

# Guidance

## RIIO-2 Cost Benefit Analysis Guidance

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The purpose of this guidance note is to ensure that the Electricity System Operator (ESO) (i) conducts CBA in a proportionate and transparent manner to justify its business plan submission (ii) employs a framework consistent with latest thinking on how to conduct CBA in a regulated context.

Ofgem is seeking to improve the visibility and transparency of the ESO investment decision-making process and assess the justification and viability of these investments through commercial/technical justification, evidence of stakeholder engagement and support and a CBA template. This CBA template outlines the different options that have been considered and includes summaries of how each investment links to their commercial/technical justification and stakeholder engagement. Our assessment will look at all three elements to substantiate justification and viability of investments.

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## Executive Summary

The purpose of this guidance note is to ensure that the Electricity System Operator (ESO) (i) conducts CBA in a proportionate and transparent manner to justify its business plan submission (ii) employs a framework consistent with latest thinking on how to conduct CBA in a regulated context.

Ofgem is seeking to improve the visibility and transparency of the ESO investment decision-making process and assess the justification and viability of these investments through commercial/technical justification, evidence of stakeholder engagement and support and a CBA template. This CBA template outlines the different options that have been considered and includes summaries of how each investment links to their commercial/technical justification and stakeholder engagement. Our assessment will look at all three elements to substantiate justification and viability of investments.

The purpose of the CBA is to provide a lens through which Ofgem can interrogate the investment decision-making processes and internal governance of the ESO. We expect this approach to be part of the standard governance process in place for investment decisions for the ESO and for these to be submitted in support of any new or transformational investment decisions or additional roles/responsibilities that the ESO proposes as part of their business plan.

We have been working with the ESO throughout the development of RIIO-2 to improve and enhance our understanding and application of CBAs and to issue more specific guidance on undertaking them. This guidance note represents our latest thinking on the CBA framework for RIIO-2.

## 1. Where we expect a CBA Submission

A CBA is an essential part of the decision making process and will be prepared for any new or transformational investments or additional roles/responsibilities that the ESO proposes as part of their business plan. Ofgem will look to review all these proposals as part of the business plan process and should be provided alongside the 9th December business plan submission. The ESO should undertake their CBA at an activity level, consistent with their business plan reporting.

We expect there will be investment projects which require CBA in order to support investment justification and demonstrate value for money. The ESO must prepare CBAs to support these decisions.

Existing or business as usual activities should be justified through appropriate benchmarking as highlighted in the December 2018 consultation document.

## 2. Identification of options

- 2.1. Consistent with the HM Treasury Green Book<sup>1</sup>, the ESO must clearly identify the range of options that were considered to meet the stated aim. This list should, where feasible, include an option that requires a minimal initial investment (the “do minimum option”) against which other options can be compared. Additionally, the impact of delaying investment must be considered as part of the CBA (see section 7 below). We consider the “baseline” scenario to be that which involves the minimum level of intervention that would be required to remain compliant with all relevant regulations. For each investment, the ESO should clearly explain, in the supporting commentary boxes in the CBA, what assumption has been used and which regulations the minimum level of intervention relates to. There are no direct benefits (i.e. avoided costs) accrued under the baseline scenario and these cells have been blanked out in the CBA template. Societal benefits will still be accrued under the baseline scenario and these should be taken into account when calculating the baseline net present value (NPV). The NPV of each of the options identified within the CBA will be compared against the Baseline NPV, rather than against a zero value.
- 2.2. We have included a section in the CBA template for the ESO to identify and clearly list the options they have considered for each investment decision. This list of options should include those that have been considered and rejected before full costing, and the shortlist of those options that have been considered and costed. A clear rationale for including/excluding options should be summarised (i.e. a few lines or bullet points) in the comment box.
- 2.3. Within the ‘Baseline’ and each ‘Option’ sheet in the CBA template, there are summary boxes for the commercial/technical justification, stakeholder support and ESO View. These summary boxes should provide executive summary style overviews that link back to the key points presented in the ESO CBA report and business plan for the chosen option. They should provide enough information to outline the key arguments under each category and allow the evaluator to trace back to the relevant section(s) in the supporting documentation and/or business plan (i.e. short paragraphs or bullet points summarising the key justification(s) for the proposed investment).

