Consultation on valuing optionality in the Common Evaluation Methodology

Open Networks

8 March 2022 | Version 1.0

DOCUMENT CONTROL

Authorities

Version	Issue Date	Authorisation	Comments
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Related documents

Reference 1	
Reference 2	

Change history

Version	Description

Distribution

Published on ENA website

Introduction

About ENA

Energy Networks Association (ENA) represents the owners and operators of licenses for the transmission and/or distribution of energy in the UK and Ireland. Our members control and maintain the critical national infrastructure that delivers these vital services into customers' homes and businesses.

About Open Networks

Britain's energy landscape is changing, and new smart technologies are changing the way we interact with the energy system. Our Open Networks programme is transforming the way our energy networks operate. New smart technologies are challenging the traditional way we generate, consume and manage electricity, and the energy networks are making sure that these changes benefit everyone.

ENA's Open Networks programme is key to enabling the delivery of Net Zero by:

1. opening local flexibility markets to demand response, renewable energy and new low-carbon technology and removing barriers to participation
2. providing opportunities for these flexible resources to connect to our networks faster
3. opening data to allow these flexible resources to identify the best locations to invest
4. delivering efficiencies between the network companies to plan and operate secure efficient networks

In order to facilitate open debate and discussion across the industry, all outputs from the project are being published on ENA's website alongside annual reports that summarise progress and achievements.

Purpose of this consultation

The purpose of this consultation is to seek views from stakeholders on the development of the Common Evaluation Methodology (CEM) and Tool in the area of valuing optionality. In 2021 an extended Product team were tasked with developing a method for valuing optionality and the Product team are seeking feedback on the content of its work to date and to help inform and shape the future work of the Product team in 2022.

Everyone is welcome to respond: Feedback is welcomed from all stakeholders, including but not limited to: network users; energy market participants; independent distribution network operators; aggregators; suppliers; DER producers; Flexibility Service Providers; consumers and consumer groups; community energy schemes; new and existing business models; and technology businesses.

How to engage and respond

This consultation is open for four weeks and closes on Friday 8 April 2022. Please send your responses to the consultation by email to opennetworks@energynetworks.org. All responses are intended to be published on ENA's website, therefore if your response is confidential and not for publication, please tell us. Or, if elements of your organisation's response are confidential then please provide us with a full version for consideration and a non-confidential version for publication. Once this consultation closes and all responses are received, they will be summarised in a separate report. This summary report will be published in late May/early June 2022.

Executive Summary

This consultation seeks views on the Open Networks' proposed approach to the development of the Common Evaluation Methodology and Tool following its revision in 2021.

The development of the CEM and Tool is intended to provide a standard approach for electricity network operators and greater transparency surrounding the decisions made on the most optimal solution between traditional network asset solutions (i.e. reinforcement) and procuring flexibility services to meet specific electricity network needs.

Following the release of the baseline version of the CEM and Tool, developed with the support of Baringa, in December 2020, the ENA engaged with users and third parties to provide their feedback on the model and areas of improvement. Respondents noted that there was a need to enhance the model to better capture the additional "option value" associated with flexibility solutions under uncertain future scenarios to ensure that the value of flexibility was fully recognised. They also highlighted that the inputs and calculations for carbon savings in the model could be more explicit and standardised.

Following the feedback, the ENA commissioned Baringa to support the Product team to develop methods for the two areas identified above within the model during a second phase of work. The outcome of Baringa's work during this phase was the publication of the second version of the CEM and Tool in January 2022.

As there is no User Forum present as part of this workstream to discuss the development of the CEM and Tool, the Product team spoke to critical friends and academics on the potential option valuation approaches in the model and sought advice on the best approach to consult on this issue.

An industry wide webinar to go over and discuss two potential approaches for valuing optionality in CEM Tool will be conducted on 8 March 2022. It should be noted that the content of the consultation should be read in conjunction with the webinar as several questions outlined in this consultation, published 8 March 2022, will be raised during the webinar.

Background

Collectively Britain's distribution network operators (DNOs) have agreed to make flexibility the first option when seeking solutions for all new projects of significant value. This was formalised in December 2018 when the ENA's Flexibility Commitment was launched, and all signatories committed to openly test the market to compare relevant grid reinforcement and market flexibility solutions.

