustainability Officer SSEN Transmission

Outline

1 . Our Science Based Target

- Overview of Targets

2. Approach to setting our target and lessons learnt

- Developing our target and action plan for RII0-T2
- Science Based Target initiative guidance and validation process

3. Treatment of Transmission Losses

- Regulatory Context
- Defining Transmission Losses as our Scope 3 emission
- Our Transmission Losses Strategy

4. Possible Considerations for Distribution Losses

- FES 2020 projections
- What action and benefit will your Science Based Target promote?

5. Questions

1. Our science-based target aligned to the 1.5°C pathway



- **Reduce our absolute Scope 1 and 2 GHG emissions 46% by FY 2029/2030 from a 2018 base year.** We intend to do this by making our substations more energy efficient, replacing our operational vehicle fleet with EVs and tackling SF₆ emissions. This builds on SSEN Transmission's commitment to reduce emissions by one third by 2026 as part of its RIIO-T2 Business Plan, A Network for Net Zero.
- **Reduce Scope 3 Transmission Losses GHG emissions 50% per gCO₂e from losses/kWh by FY2029/2030 from a 2018 base year,** by implementing a Transmission losses strategy and connecting more renewable electricity to our network in the north of Scotland.
- **Work closely with our supply chain so that two thirds (67%) of our suppliers by spend will have a science-based target by FY2024/2025** and so reducing our indirect emissions.



www.ssen-transmission.co.uk/riio-t2-plan/

2. Approach to setting our target and lessons learnt



SSEN Transmission committed to setting a science-based target in May 2018

Review

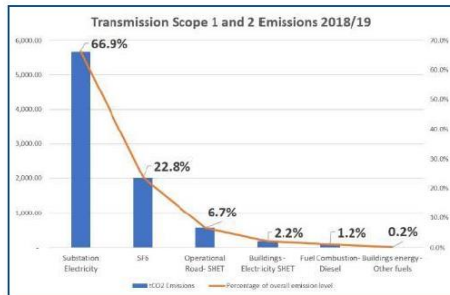
- Review baseline GHG data and SBTi guidance.
- Define strategy - target year, baseline and reduction pathway.
- Identify priority areas & reduction initiatives.

Modelling

- Collate existing studies.
- Forecast network development GHG impact
- Scenario modelling of reduction initiatives and scale of initiatives required.

Plan

- Proposals submitted in RIIO-T2 business plan.
- Submit SBT application for target approval.
- Begin implementation...



2. Science Based Target initiative guidance and validation process

Scope 1 & 2 emissions

- Absolute Reduction (irrespective of network growth)
- Most recent year for baseline recommended
- Targets 5-15 years ahead
- No offsetting allowed

Pathway	Absolute contraction – annual linear reduction over target period
2 degrees	1.23%
Well below 2 degrees	2.5%
1.5 degrees	4.2%

Scope 3 emissions

- A Scope 3 target is required if a company's relevant Scope 3 emissions are 40% or more of total scope 1, 2, and 3 emissions
- Target options: Absolute, economic intensity or physical intensity.

Independent review and validation process

- The Science Based Target initiative (WRI, WWF, CDP, UN Global Compact) undertake an independent review and validation of your target submission against the SBTi criteria and GHG protocol.

Lessons Learnt

- The allocation of GHG emission scopes (and their associated materiality) influences the SBT action that will be taken.
- The GHG Protocol Scope 3 Evaluator helps to provide an initial view of your total scope 3 emissions.
- The SBTi offer a "Preliminary" validation process to provide companies understanding if their proposed target would be approved ahead of internal governance.

3. Treatment of Transmission Losses – regulatory context

Ofgem RIIO-T2 Draft Determination – Electricity Transmission Annex

Table 4: TOs' proposals for science-based targets for reducing BCF

Network company	Proposals in TOs' EAPs
NGET	Commitment to target 34% reduction in BCF in 2025-26 compared to 2018-19 and a science-based target (SBT) for a 50% reduction in scope 1 and scope 2 emissions by 2030.
SHET	PCD for target reduction in BCF by 33% by 2025-26 compared to 2018-19 and long-term reduction target of 45% by 2030.
SPT	Commitment to adopt an SBT for BCF ahead of RIIO-2. Additional EAP Commitment to adopt an SBT for scope 3 emissions by 2023.

Note: The TOs' BCF targets cover scope 1 and scope 2 greenhouse gas emissions but exclude electricity losses.³²



“Having considered it further, we do not think it is appropriate to emphasise loss minimisation in a Licence condition for the TOs. This is because transmission losses are largely the result of the energy flows and loading on the system, which the ESO controls. The TOs have a partial influence on transmission losses through decisions they make on asset procurement and network design. We think that a Licence condition to minimise losses could give undue weight to reducing losses in network investment decisions over factors such as cost and system need, which are important considerations to ensure that any proposed investment is economic and efficient” (p38).”


