ofgem
Making a positive difference
for energy consumers

# Decision

## RIIO-ED1: Losses Discretionary Reward for tranche three, 2020


| | | | |
|---|---|---|---|
| **Publication date:** | 14 September 2020 | **Contact:** | Jack Ambler |
| | | **Team:** | RIIO Electricity Distribution |
| | | **Tel:** | 020 7901 7000 |
| | | **Email:** | RIIO.ED1@ofgem.gov.uk |


The Losses Discretionary Reward (LDR) was introduced in the RIIO-ED1 price control to encourage and incentivise Distribution Network Operators (DNOs) to undertake additional actions to better understand and manage electricity losses. In July 2016 and September 2018 we published our decisions for tranche one and two respectively.

In tranche three, up to £14 million was available to the DNOs in 2020/21. We have decided not to make any award in tranche three. This document sets out the assessment process and reasons for our decision.

# Contents

## Executive Summary

The Losses Discretionary Reward (LDR) is spread over three tranches during the eight years of the RIIO-ED1 price control to March 2023 and is worth £32 million in total across all Distribution Network Operators Groups (DNOs). Tranche three is a predominantly backward looking assessment of losses management achievements and preparations for the RIIO-ED2 price control, which will start in April 2023.

Tranche three is worth up to £14 million and DNOs are expected to provide evidence of the following:

- improved understanding of the impact of losses on networks
- how DNOs are preparing for a measurable losses incentive in RIIO-ED2
- assessment of potential additional cost-effective actions with the differences in local distributions in mind
- the sharing of best practice and stakeholder engagement

We received five submissions for tranche three of the LDR, one from each DNO group with the exception of Electricity North West. We assessed the submissions against the four criteria in the LDR Guidance Document[1] covering understanding of losses; stakeholder engagement; processes to manage losses and proposals for RIIO-ED2; and innovative approaches to losses management. The Guidance document was updated following tranche two, setting out Ofgem's expectations for tranche three.

In general, the DNOs' submissions showed the progress made from tranches one and two by outlining the outputs delivered by both completed and ongoing projects, the projects currently being undertaken, and collaboration with various stakeholders. However, we do not consider that any DNO provided sufficient evidence for each criterion to justify a reward.

This document explains how we assessed the LDR submissions and the reasons for our decision.

[1] Losses Discretionary Reward Guidance document

## Context

Electricity losses are an inevitable consequence of transferring energy across electricity networks. They have a significant financial impact on consumers; the effective management of losses can protect consumers from unnecessary network costs. In addition, network losses pose a significant wider impact on the environment.

Distribution Network Operators groups do not pay for electricity lost on their network; therefore, they have no inherent incentive to manage losses efficiently. As part of the RIIO-ED1 price control, we implemented a losses management mechanism to ensure that DNOs focus appropriately on activities to manage losses. A core component of this is a licence requirement on DNOs to manage losses on their distribution network to as low a level as is reasonably practicable. In doing so, DNOs must act in accordance with their published Distribution Losses Strategy,[2] which they must maintain and keep under review. The final component is the LDR.

The third tranche of the LDR rewards DNOs for specific actions they have undertaken, and concurrent improvements they have made in their understanding of losses following on from tranches one and two. The third tranche also includes an assessment of losses management achievements and preparations for the RIIO-ED2 price control. In addition, we expect DNOs to give evidence of how these actions are significantly shifting expectations of what they should be doing to keep losses as low as reasonably practicable. Furthermore, DNOs are expected to provide evidence for how they are preparing for a measurable losses incentive in RIIO-ED2 and outline potential cost-effective actions keeping differences in local distributions in mind.

The third tranche is both forward and backward looking. The first tranche was in 2016/17 and the second tranche was in 2018/19.

## Related publications

Losses Discretionary Reward Guidance Document - https://www.ofgem.gov.uk/system/files/docs/2019/09/ldr_tranche_3_guidance_-_clean_copy.docx_0_0.pdf

[2] These are available on each DNO's website.