In July 2019 the ENA followed up their earlier announcement with additional guidance on the next steps required. The booklet titled "Our six steps for delivering flexibility services" detailed plans and commitments to continue working extensively and inclusively with stakeholders, sharing our flexibility developments, and listening to wide reaching feedback.

The six steps identified were selected to ensure consistent, tangible processes, procedures and agreed working methodologies by all participating electricity networks through the ENA Open Networks . These were:

1. Champion a level playing field
2. Ensure visibility and accessibility
3. Conduct procurement in an open and transparent manner

4. Provide clarity on the dispatch of services
5. Provide regular, consistent and transparent reporting
6. Work together towards whole energy system outcomes

Through the ENA Open Networks, work completed under Workstream 1A (WS1A) – Flexibility Services is helping meet these commitments, and specifically the output from Product 1 (P1) – Common Evaluation Methodology is helping realise points 1 to 3.

In 2020 WS1A P1 delivered a first version of the CEM and associated Tool. This allowed the user to assess the viability of flexible vs non-flexible (i.e. conventional network reinforcement) options to meet their existing and future network needs. From April 2021 all DNOs committed to using the CEM to evaluate flexibility, a significant milestone in the flexibility journey.

The CEM and Tool was well received by stakeholders and suggestions were made on how the tool could be further enhanced; these included 1) the need for show the option value (especially under conditions of load growth uncertainty) and 2) an expansion on the calculation of carbon impact assessment (i.e. making the inputs and calculations more explicit and standardised).

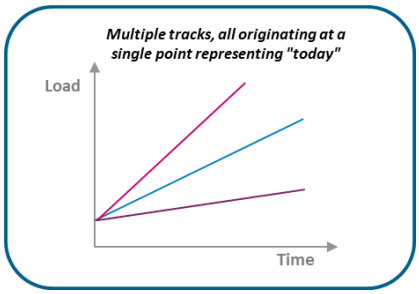
This feedback was incorporated into the scope for 2021 and the outcome/deliverable being the publication of the second version of the CEM and Tool in January 2022. As we move into 2022 we will continue to consult on the changes made in 2021, seeking to clarify, enhance and/or expand the CEM where required as guided by our stakeholders.

The CEM and Tool are live documents and will continue to evolve.

Valuing optionality

Our stakeholders confirmed in responses to Open Networks' 2021 high level scope consultation that the two areas of development for the Common Evaluation Methodology in the 2021 workplan should be developing and incorporating methodologies for 1) Carbon Impact Assessment and 2) Option valuation.

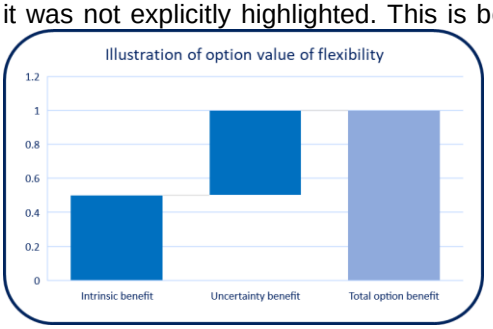
Baseline CEM and Tool (2020):



The Product team was reformed in July 2021 and work started in developing these two requirements. The baseline CEM and Tool developed in 2020 used scenarios to represent load growth uncertainty over time which highlighted that the value of flexibility services varied under different scenarios. The chart across illustrates differing pathways orginating from today. The aim of the CEM and Tool is to provide the user with information from which to determine the optimal intervention solution. The Tool uses the Least Worst Regrets and Weighted Average methods to provide evaluation information to the user, such a ceiling price (ie the max viable price for using flexibility) and the optimal contract length. To generate this information under the Weighted Average method the user must manually input the probabilities for the scenarios being evaluated. The Product team has observed that as the range of scenarios increases (ie the envelope widens) the ceiling price for flexibility increases.

