

Expanded 'Innovation Type' approach to reducing distribution network losses ('losses reduction incentive approach')

1. Introduction

- 1.1. The RIIO-ED1 Losses Working Group (LWG) considered a number of different approaches for a RIIO-ED1 distribution losses mechanism at the last meeting on 28 May 2012.
- 1.2. It was agreed that an approach similar to that taken for the Innovation Stimulus should be developed further, incorporating relevant aspects of the proposals put forward for pre-investment cost assessment, post investment appraisal and losses index mechanism. Addressing theft reduction activities should also be considered while bearing in mind that there are other existing initiatives in the industry which focus specifically on theft.
- 1.3. The proposed approach therefore considers similar components to those making up the current innovation stimulus which might be applicable.

2. Outline of possible losses reduction incentive approach

- 2.1. This paper expands on two components of the innovation stimulus approach, the losses reduction allowance and an additional funding mechanism. It does not expand on a revenue adjustment mechanism which it is felt is not appropriate for losses beyond the allowance and additional funding, particularly because of the concerns around measuring performance. The strength of any of the components should be relative to the level of control or influence the DNO has over the level of losses.

Losses reduction allowance

KEY AIM: to encourage DNOs to establish a portfolio of investments in initiatives aimed at reducing losses. While this component would mainly address technical losses, initiatives aimed at commercial losses could also be motivated in the business plan.

- 2.2. The losses reduction allowance could take the form of a set allowance received by each of the licensees as part of their price control settlement to fund a pre-determined level of losses reduction action (e.g. investment in low-loss equipment).

Licensees would be expected to take into account distribution losses reduction when deciding on equipment or projects. Business plan submissions would need to consider whether it is in the long-term interest of customers to invest in higher cost / lower loss equipment. They would set out the proposed expenditure on loss reduction equipment or projects, as well as the potential losses reduction to be achieved. A post-investment review could provide a true-up position. Any allowance could be clawed back if not effectively utilised (this is discussed further below).

- 2.3. There are different options:
 - A. One option relevant to asset investment decisions, would be for the DNO to determine the NPV of the additional cost of the low loss option against the benefit of reduced losses over the lifetime of the asset, valued at what consumers pay for losses on the system (the price of electricity lost). This

would result in an output based on the modelled lifetime net benefit to customers.

- B. A losses index or engineering style approach (which could apply to all or parts of the network) could assist DNOs assess optimal losses investment for developing their business plans. It would be important to ensure this index was easy to establish and keep updated.
- C. In addition, licensees could provide details of any other losses reduction actions (not equipment investment) to be undertaken, provided that these actions could clearly demonstrate improvements in the losses position. This could include joint supplier/DNO projects.

Valuing benefits

- 2.4. The expenses associated with losses reduction equipment were previously recovered over the period of the price control. If the incentive is based on a longer period (full life of the assets) then a lower economic indicator could be applied. While there has been a general indication that there is justification for this value to be linked to the shadow price of carbon, the strength of that link could be further explored.
- 2.5. Previous investigations (undertaken in 2008) explored the appropriateness of explicitly factoring the shadow price of carbon into the incentive value, based on the current forward wholesale electricity price¹. At the time it was stated that the value would provide a significantly larger incentive to reduce losses, and would reflect the environmental benefit of losses reduction. However, the amount would be applied across all losses, whereas it is predominantly technical losses which represent electricity lost and have an environmental impact. There was concern that under the current mechanism, a higher incentive would simply incentivise DNOs to focus on the reduction of non-technical losses.
- 2.6. If the proposed mechanism is focused almost completely on technical losses, we need to consider how this rate should be determined. One argument could be that as losses reduction is being modelled and not measured, a reduced rate should be applied.

How might the total value of the allowance be set / determined?

- 2.7. This total value could be capped e.g. X% of allowed revenue or capex (say 0.5 – 1% as used in innovation stimulus]. However, there is an argument that a natural limit would be the cost / benefit analysis of each project, and applying an overall cap on the amount of losses reduction investment could constrain valid investment decisions.
- 2.8. An alternate valuation would be to limit the NPV calculation to the period of the price control. As discussed at the previous LWG, there is no clear argument to link the calculation to the price control period, and a stronger argument to link it to the asset life.

¹ The wholesale electricity price is the cost of energy avoided if DNOs reduce losses ie the avoided energy which DNOs must take onto their system from GSPs.