Both SSEN Transmission and NGET have proposed a Scope 1 and 2 science based target that exclude Transmission losses.

3. Defining our Transmission Losses as our Scope 3 emission

SSEN Transmission is the Transmission Owner (TO) for the North of Scotland but is not the system operator of the network; this is the responsibility of nationalgridESO.

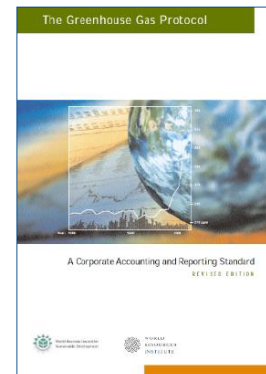
Other UK Electricity System Actors Control Over Transmission Losses Emissions

	UK Electricity Market	
Controls the power flows across the GB Transmission Network to ensure safe and stable network operation.	Energy trades (dispatch of generation and demand) occur on the electricity market.	Ofgem makes final decision on revenue allowed for network reinforcements.
Balances the electricity system.		
Monitors UK Transmission Losses across the network and reports Losses annually.		

 Scottish & Southern Electricity Networks TRANSMISSION
Owens, maintains and builds the Transmission Network to fulfil connection requests.

Substation Electricity Use (Loss) = **Scope 2**
Wider Transmission (line) Losses = **Scope 3***

GHG Protocol: "Scope 3 emissions are a consequence of the activities of the company, but occur from sources **not owned or controlled by the company.**"



*These scope allocations are independently assured in the SSE Group GHG Reporting and is compliant with the GHG protocol.