Decision document for tranche one - https://www.ofgem.gov.uk/publications-andupdates/riio-ed1-losses-discretionary-reward-decision-tranche-one-2016
Decision document for tranche two - https://www.ofgem.gov.uk/system/files/docs/2018/09/ldr_decision_tranche_two_11092018.pdf

# 1. Introduction

## Our decision making process

1.1. The Losses Discretionary Reward (LDR) aims to incentivise Distribution Network Operators (DNOs) to undertake additional actions (over and above meeting their losses licence obligation[3]) to better understand and manage electricity losses. The total reward, worth up to £32 million across all DNOs, is spread unevenly across three tranches over the RIIO-ED1 price control. The reward is discretionary and, therefore, we[4] may decide that it is not appropriate to award any, or all, of the available funds. The LDR Guidance Document[5] explains the main areas of assessment for each tranche, and details the process for tranche three.

1.2. The focus of tranche three is on a backward looking assessment of losses management achievements, and preparations for the RIIO-ED2 price control. The LDR does not reward DNOs for listing the outputs and actions that have arisen from previous tranches. The DNOs should provide sufficient evidence of these outputs, and how these actions are significantly shifting expectations of what they should be doing to keep losses as low as reasonably practicable.

1.3. In addition, DNOs are expected to provide evidence for how they are preparing for a measurable losses incentive in RIIO-ED2 and outline an assessment of potential additional cost-effective actions with the differences in local distribution networks in mind.

1.4. On 2 March 2020, we received five submissions for tranche three of the LDR, one from each DNO with the exception of Electricity North West (ENWL). These submissions have been published on our website.[6]

[3] Standard Licence Condition 49 of the Electricity Distribution Licence, which requires DNOs to manage losses to as low as reasonably practicable on their distribution network. In doing so, DNOs are required to act in accordance with their published Distribution Losses Strategy.
[4] The "Authority", "Ofgem", "we" and "our" are used interchangeably in this document. The Office of Gas and Electricity Markets (Ofgem) supports the Gas and Electricity Markets Authority (GEMA) in its day-to-day work.
[5] https://www.ofgem.gov.uk/system/files/docs/2019/09/ldr_tranche_3_guidance_-_clean_copy.docx_0_0.pdf
[6] https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-losses-discretionary-reward-submissions-tranche-three

## Our assessment process

1.5. In tranche three, we reviewed the DNOs' submissions against the same criteria as previous tranches as noted below. However, the questions set out in the sub-criteria[7] were different from previous tranches.

1. Understanding of losses
2. Efficient engagement and sharing of best practice with stakeholders on losses
3. Processes to manage losses and proposals for RIIO-ED2
4. Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual (BAU) activities.

1.6. The weighting for each of the four criteria are different, as set out in the LDR guidance document.

1.7. The weighting for tranche three of the LDR are as follows:

| | | |
|---|---|---|
| **Criterion 1** | Understanding of losses | **25%** |
| **Criterion 2** | Effective engagement and sharing of best practice with stakeholders on losses | **20%** |
| **Criterion 3** | Processes to manage losses and proposals for RIIO-ED2 | **40%** |
| **Criterion 4** | Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities | **15%** |

1.8. In our decision for tranche two[8], under chapter 3, 'Next Steps', we noted our expectation that, in order to achieve a reward in tranche three, submissions would need to provide thorough yet concise evidence for each criterion.

[7] https://www.ofgem.gov.uk/system/files/docs/2019/09/ldr_tranche_3_guidance_-_clean_copy.docx_0_0.pdf
[8] https://www.ofgem.gov.uk/system/files/docs/2018/09/ldr_decision_tranche_two_11092018.pdf

1.9. Similarly, the LDR guidance document stated that we expect the DNOs to provide evidence that shows they fully meet all the criteria set out in the guidance. Should a DNO fail to provide sufficient evidence under one or more of the criteria, it will not be eligible to receive a reward under this tranche of the LDR.