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<sup>1</sup> HM Treasury - The Green Book;  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf)

### 3. Valuing the costs and benefits of options

The financial costs and benefits should correspond to the financial/market values set out in the ESO business plan (where applicable). Benefits should be categorised as per the ESO 2019-21 Forward Plan and Ofgem Forward Work Programme :

- Lower bills for consumers than would otherwise be the case
- Ensuring system security and reliability
- Reduced environmental damage
- Better quality of service
- Benefits for society as a whole

The financial costs and benefits must be in 2018/19 prices, exclude real price effects (RPEs) and be net of expected productivity improvements, i.e. consistent with the data set out in the ESO Business Plan Data Template (BPDT). Where CBA outcomes are marginal, the ESO should run sensitivities analysis as detailed below.

<sup>2</sup> National Grid ESO – 2019-2021 Forward Plan <https://www.nationalgrideso.com/about-us/business-plans/forward-plans-2021>

<sup>3</sup> Ofgem – Forward Work Programme 2019-21 [https://www.ofgem.gov.uk/system/files/docs/2019/03/ofg1132\\_fwp\\_2019\\_21\\_programme\\_post\\_consultation\\_web.pdf](https://www.ofgem.gov.uk/system/files/docs/2019/03/ofg1132_fwp_2019_21_programme_post_consultation_web.pdf)

## 4. Applying the Spackman approach to electricity transmission network investment

The Spackman approach involves the following two-step approach :

- Convert capital costs into annual costs using the company's cost of capital. A placeholder of 2.64% should be used until a decision on the ESO's cost of capital is made by Ofgem.
- Use the Social Time Preference Rate (STPR) of 3.5% (less than & equal to 30 years); 3% (greater than 30 years) to discount all costs and benefits , except safety where the Health Discount Rate (HDR) of 1.5% (less than/equal to 30 years); 1.2857% (greater than 30 years) should be used.

The capital costs are to be converted to equivalent annual costs that are recovered through customers' bills. The CBA template assumes straight line depreciation in line with the ESO depreciation policies i.e. 7 years. The annual capital costs will also be calculated over the assumed economic life of the asset.

To convert capital costs into annual cost recovered through customers' bills, we require the ESO to use a pre-tax weighted average cost of capital (WACC) figure.

Costs and benefits should cover the period to 2030. This represents the useful economic life of the investments made by the ESO and is consistent with asset life assumptions used in the ESO RIIO-2 finance model. Due to future uncertainties, we have limited the CBA template to 2030. Where possible the ESO should look to identify when investments will be recovered in shorter timeframes. Where costs and benefits have only been calculated for the RIIO-2 period, the ESO should average or flat-line the costs and benefits as appropriate.

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<sup>4</sup> Joint Regulators Group (4 October 2011) Discounting for CBAs involving private investment but public benefit. para 3.10; [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0029/37856/jrg\\_statement.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0029/37856/jrg_statement.pdf)

<sup>5</sup> HM Treasury - The Green Book, Annex A6: Discounting, Table 9; [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf)

<sup>6</sup> HM Treasury - The Green Book, Annex A6: Discounting, Table 10; [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf)



## 5. Society benefits and the treatment of non-marketed goods

The ESO should consider societal benefits and the avoided costs associated with each option. For consistency, we have standardised many of the assumptions and calculations for the valuation of societal benefits and non-marketed goods. We have entered default parameters in the CBA template for most of the non-marketed items; where the ESO amends these assumptions, full justification for the move from the default parameters should be provided.

For the benefits associated with preventing fatalities and injuries, we require the ESO to draw on guidance set out in HM Treasury Green Book and the HSE .

In relation to carbon abatement values, we require the ESO to use the BEIS traded (central) carbon values .