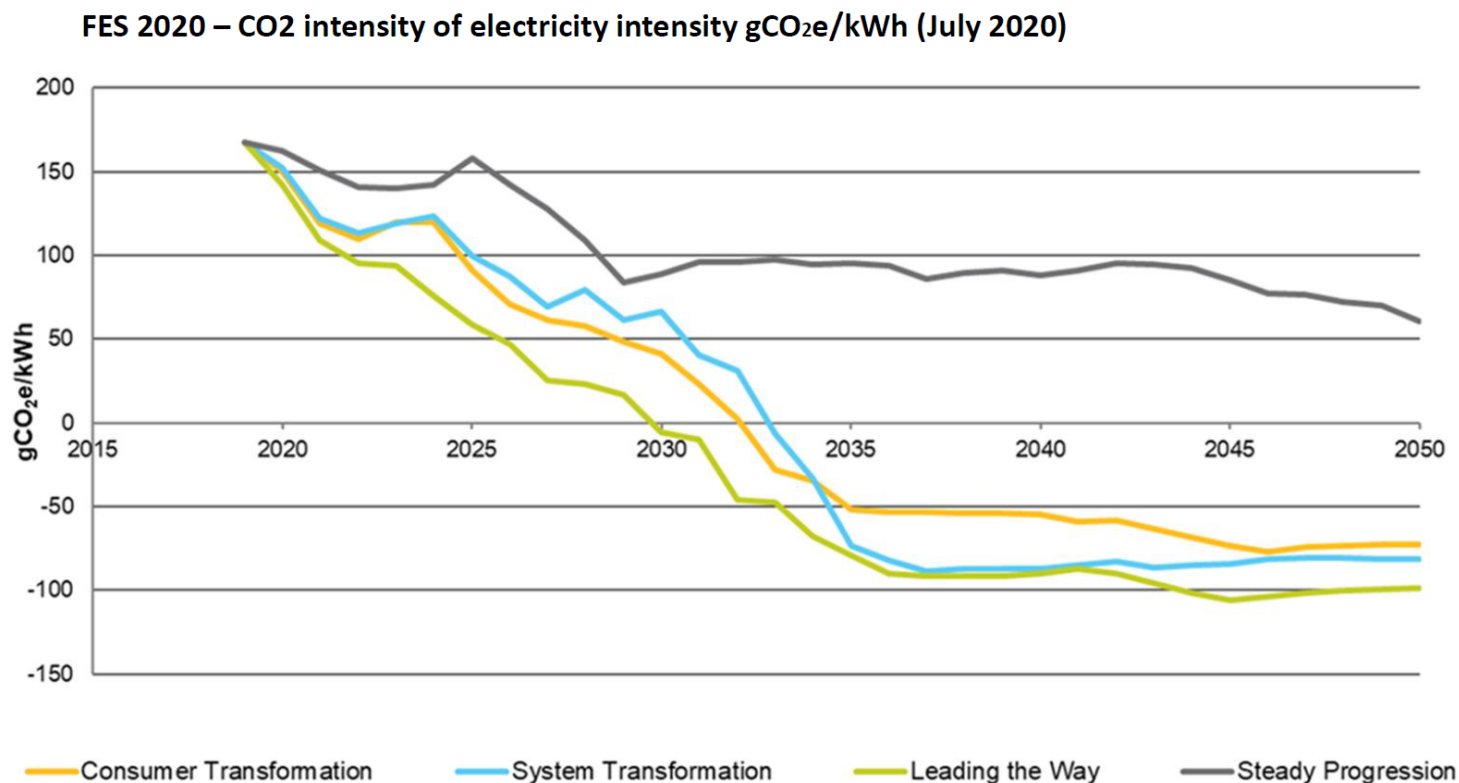
3. Our Transmission Losses Strategy



RIIO-T2 Transmission Losses Strategy

- Introduce a clear transparent methodology for calculating lifetime losses of new assets in our procurement process.
- Explore enhancements in annual losses reporting.
- Include losses accounting within our new whole system cost benefit analysis framework.

4. Possible Considerations for Distribution Losses – FES 2020 projections



In three of the FES 2020 Net Zero Scenarios - the electricity network reaches negative emissions by 2033.

4. Possible Considerations for Distribution Losses

- Network development impact on losses vs. grid decarbonisation rate
- Focus
- Materiality and action
- Risk
- Cost benefit analysis

**What action and benefit will your
science-based target promote?**

5. Questions

Thank you for listening

Updates on actions from previous DEWG (A)

Thank you



RIIO-ED2 DEWG ED2 Losses Strategy - Criteria

October 2020

ED1 Losses Strategy

RIIO-ED1 Licence Obligation

- SLC 49 requires DNOs to design, build and operate their networks to **ensure losses are as low as reasonably practicable** and to maintain and comply with its Losses Strategy.
- The licence requires the DNO to try to recover the value of electricity theft if the costs of doing so are not likely to exceed the sums recovered.

RIIO-ED1 Losses Strategy

- Each DNO must have an up-to-date and publicly available losses strategy.
- The strategy should explain the overall approach to managing losses, and identify specific projects or actions with associated timescales, deliverables, costs and benefits.
- Actions are justified with the associated benefits (e.g. carbon abatement) using a “whole life costing” and CBA.
- DNOs’ strategies should demonstrate use and sharing of best practice.
- DNOs should be clear on the specific activities they intend to carry out.



ED2 Context

Context

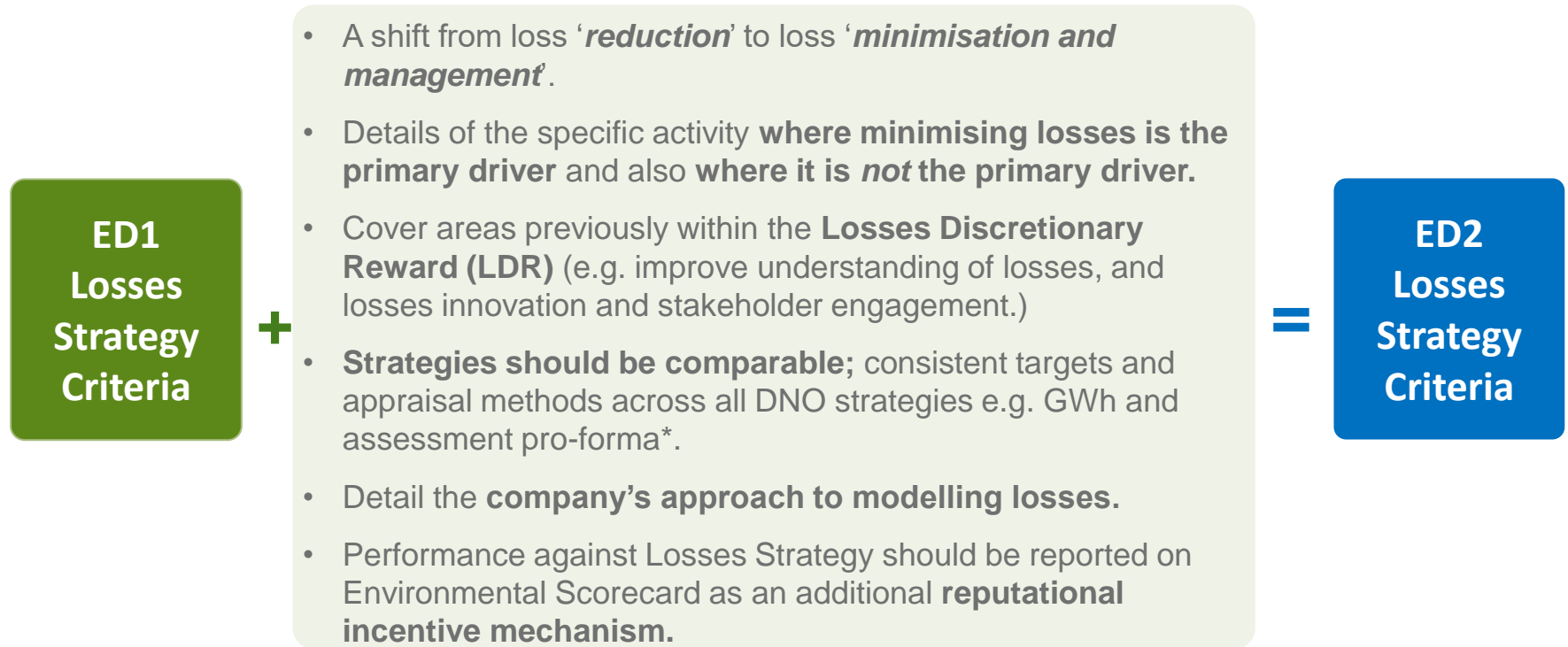
- In the context of **Net Zero**, asset utilisation and technical losses will increase. The generation mix will also change, becoming greener. Future losses cannot be meaningfully benchmarked against historic values and levels.
- Metering inaccuracies (ca. 2%) represents significant uncertainty, and will not be resolved by smart metering. Settlement profiles (estimated consumption curves) and natural conveyance settlement lag continue to contribute to uncertainties.
- Increased monitoring and smart meter data will unlock new insights into losses on the network.
- DNOs currently have various ways of modelling losses.
- The ENA Technical Losses Working Group (TLWG) has found future losses management can be effectively regulated using a consistent cost-benefit analysis mechanism over a financially-incentivised mechanism.