1.10. Following the limited responses to our consultation on submissions received for tranche one, we did not consult on the submissions received in tranche two and three. This was noted when we updated the LDR Guidance document for both tranches two and three.[9]

1.11. Chapter 2 sets out our overall observations of submissions. The Appendices give a high-level view of each submission, including examples of what we considered to be the strengths and weaknesses of the submissions generally. There, we also provide more detail on our views on each DNO's performance against each assessment criterion.

1.12. In summary, we do not consider any DNO provided sufficient evidence for each criterion to justify a reward.

[9] https://www.ofgem.gov.uk/system/files/docs/2019/09/direction_tranche_3_guidance_1_0.pdf

# 2. Our Decision

2.1. We do not consider any DNO provided sufficient evidence to merit a reward under tranche three of the LDR.

## Overall observations

2.2. We consider that the submissions from the DNOs intended to show a predominantly backward looking assessment of losses management achievements, and preparations for the RIIO-ED2 price control. In general, the DNOs' submissions showed the progress made from tranches one and two by outlining the outputs delivered by both completed and ongoing projects, the projects currently being undertaken, and collaboration with various stakeholders. However, we do not consider that any DNO provided sufficient evidence for each criterion to justify a reward.

2.3. In general, there were some areas we believe the DNOs demonstrated strong evidence in their submissions, for example:

- Considering the impact of low carbon technologies (LCTs) and network utilisation on losses
- Taking into account smart meter data to inform losses management
- Building on learnings from tranches 1 and 2

2.4. However, each DNO needed to provide more evidence under one or more criteria to be eligible for a reward. Consequently, submissions were deemed unsuccessful as outlined in section 5.5 of the LDR tranche three guidance document, which states sufficient evidence must be provided under each criteria for DNOs to be eligible for a reward.

2.5. There were areas that we consider the majority of DNOs failed to answer at all or provided insufficient justification for a reward, for example:

- While we note DNOs did attempt to provide evidence to demonstrate 'considerations for RIIO-ED2', there was insufficient evidence of proposals for a losses mechanism for RIIO-ED2 (criterion three).

- It is clear that DNOs are engaging with each other through the ENA Technical Losses Working Group. However, some DNOs heavily relied on this as evidence for stakeholder engagement, rather than building on other initiatives.

- With the exception of UKPN, all DNOs did not provide sufficient tangible outputs for their initiatives, nor did they quantify savings made for consumers.

2.6. Appendices 1 to 5 provide more detail on our assessment of each DNO's submission under each criterion.

# 3. Appendices

**Index**

# Appendix 1 – Northern Power Grid (NPg)

3.1. While we consider NPg's submission to be a strong submission for tranche three, we do not consider NPg provided sufficient evidence to merit a reward.

3.2. Although this did not affect our decision, we noted that NPg's submission was very well structured.

3.3. For each of the four criteria, we have noted areas that we considered strengths of the submission. Additionally, we have highlighted areas that required more evidence in order for a reward to be given.

**Criterion 1 – Understanding of losses**

3.4. NPg showed evidence of understanding losses through various endeavours such as their Enhanced Understanding of Losses project and analysis of forecasted load growth and use of customer flexibly on the primary network, the impacts of measurement errors, and low voltage board monitoring data. In addition, they looked at modelling methods and the impacts of energy storage on losses.

3.5. NPg identified instances of progress since tranche two, such as building on learnings from LV monitoring, power flow measurement, and the impact of voltage and harmonic variations on domestic losses.

3.6. Overall, we consider that NPg provided good evidence under this criterion, but that further evidence of a holistic approach to losses, including around how actions on its own network affects others, would have benefitted their submission.

3.7. Overall, NPG provided sufficient evidence to merit a reward under this criterion.

**Criterion 2 – Effective Engagement and sharing of best practice with stakeholders on losses**

3.8. NPg provided evidence of how they are utilising stakeholder engagement to create a dialogue with a range of stakeholders, including developing partnerships with Citizens Advice, Green Doctor, and Energy Heroes, among others.

3.9. NPg carried out various stakeholder engagement actions, such as running a consultation, creating online communities, creating visuals and animations, providing

energy-saving advice, and being a member of the ENA Technical Losses Task Group (TLTG). They noted that outcomes from their projects are published on their losses and innovation websites and communicated via stakeholder bulletins.