There may be further non-marketed items where a fixed assumption or calculation methodology has not been provided in the CBA template. The ESO can include these benefits in the rows provided but should clearly set out, in the CBA report, the assumptions and valuation methodology used.

The ESO should also set out, within the wider investment appraisal, any non-marketed impacts or factors that cannot be monetised.

## 6. Decision Rule

The purpose of the CBA template is to enable the ESO to demonstrate that the proposals included in their business plan provide the optimum solution which demonstrates best value for customers.

We do not expect the ESO to use CBAs mechanistically (i.e. including all schemes with positive NPV and excluding all those with negative NPV). Where a scheme has a marginally positive or negative NPV, the ESO should consider the inclusion/exclusion of such a scheme, drawing on sensitivity analysis and the identification of any non-monetised benefits or costs. As an example, such non-monetised costs/benefits might include (non-monetised) commercial/technical judgement on what constitutes an efficient project, as detailed in the business plan or evidence of stakeholder support for one option over another. We require the ESO to clearly set out such judgements as part of their supporting documentation and/or business plan, and have accordingly included in the CBA template a section for the ESO to provide a brief synopsis of both commercial/technical justification and stakeholder support.

It is the overall position, determined across the following three distinct elements, which will determine and substantiate the most appropriate solution: commercial/technical justification; stakeholder engagement & support; and the quantitative analysis (i.e. CBA). These will be assessed in their entirety by Ofgem to determine the viability and justification of any proposed investments within the ESO's well-justified business plan. Ofgem also intends to utilise this evidence as part of the ongoing monitoring and assessment of delivery throughout the Price Control period. Where there has been material divergence in the cost, timing or nature of the solution from that which was assessed and funded through the business plan process, we expect these changes to be subject to the same rigor and assessment that the original proposal was subjected to. We would therefore expect an updated investment justification and CBA, with the baseline being the original solution, to be available to Ofgem upon request.

## 7. Uncertainty and sensitivity analysis

We expect the ESO to undertake sensitivity analysis consistent with the HM Treasury Green Book guidance<sup>1</sup> and consistent with their stakeholder approved process based on the 2019 Future Energy Scenarios<sup>2</sup>.

- *"Sensitivity analysis is fundamental to appraisal. It is used to test the vulnerability of options to unavoidable future uncertainties. Spurious accuracy should be avoided, and it is essential to consider how conclusions may alter, given the likely range of values that key variables may take. Therefore, the need for sensitivity analysis should always be considered, and, in practice, dispensed with only in exceptional cases.*
- *The calculation of switching values shows by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option. This should be considered a crucial input into the decision as to whether a proposal should proceed. It therefore needs to be a prominent part of an appraisal."*

We expect the ESO to consider sensitivity analysis with respect to key parameters, for example:

| Market factors                        | Third party factors   | Delivery factors   |
|---------------------------------------|---|--|
| Constraint costs                      | Efficiency created by ESO activities (i.e. customer time saved) | Implementation (i.e. do we deliver the activity on time)                             |
| Balancing and ancillary service costs | Costs of solution (e.g. operability solutions)                  | Quality of implementation (i.e. does the activity deliver the benefit we anticipate) |
| Carbon price                          |   |  |
| Energy landscape assumptions          |   |  |

In addition, included within the CBA template is a section for capturing risks associated with the chosen option. These risks should capture any material risk which may impact the cost and/or timing of the chosen investment. The risk impact should be quantified and the likelihood of occurrence estimated. The relevant controls and risk mitigation should also be captured within this section.

<sup>10</sup> HM Treasury - The Green Book; [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf)

<sup>11</sup> National Grid – Future Energy Scenarios; fes.nationalgrid.com

## 8. Links to business plan

The ESO must clearly show the links between their CBA and the business plan and associated data tables. For example, the ESO should show how the workload and cost reductions underpinning the CBA and proposed asset investment plans feed through into the overall business plan proposals. We have included an area within the template for the ESO to reference which BPDT/Regulatory Reporting Pack table the CBA would fall under.