ED2 SSMC Proposals

- DNOs to implement a **Strategy** to manage losses over the long term.
- Contribute to the evidence base on the proportion of losses that network companies can influence/control.
- Report on the progress of implementing the losses strategy and associated performance measures.
- Removal of the Losses Discretionary Reward, which is difficult to compare.



ED2 Losses Strategy Criteria – Building on ED1



Losses Strategy Criteria should be Developed Collaboratively.

- * Potential to develop via ENA TLWG



ED2 Losses Strategy – LDR

The LDR has driven useful change for industry by expanding **understanding** and ability to **manage losses**, driving **innovations** and **sharing best practices**.

These areas should be included within ED2 Losses Strategies.

Area	Examples
<i>Understanding Losses</i>	<ul style="list-style-type: none"> • Smart metering and network monitoring, when available, will help to identify areas of greater losses in the network. • Strategies should contain details of progress in understanding losses
<i>Sharing of best practice</i>	<ul style="list-style-type: none"> • Strategies should demonstrate use and sharing of best practice (continuation from ED1). • Industry engagement and sharing of best practice will continue under the ENA TLWG but companies should look to expand this activity.
<i>Innovation</i>	<ul style="list-style-type: none"> • Future losses innovations should be funded by wider ED2 innovation mechanisms to avoid duplication/crossover. • Plans for innovative ways to manage losses should be covered in the strategy.

Companies ED1 LDR activities should be expected to feed into ED2 losses strategies.



ED2 Losses Strategy – Targets & Assessment

- DNOs may set quantitative targets for a particular activity backed up by a CBA.
- CBA should be consistent across DNOs, and this should be detailed in the Strategy.
- Targets should be presented in the Strategy in a comparable format across all DNOs (e.g. GWh of **avoided/ minimised** losses).
- Options for assessing performance were considered by TLWG and WSP.

A reputationally assessed scoring mechanism with comparable strategies

Name	Description	Output	Pros	Cons
Published Losses Strategy – No Scoring	This should be based on transparency, allowing interested stakeholders to form their own views (i.e. progress reported versus the losses strategy).	Report detailing progress against the losses strategy.	No scoring or comparison between DNOs.	On its own, may not provide a sufficient incentive for DNOs to optimise their performance.
Published Losses Strategy – With Scoring	The performance of DNOs could be monitored versus the Losses Strategy and this could be scored (e.g. red, amber, green scoring).	RAG showing how well the DNO met their Losses Strategy commitments.	A measurable incentive without specific financial penalties.	The published losses strategies between the DNOs are likely to be quite different. There will be comparison between DNOs, which has drawbacks.
Published Losses Strategy with agreed areas and elements	The DNO could be monitored versus a set of agreed areas, for example understanding of losses, engagement and knowledge sharing, BaU Integration. Could include output from the CBA incentive mechanism.	Score showing how well the DNO has performed against each of these areas.	A measurable incentive without specific financial penalties. Elements can be obtained from previous incentive schemes.	Difficult to associate elements with a physical number-based scoring system, and some of the elements may not be applicable to certain DNOs.

Figure 1: Comparison of different reputational incentive mechanism approaches
(Source: CEP023 Technical Losses Mechanism Study, WSP, September 2019)



ED2 Losses Strategy Scoring

- It is not possible to evaluate absolute losses, or to fairly compare absolute levels of improvement.
- Assessment should be of **performance against ambition**.
- The ambitiousness of the targets should also be scored as an incentive.
- Scoring can be weighted towards **ambition** or **performance** as below.