3.10. NPg's submission would have benefitted from evidence highlighting the monetary benefits, and/or savings of their stakeholder engagement.

3.11. While we recognise that NPg have engaged with a wide variety of stakeholders and outlined a process of sharing best practice with relevant stakeholders, the evidence provided is not sufficient to cover the full breadth of the criterion.

**Criterion 3 – Processes to manage losses and proposals for RIIO-ED2**

3.12. NPg outlined how they have engaged with their sister companies in the US and Canada, which provided insights into areas such as conservation voltage reduction and reactive power support. As mentioned in previous feedback, we do not consider this work as exceptional to merit a reward. The aim of this reward is to reward activities that go over and beyond business as usual activities.

3.13. NPg also provided evidence of their engagement with a Norwegian distribution system operator (DSO), which allowed NPg to recognise similar principles and aligned approaches. These included losses management incentivised by the regulator, a cost analysis based methodology for investment criteria, and using smart meter data. They have also worked to analyse the New Zealand Electricity Authority Guidelines on the calculation and use of loss factors for reconciliation purposes. NPg mentioned their plans to use learnings from this to improve their assessment on the impact of generation on losses.

3.14. While we acknowledge that these actions are taken from previous tranches and have been incorporated into business as usual activities, we do not deem these actions to be exceptional so as to merit reward. The aim of this reward is to reward activities that go over and beyond business as usual activities.

3.15. NPg noted their contributions for the TLTG working group, which included joint initiatives with other DNOs on amorphous transformers (AMT), losses assessments methodologies, and trialling UKPN's mobile assessment asset vehicle (MAAV). NPg plan to continue their work on AMTs and other best practice from the TLTG.

3.16. NPg mentioned the findings of their Smart Network Design Methodologies project as evidence of using smart meter data. They acknowledged this has already been funded under the innovation fund, so will not qualify for a reward under the LDR.

3.17. Actions from tranches one, two and three are noted to help feed into RIIO–ED2, which range from design policy, to exploring asset solutions, to enabling smart systems. While we welcome such learnings, we do not see these actions as exceptional to merit reward.

**Criterion 4 – Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities**

3.18. NPg noted their engagement with UKPN's MAAV, and their efforts to incorporate losses into some BAU activities such as an internal environmental newsletter and in-house training.

3.19. The submission would have benefitted from evidence demonstrating a wider range of innovative approaches and, as a result, we do not consider they provided sufficient evidence under this criterion to be eligible for a reward.

# Appendix 2 – SP Energy Networks (SPEN)

3.20. SPEN provided stronger evidence for criterions one, two and three than criterion four, which lacked sufficient evidence for a reward. As a result, we have decided not to give a reward to SPEN under the LDR.

3.21. Although this would not have had an effect on our decision, SPEN's submission was very well structured; we appreciate the 'Beyond LDR' sections.

3.22. For each of the four criteria, we have noted areas that we considered strengths of the submission. Additionally, we have highlighted areas that required more evidence in order for a reward to be given.

**Criterion 1 – Understanding of losses**

3.23. SPEN noted considerable advances in the understanding of network losses, particularly in the context of the low carbon energy transition. Through the TLTG, they have proposed studies that have looked at the impact of both LCT uptake and increased network utilisation on technical losses, alongside how customer usage patterns may influence these. SPEN have combined their work on LCTs with network analysis and modelling techniques to help them understand the areas of increased losses on parts of their network, which are helping them prioritise higher loss assets within future investment plans.

3.24. SPEN have utilised smart meter data and modelling techniques to manage both technical and non-technical losses, and improve the visibility of losses across their LV networks. They have used smart meter data, in combination with internal modelling, to explore demand patterns and identify high/low demand outliers for further investigation.

3.25. We consider that this would have been good evidence; however, we would have welcomed further detail around the quantified benefits of the measures SPEN have introduced.