- 2.9. The outputs (*reduced losses*) of the proposed initiatives (both equipment and other loss reduction activities) could be assessed through load flow modelling of the relevant network, and the benefits valued using the carbon value of saved energy together with an appropriate asset life.
- 2.10. In the simplest form of the mechanism only schemes which provide a net benefit would be allowed for funding/reward; however there are several options for basing payments, for example:
- 100% funding of projects which pass the cost/benefit test
 - Pay assessed MWh savings at [£60/MWh] for [25] years
 - Pay assessed MWh savings at [£77/MWh] for [16] years
 - For any project, fund at 80% pass through (via a 16 year annuity) plus a calculated £/MWh, designed to provide a return (of wacc +1%) for a project that would otherwise break even against the cost/benefit test.
 - Apply an IRR cap and collar on the overall portfolio of projects.

Post investment review

- 2.11. A post investment review would provide a true-up position. The consumer challenge group has emphasised (for other initiatives) that the benefits of any allowance / funding / incentive need to demonstrate an improvement in performance. The post investment review would need to ensure that this is demonstrated in some way.
- 2.12. We could consider linking the outcome to a reward / penalty based on accuracy of forecasting. The forecasting and demonstrated improvement in the losses position would impact on a DNO's credibility, and be a reputational incentive.
- 2.13. In addition, there could be rewards / penalties associated with the post investment review. Opinions were expressed at the last meeting that there should be no claw back until there was confidence in the post assessment methodology.
- 2.14. Applying an engineered model approach has the benefit of DNOs undertaking actions to improve the incremental losses situation, while not focussing on absolute losses which can be impacted by a number of factors outside of the DNO's control which might increase losses.

Additional (Losses Reduction) Funding

KEY AIM: This funding would provide a vehicle for specific innovative projects specifically aimed at reducing losses.

- 2.15. The second component to consider is funding made available for additional projects (not included in the business plans) which would demonstrate reduction of network losses, or which would clearly provide benefits such as accurately determining distribution losses. This component could also be considered as a stand-alone component.
- 2.16. Note that we are not trying to re-create the Innovation Stimulus. These projects would probably qualify for consideration in terms of the criteria for Network Innovation Stimulus / Low Carbon funding, as reducing losses directly reduces carbon emissions. While this component is considered it may not be necessary.

- 2.17. It could also provide a vehicle for other stakeholders (suppliers / IDNOs) to participate in specific losses reduction incentives in partnership with DNOs, where the project could demonstrate potential for verifiable and sustainable reduction of distribution network losses.
- 2.18. A key question is whether there is a real need for additional (dedicated) funding if the allowance component (up front) is implemented. There was general consensus at the last LWG meeting that this component was not necessary or would be unduly administratively burdensome.
- 2.19. There are various options to consider as a means of allocating this type of funding:
- Through a competitive process where DNOs bid for funds dedicated to losses reduction.
 - A discretionary funding mechanism to reward successful delivery and projects that bring particular value in helping the DNOs understand what investment, commercial arrangements and operating strategies they should be putting in place to improve distribution losses. This funding could be capped at e.g. 0.5% of total revenue spread over the price control period.
- 2.20. The total funding available would need to be proportionate to the benefits which could be achieved. We should consider on what basis this proportionality could be determined.
- 2.21. One of the criteria for any funding should address knowledge / skills transfer.

Revenue adjustment mechanism

While this component was included in the Innovation Stimulus and in the initial strawman paper, we do not consider that it is necessary in terms of the RIIO principles which seek to provide more revenue certainty. This also encourages accurate forecasting in the business plans.

Theft / Commercial losses

- 2.22. There is some acceptance within the LWG that there is a need to incentivise action to identify non-technical losses where the DNO has some level of control. However, it is also recognised that it is more difficult to quantify these losses, particularly through the engineered model approach.
- 2.23. An option is to have an additional component of the incentive mechanism purely to address improvements in non-technical losses. This could be in the form of retaining the outputs incentive contained in the DPCR5 reporting methodology, but with a very reduced strength of the incentive amount. For example, the current £60/MWh could be reduced to e.g. £6/MWh.
- 2.24. While having the 2 incentives operating in parallel would present the danger of some 'double counting' of losses this would be minimal. It would also be possible to structure the total incentives such that a value of, for example, £54/MWh is applied to the engineered model investment decision, and £6/MWh to the non-technical losses.
- 2.25. There are arguments for retaining the existing DPCR5 reporting system. Some of these are that considerable resources have been put into establishing the necessary systems. Although considered flawed due to data volatility, the current

mechanism has had the effect of stakeholders undertaking actions to change behaviours and ensure that data concerns are addressed.

Summary

2.26. Discussion on the various strawman papers at the last LWG seemed to predominantly support the following components in an incentive mechanism:

- An initial investment allowance based on a pre-investment (engineered model) motivation in the business plans,
- Some form of post-investment assessment and review of the allowance,
- An additional component to incentivise reduction in non-technical losses.