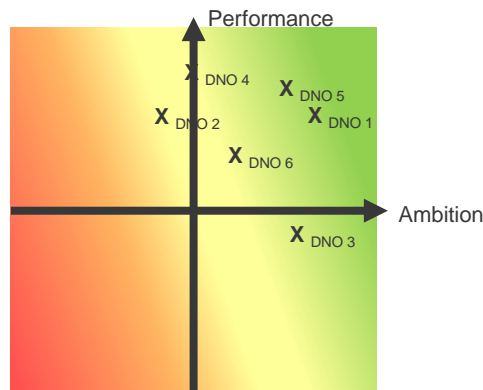


Figure 2: Scoring weighted towards ambition

Ranking:
DNO 1
DNO 5
DNO 3
DNO 6
DNO 4
DNO 2

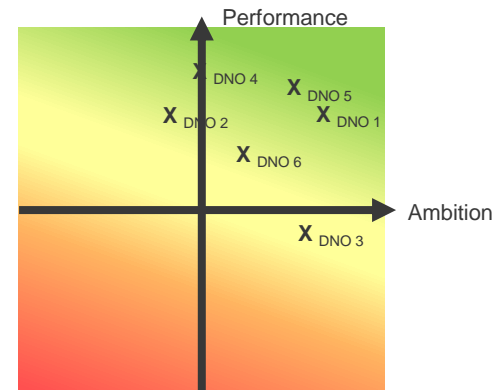


Figure 3: Scoring weighted towards performance

Ranking:
DNO 5
DNO 1
DNO 4
DNO 2
DNO 6
DNO 3

Weighting favouring performance incentivises out-performance.



ED2 Losses Strategy Criteria – In Summary

- Each DNO must have an up-to-date and publicly available losses strategy.
- The strategy should:

Describe company's approach to understanding and modelling losses.	Clearly identify specific projects or actions with associated timescales, deliverables, costs and benefits.	Justify actions with the associated benefits (e.g. carbon abatement) using a "whole life costing" approach and CBA.	Be clear on the specific activities carried out where minimising losses is the primary driver, and also any activities where this is not the primary driver.	Describe and demonstrate the use and sharing of best practice.	Describe a company's approach to innovation around losses
This should incorporate areas previously covered by the LDR.	These benefits should be in a comparable format, e.g. everything in GWh of avoided losses.	The CBA approach should be consistent across DNOs, and this should be confirmed by the strategy.	The Strategy should focus on 'minimising' rather than 'reducing' losses.	Both national and international practices could be considered. Collaboration should be highlighted.	Future losses innovations should be funded by wider ED2 innovation mechanisms to avoid duplication/crossover

- The strategies may be used to evaluate a reputational incentive mechanism to replace the financially incentivised LDR.
- A summary of the DNO Losses Strategy activities must be included within DNOs Environmental Action Plan.

This approach should be developed collaboratively and we are seeking views on these criteria.



Updates on actions from previous DEWG (B)