3.26. Therefore overall, SPEN have not provided sufficient evidence to merit a reward under this criterion.

**Criterion 2 – Effective Engagement and sharing of best practice with stakeholders on losses**

3.27. As was highlighted in previous submissions, SPEN drew upon their leadership of the TLTG. Through the group, SPEN have explored other DNOs' initiatives to assess their viability for SPEN's network. In addition to leading the TLTG, SPEN outlined their continued work with the Merseyside Police in countering electricity theft – namely through the embedding of a full-time member of staff within the police. They have taken evidence of the success of this approach to other parts of the country to disseminate the lessons they have learned.

3.28. More widely, SPEN outlined the engagement they have had with international companies through their parent company, Iberdrola. This is in addition to work with the Electralink-led Theft Risk Assessment Service Expert group, and direct engagement with the Tokyo Electric Power Company and the Nigerian Government. Within Great Britain, SPEN provided evidence of their engagement with National Grid on power flows and voltage optimisation to help them understand the impact of interactions with other networks (and vice versa) on losses.

3.29. We would have welcomed further detail on how SPEN are utilising stakeholder engagement to inform their actions, as it was not clear how this is happening.

3.30. Overall, SPEN has provided sufficient evidence to pass this criterion.

**Criterion 3 – Processes to manage losses and, proposals for RIIO-ED2**

3.31. SPEN outlined it has a Losses Strategy and a corresponding Losses Policy to help communicate the approach their staff should be taking; these documents are supported by other material that is available to staff. Parallel to these documents, SPEN have carried out improvements to their network modelling with TNEI, and they outlined that best practice (both national and international) was considered as part of this.

3.32. The submission also noted initiatives that SPEN undertook around substation efficiency improvements, which led to the procurement of more efficient transformers as standard. SPEN also provided details of how they are using smart meter data to help prioritise LV reinforcement and understand localised changes in demand associated with LCT uptake, as well as detecting LV fuse failures to help reduce technical losses.

3.33. While they provided some examples of national and international best practice, we consider that further evidence could have been provided here to show how SPEN are looking beyond their immediate stakeholders (i.e. other DNOs and members of the Iberdrola group).

3.34. Overall, SPEN has not provided sufficient evidence to pass this criteria.

**Criterion 4 – Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities**

3.35. SPEN outlined innovative initiatives that they have transitioned into business as usual activities, such as LV modelling techniques. They provided further details of how their tools for modelling complex HV networks enables more granular analysis of network models and behaviour patterns, and this is being used to consider losses when undertaking major investment decisions.

3.36. SPEN also provided evidence of how it is looking at expanding wider industry innovations, such as UKPN's MAAV. SPEN also lists innovation identified for RIIIO-ED2.

3.37. SPEN's submission would have benefitted from a more detailed range of innovative approaches that they have used in managing losses. The projects they presented were good, but the range of approaches and was limited. As such, we do not consider SPEN provided sufficient evidence to qualify for a reward under this criterion.

# Appendix 3 – Scottish and Southern Electricity Networks (SSEN)

3.38. We do not consider SSEN's submission contained sufficient evidence to be rewarded, particularly under criterion two and four.

3.39. For each of the four criteria, we have noted areas that we considered strengths of the submission. Additionally, we have highlighted areas that required more evidence in order for a reward to be given.

**Criterion 1 – Understanding of losses**

3.40. SSEN provided evidence of how they are continuing to improve their understanding of the level and sources of losses on their networks by continuing projects from traches one and two such as data monitoring.

3.41. The limited availability of relevant data sources was seen as a challenge in identifying network losses. SSEN identified substation monitoring data as a key source of data for industry and, consequently, chose to deploy LV monitoring during their New Thames Valley Vision (NTVV) project. We are pleased to see this practice is now being deployed as a business as usual activity and installed in approximately 250 substations. We welcome that SSEN have taken into account the likely increase of LCTs by locating the monitoring devices in substations identified as potential areas of high LCT uptake.

3.42. Although SSEN have mentioned their roll out of smart meters on the network, there is not yet a level of clustering to allow reliable data to understand losses. Consequently, we do not consider this criterion to be fully met. Their submission would benefit from developing the use of smart meter data.