Environmental Action Plan: Embodied carbon

DEWG Presentation
October 2020

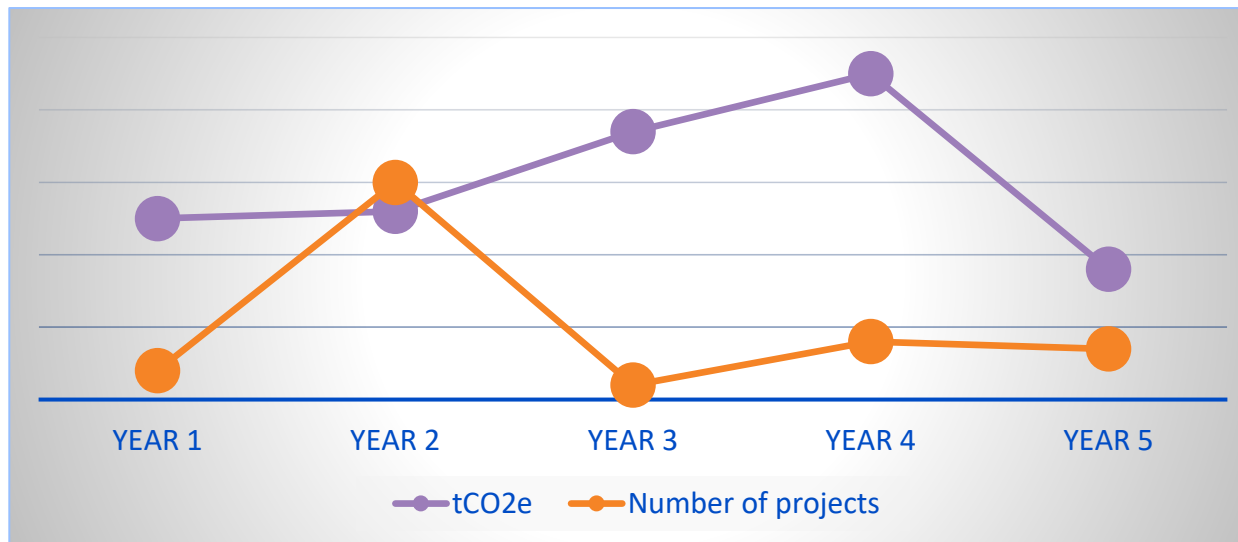
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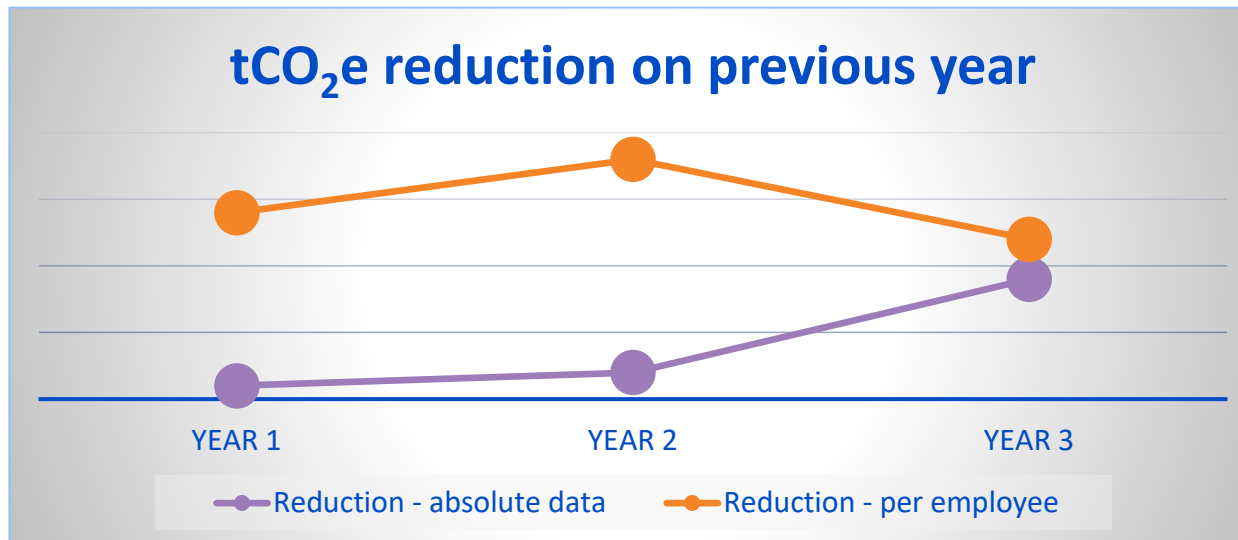


- Accurate reflection of the actual embodied carbon with projects
 - Does not account for other factors such as the tCO₂e relative to the size or number of projects
- May provide incentive to target projects where the biggest reductions can be made
 - Potentially provides less incentives to target reductions on smaller projects



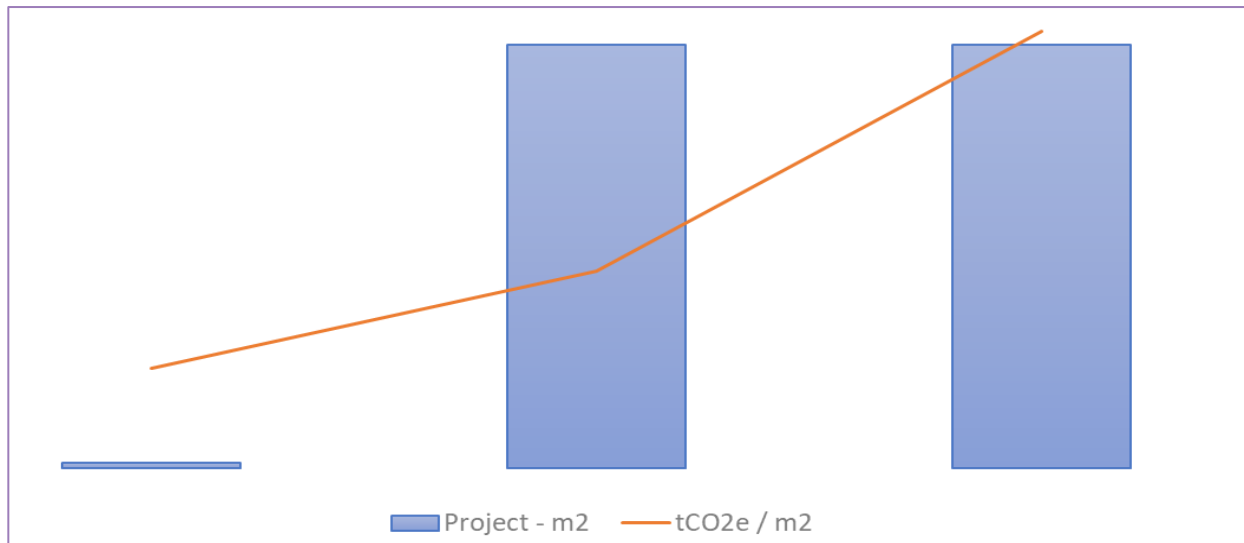


- Often applied as a metric within the BCF of an office environment
- Does it work for unmanned electrical assets?





- Common metric for many new infrastructure projects
- Differentials between new builds and refurbishment / replacement
- Likely to be some baseline embedded carbon so small projects could appear more carbon intensive



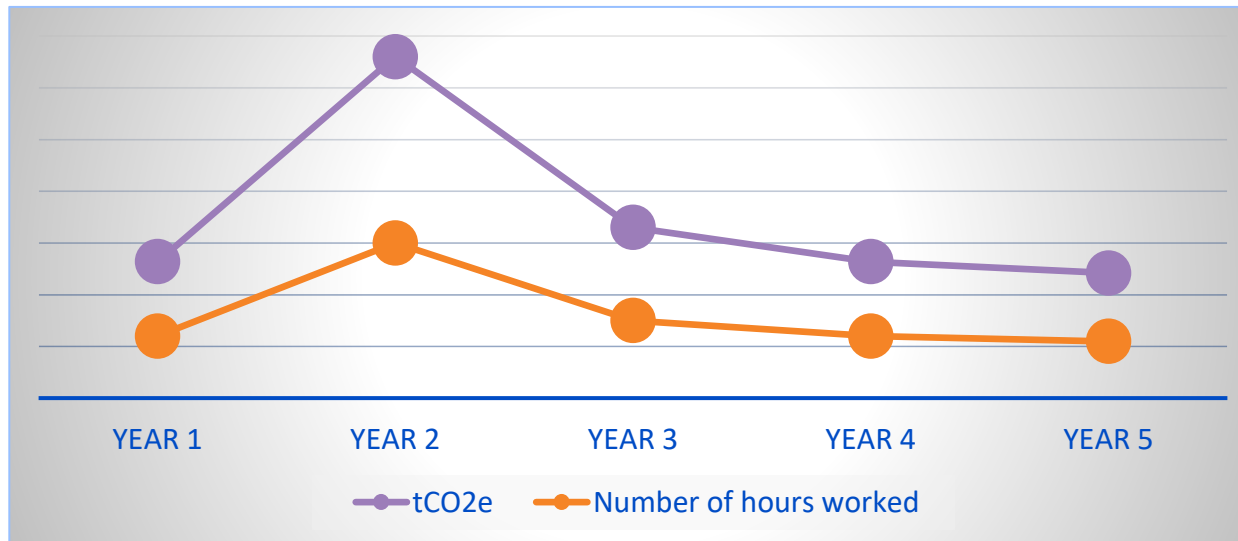


- Changing costs, such as the yearly inflation, may make comparison between different years less accurate
- Could this metric have an adverse impact on cost efficiencies by spending more consumer money to make gains in tCO₂e





- Potentially provides a more meaningful metric, if there is some correlation between the scale of the project and the hours worked
- Could be some increased efficiencies for larger projects





- Opportunities for DNO's to collaborate with the supply chain to reduce embodied carbon in the network
- Traditional metrics used for BCF may not be suitable for embodied carbon
- Is an intensity ratio appropriate for a relatively new activity?
- Is applying a metric appropriate at this stage?
 - Commitment to establishing a meaningful baseline during RII0-ED2 is appropriate
- DNO collaboration with Anthesis may inform this area

BPD

- A [draft BPDT](#) was published alongside the SSMC and we are aiming to publish the final BPDT alongside the SSMD
- Between now and December, the BPDT needs to be developed to fully reflect the ED2 environmental approach
- The relevant tables currently in the draft BPDT are CV20 Visual Amenity, CV21 Losses and CV22 Environmental Reporting
- To incorporate the EAP, we will need to consider changes to CV21 and CV22. To bring together all EAP elements, we can refer to the other sectors EAP BPDT but we consider it is not suitable for a 'copy paste'.
- For ED2, we want to improve how the costs are captured in the BPDT. This is to support DNOs justification's of their environmental activities.

We want to ensure the BPDT can support the aims of the environmental package and enable the companies to justify their initiatives appropriately.