3.43. SSEN established a Whole System Development Forum that includes the consideration of the impact of decisions on losses, as well as engaging with a variety of stakeholders such as DNOs, TOs, the ESO, and community energy groups. Through engagement with local authorities, SSEN have considered the optimisation of losses and local energy systems within the whole system, demonstrating a holistic approach.

3.44. In addition, SSEN has trialled UKPN's MAAV to calculate losses on the network by detecting contact voltage losses (CVLs). This trial has allowed SSEN asses the viability of incorporating MAAV technology as a business as usual activity.

3.45. Overall, SSEN has not provided sufficient evidence to pass this criterion.

**Criterion 2 – Effective engagement and sharing of best practice with stakeholders on losses**

3.46. SSEN outlined their engagement with various stakeholders including other DNOs, both on a national and international level. This has improved their awareness for both technical and non-technical losses on the network.

3.47. Building on from previous tranches, SSEN engaged with representatives from other industries to understand their approach to leakage and shrinkage. In addition, they have also built on their learnings from a Canadian organisation. We welcome the continuation of projects from previous tranches.

3.48. We were pleased to see SSEN have quantified outcomes from their '#NotWorthTheRisk' campaign, as they have had an over 10% increase in the number of case files being opened by their Network Protection Team.

3.49. Although SSEN are members of the TLTG and an active member of the ENA Open Networks project, the submission failed to provide sufficient evidence of sharing best practice to qualify for a reward.

**Criterion 3 – Processes to manage losses and, proposals for RIIO-ED2**

3.50. SSEN outlined several innovation projects, business as usual activities, and industry working groups. This included the use of Canadian tools to assist with economic modelling. The innovation projects SSEN noted do take into account various aspects of losses such as local energy systems, DSO transition, and Canadian best practice.

3.51. SSEN has outlined several possible business as usual activities, including the use of MAAV technology, DNO Boundary Investigation, data monitoring, flexible connections, and the use of local renewable generator. They have also put in place a Network Protection Team, and have engaged with peers at UKPN to share best practice such as discussing instances where illegal connections have been made to the network using equipment belonging to another DNO, and developing and

improving processes and procedures for installations which involve Building Network Operators.

3.52. Following previous tranches, SSEN has outlined a number of processes they have in place to help manage losses such as the deployment of LV monitoring equipment, an e-learning module and social media campaign. Although this demonstrates good learnings from previous tranches, it is not considered exceptional to qualify for a reward.

3.53. We do not consider that SSEN has provided sufficient evidence for a reward in relation to its proposals for RIIO-ED2. SSEN would have benefitted from a more developed approach than listing the potential role going forward for events. The activities listed are expected for a company in this position.

3.54. Overall, SSEN has failed to provide sufficient evidence to qualify for a reward under this criterion.

**Criterion 4 – Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities**

3.55. We were pleased to see that SSEN outlined that they have quantified the outcomes of their stakeholder campaigns. In contrast, while SSEN mentioned that losses consideration is now incorporated into its Asset Risk Model for deployment of monitoring equipment, we consider this to be a business as usual activity for a company in this position.

3.56. While we acknowledge the work they have done to quantify the outcomes of their stakeholder campaigns, we do not consider SSEN's approaches to be sufficiently 'innovative' or exceptional to qualify for a reward.

# Appendix 4 – UK Power Networks (UKPN)

3.57. UKPN provided sound evidence for criterions one and three; however, they would benefit from more developed evidence for criterions two and four.

3.58. UKPN noted many tangible outputs and quantified outcomes, which we consider to have strengthened their evidence. With this being noted, we do not consider UKPN eligible for a reward under the LDR.

3.59. For each of the four criteria, we have noted areas that we considered strengths of the submission. Additionally, we have highlighted areas that required more evidence in order for a reward to be given.

**Criterion 1 – Understanding of losses**

3.60. We welcome how UKPN outlined their key learning initiatives with tangible outputs. The evidence clearly sets out key learnings from tranche one and two, demonstrating progress made previous traches and improved understanding. They mentioned the considerations for smart meter data, highlighting learnings from previous tranches such as the International Best Practice report.

3.61. UKPN noted a holistic approach to losses by referencing research from Imperial College London. Although this outlines some impacts of losses on transmission and distribution networks, we would have welcomed further evidence around the progress that has been made through this work.

3.62. Initiatives that could deliver customer benefit in RIIO-ED2 are outlined, including network topology, grid and primary transformer efficiency, and enabling flexibility to emulate ripple control. Although this is a good start for ideas, the submission would benefit from a more developed and detailed approach, encompassing a broader range of initiatives.

3.63. UKPN heavily relied on their findings from Imperial College London's research. It would have been good to see how they considered and used other evidence to help in their understanding of losses.

3.64. Overall, UKPN has not provided evidence to pass this criterion.

**Criterion 2 – Effective Engagement and sharing of best practice with stakeholders on losses**

3.65. UKPN noted several stakeholder engagement activities, where they have considered both national and international stakeholders to aid with research and benchmarking. They also outline their involvement in working groups both at national and international levels, the TLTG and the International Utilities Working Group. They also list the many academic partners such as Imperial College London, University of Strathclyde and Princeton University's Andlinger Centre for Energy and the Environment mentioned. We acknowledge the importance of academic partnerships and the expertise they provide.

3.66. UKPN provided good evidence around their engagement with their supply chain manufacturer, Toshiba. The collaboration allows UKPN to work with Toshiba to optimise amorphous steel transformers to aid in losses management.

3.67. As a member of the TLTG, UKPN has engaged with fellow DNOs. They promoted awareness of contact voltage losses through their Mobile Asset Assessment Vehicle (MAAV). Other DNOs have shown interest in this endeavour, and UKPN have shared the technology and learnings of this innovative approach accordingly.

3.68. Despite this, we consider that UKPN lacked sufficient evidence to demonstrate their engagement with wider communities. Better evidence could have been obtained by going beyond the use of a dedicated losses website as the sole source of wider engagement.

3.69. Overall, UKPN has not provided sufficient evidence to pass this criterion.

**Criterion 3 – Processes to manage losses and, proposals for RIIO-ED2**

3.70. UKPN noted various business processes to manage losses, including network analysis and optimisation, project and portfolio management, the use of smart meter data, and a decision-making processes. Their dedicated losses section highlights opportunities to manage losses throughout the organisation.

3.71. The submission clearly outlines a project life-cycle to demonstrate well managed implementation. This table walks through the path to implementation approval from the concept stage, to the business case stage, which takes into account

stakeholders, to the implementation itself. This is sound evidence to demonstrate a process in place to aid with losses management.

3.72. To prepare for RIIO-ED2, UKPN outlined several initiatives it is considering such as, improving losses on the grid and primary transformers and upgrading 6.6kV networks. Whilst we welcome the specific tranche three initiatives that are recognised as essential for RIIO-ED2, we feel this list, with the exception of MAAV technology, does not state any exceptional proposals to qualify for a reward.

**Criterion 4 – Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities**

3.73. UKPN outlined evidence of innovative approaches to losses management and the actions to incorporate these in business as usual activities. There is good detail around how approaches have been incorporated into business as usual activities. An example of this is the use of CBA to optimise transformer sizes, used in over 50 successful decisions.

3.74. In addition, UKPN has demonstrated evidence of taking learnings from previous tranches and turning these into business as usual activities, such as the use of MAAV technology to detect Contact Voltage Losses. They note how an academic partnership with Princeton University provided an understanding of the theoretical detail of losses, and then in tranche 2, MAAV was used as business as usual for the London region, which resulted in an annual loss reduction. For tranche three, UKPN is considering using MAAV technology alongside other initiatives such as LV monitors and smart meters to target the most appropriate areas. Other DNOs have shown interest in this initiative by carrying out their own trials with the MAAV.

3.75. The 11kV Normal Open Point (NOP) Optimisation project aims to optimise the position of normally open switches on lines connecting radial networks. This is beneficial for losses management as it can reduce variable losses through lessening uneven load. Although we acknowledge this project has a potential value off up to £8.9million over 10 years, we do not class this action as exceptional to merit reward.