What do we need from the group? (progressed through the BPDT WG)

- CV20 Visual Amenity – review Ofgem proposed amendments to CV20
- CV21 Losses – how can CV21 can improved (and other tables) to ensure losses costs are appropriately captured and justified? Should elements of Table E4 be incorporated?
- CV22 Environmental Reporting – how to incorporate the EAP into the BPDT and what are the implications for CV22?
- BCF – We propose to include table E3 from the E&I RRP in the BPDT. How does the table need to be changed to ensure consistency with the common methodology?

Are there any additional issues to raise?

Next steps

- If you already have views on the above, even preliminary, please submit these to us by Oct 15th COP.
- We will discuss this in greater detail at the 20th Oct WG.

Break

Environmental reopener and visual impact allowance

SSMC proposal: Annex 1

- We propose to introduce a re-opener mechanism to respond to environmental legislation that would require a material change in the approach to companies' EAPs.
- Ofgem or the network companies would be able to trigger the reopener.
- For national legislation, we expect companies to work together to demonstrate the material change in approach needed. For regional legislation, all companies impacted should work together to do this.
- There may be some instances where it could overlap with the proposed scope of the Net Zero reopener, which is to enable us to reset allowances and other elements of RIIO-ED2 in order to align the price control with Net Zero targets. In such instances, we would use the most applicable mechanism to adjust the price control and achieve the legislative objectives. We consider this re-opener would be more suited for more distinct changes in environmental legislation that require DNOs to take action in order to ensure compliance.

SSMC proposal: Annex 2

- Common reopener parameters proposed for RIIO-ED2:

Reopener parameters	Consultation position
Reopener application window	Bring forward re-opener application windows from May to January. Reduce re-opener application window from one month to one week (ie last week of January).
Application requirements	Provide additional detail and guidance where possible in licence conditions and guidance.
Authority triggered reopener	Authority can trigger a re-opener at any time during price control.
Materiality threshold	For each individual re-opener application, set a materiality threshold such that we will only adjust allowances if the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate applicable to that licensee, exceeds a threshold of 1% of annual average base revenues (as set out in Final Determinations). Allow for aggregation of some re-openers subject to specific criteria.

Next steps/additional considerations from SSMC responses:

- We propose to decide whether or not to implement an environmental reopener in the SSMD, as well as the proposed scope and the extent to which the proposed common parameters should apply.
- This is in line with the key considerations highlighted by consultation responses. Stakeholders were largely supportive of the proposal but noted the scope needed to be well defined and the delineation between it and the Net Zero reopener and that there needed to be a clear trigger.

Questions for discussion/to be taken away for further consideration

- To what extent should the common parameters for reopeners apply to the environmental reopener?
- Is the proposed scope fit for purpose or does it need to be widened?
- Are there additional considerations we should be taking into account?

SSMC proposal

- Retain visual impact allowance in RIIO-ED2
- Use same method to calculate and allocate the funding pot for RIIO-ED2 as in RIIO-ED1, adjusting it for the shorter price control period. We may consider Transmission WTP results where appropriate.
- Given that the scheme is designed to be flexible, we do not propose to set PCDs for project outputs, as is proposed for RIIO-ED2.

DPCR5 and RIIO-ED1 approach to calculating and allocating funding

- The customer WTP research conducted in DPCR5 indicated that on average, customers were willing to pay 46p per year for the undergrounding of 1.5% of the overhead lines in AONBs and NPs. For RIIO-ED1, this was multiplied up by the number of customers and the 8 years to give a total funding pot of £123.1m.
- The undergrounding allowances for individual DNOs were calculated by dividing the total pot between DNOs first by number of customers and second by length of lines to be undergrounded in each licensed region.
- The allowance for each DNO was calculated as the average of these two values.

Next steps/additional considerations from SSMC responses

- We propose to set expenditure cap at Draft Determinations. For this, we will need to take into account:
 - **WTP survey results:** DNOs should consider [best practice methods](#), and should also reference approach taken by TOs in most recent WTP survey carried out by NERA.
 - **DNO plans:** When setting expenditure cap, need to consider whether the total WTP over 5 year period is more than the total value of work DNOs have in the pipeline. DNOs should indicate in their Business Plans the value of projects that they could feasibly deliver in RIIO-ED2.
 - **Additional considerations:** eg take into account the additional costs consumers will likely face in ED2 to facilitate the Net Zero objective, and also addresses concerns about the affordability of energy bill increases for energy consumers in the medium term arising from the economic shock caused by the COVID-19 pandemic.

Questions for discussion

- How else can we ensure DNOs' WTP results are comparable when coming to a national WTP value?
- Are there additional considerations we should be taking into account?

AOB and next steps

Proposed focus of next session (29 October)

- Review options for an ODI-F: How can could different options overcome challenges outlined in SSMC?
 - Sustainability First
- Outstanding actions:
 - BCF – Updated view on the use of a carbon intensity metric (WPD)
 - Losses – Proposed approach for losses ODI R that takes into account ambition and delivery (SPEN)

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.