# Appendix 5 – Western Power Distribution (WPD)

3.76. WPD relied heavily on its UKPN-partnered SOHN Report from Imperial College London as evidence. WPD would have benefitted from covering a wider range of initiatives for losses management.

3.77. We do not consider WPD's submission to be successful for a reward under the LDR.

3.78. For each of the four criteria, we have noted areas that we considered strengths of the submission. Additionally, we have highlighted areas that required more evidence in order for a reward to be given.

**Criterion 1 – Understanding of losses**

3.79. WPD has noted evidence to demonstrate its understanding of losses. This included the SOHN losses report that is a joint venture with UKPN; although the scope of the report was broad, it provided an academic viewpoint on losses.

3.80. WPD considered the future increase of LCTs, as demonstrated by its LV Templates project that monitors LV substations to characterise them into 'templates', which can be used to describe the temporal load and voltage behaviour of substations nationwide. We welcome that WPD chose locations with high uptake of LCTs. The DNO notes 82% of UK substations fit one of the ten district templates; therefore providing potential to apply learnings across the vast amount of the network. The initiative also provided data on voltages on the network. As a result of this project, WPD has commenced a project of voltage reduction across all licence areas.

3.81. Project FALCON, a Low Carbon Fund initiative entailed losses work-streams that covered Dynic Asset Rating, which looked at an asset/network specific cost benefit analysis; Automatic Load transfer, which explored the relocation of NOPs; and LV connected Energy Storage, which investigated peak-shaving at substation and feeder level. This demonstrates WPD expanding their knowledge on losses.

3.82. WPD mentioned the use of smart data to form a more targeted approach and incentivise time-of-use tariffs. The OpenLV project provides a logic model, which is a means of planning community-based project activity to achieve a set of outcomes for use of the OpenLV data, as well as a structure against which to evaluate the trials. We do not consider this exceptional to qualify for a reward.

3.83. In order to provide evidence for considering the network in a holistic manner, WPD has mentioned methods to assess losses on the network have been applied to over 75% of the network.

3.84. The submission would have benefitted from more evidence demonstrating learnings from tranche one and two as there is limited evidence mentioned in the submission.

3.85. Overall, WPD failed to provide sufficient evidence to merit a reward under this criterion.

**Criterion 2 – Effective Engagement and sharing of best practice with stakeholders on losses**

3.86. WPD provided limited evidence to demonstrate effective engagement and sharing of best practice with stakeholders. This included stakeholder events and contributions at the TLTG.

3.87. WPD noted elements of findings from projects such as their losses strategy are commonplace in other DNO strategies. An example of this is SSEN's intervention on pre-1960 transformers and WPD's IFI project listed as research source, whilst also noting other topics such as asset changes are now included other DNOs' losses strategies.

3.88. WPD would have benefitted from a wider range of stakeholder engagement activities.

3.89. WPD has not provided sufficient evidence to qualify for a reward under this criterion.

**Criterion 3 – Processes to manage losses and, proposals for RIIO-ED2**

3.90. WPD failed to outline any international collaboration or learning from best practice when considering processes or methods to manage losses on its network and, therefore, is not eligible for a reward. WPD would benefit from looking at international best practice, as other DNOs have done, to help them manage losses on their network.

3.91. WPD mentioned considerations for losses in RIIO-ED2; however, there is not sufficient evidence to qualify for a reward. WPD would benefit from developing their considerations for RIIO-ED2, identifying clear proposals for a losses incentive.

**Criterion 4 – Innovative approaches to losses management and actions taken to incorporate these approaches into business as usual activities**

3.92. WPD has clearly listed its process to incorporate innovation initiative into business as usual activities.

3.93. The approaches mentioned, SOHN - Circuit lengths and losses in low-voltage network design and Housing for the Future – superfast Electricity, heavily reply on LV template work. The submission would have benefitted from more initiatives that cover a larger range of losses management activities.

3.94. Overall, WPD has failed to provide sufficient evidence to merit a reward under this criterion.