Second CEM and Tool (2021):

One of the concerns raised by stakeholders during the creation of the baseline CEM and Tool in 2020 that the 'option value' associated with flexibility was not being considered. In the Product team's deliberations on valuing optionality in 2021 it was identified that the baseline CEM and Tool did implicitly provide an option value, although it was not explicitly highlighted. This is because flexibility services have an implicit option value because they allow the DNO to wait and see whether network reinforcement is required. The use of multiple scenarios means that the CEM and Tool are accounting for this option value and the Product team proposed changes to show the option value more clearly. The revised CEM and Tool (2021) now visualises separately the NPV for flexibility under the best view scenario (defined as the intrinsic benefit) and the additional NPV revealed by having multiple scenarios (defined as the extrinsic or uncertainty benefit), and when combined provide the total option benefit. The picture across illustrates this visualisation.



In our informal engagement with a number of academics working in the field of investment decisions they identified two concerns. The first issue is the well-known concern with the Least Worst Regrets method, in that the outcome can be skewed by extreme scenarios. The second issue is that there is currently no defined method in the CEM for calculating probabilities, whilst highlighting that there is little academic research on creating probability values for scenarios.

Scope of second CEM and Tool

Q1A. Do the 2021 revisions to the CEM and Tool deliver what you expected? Please explain.

Q1B. Do the changes related to valuing optionality provide you with a view and understanding of the option value of flexibility? Please explain.

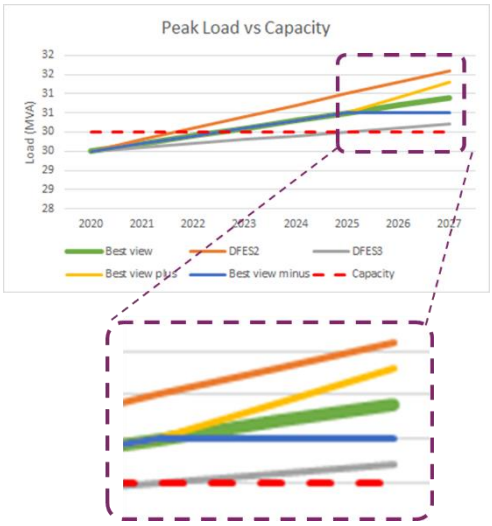
Probabilities

Q2. Should there be a common approach to defining probabilities in the common evaluation methodology? If yes, how do you think the probabilities should be reflected in the CEM Tool? Please reference any published work on probabilities that you are familiar with.

Two potential alternative methods for valuing optionality:

The CEM Tool evaluates multiple scenarios simultaneously and it can be shown that uncertainty around a central scenario increases the expected value of flexibility, which is now visible in the second CEM and Tool, published in January 2022. The Product team with the support of Baringa explored the alternative modelling approach of decision tree using branching to represent future uncertainty; this was based on the work undertaken by Frontier Economics on behalf of Scottish & Southern Energy Networks in 2019.

The Product team has chosen only to describe these two methods through illustration, not examples as we want to seek feedback on the methodologies only. We have observed in consultations on DUoS methodologies that respondents can be swayed into choosing a methodology as it provides the best outcome for them.

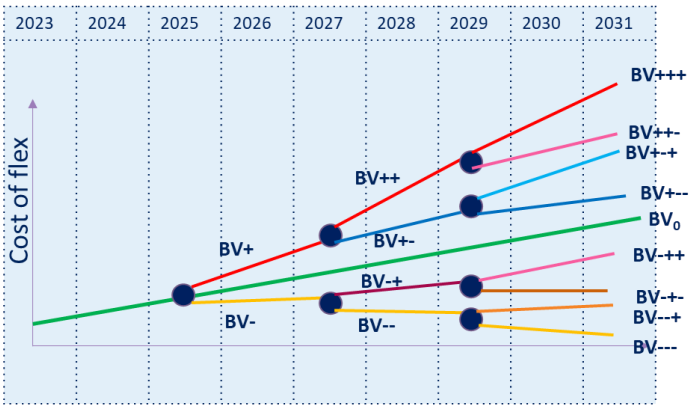


Method 1 – branching off multiple scenarios: This approach considers introducing branching at specific times with branches showing a range of the upside and downside branches at each branching node. Its aim is to mirror the potential decision tree faced by the evaluation team considering flexibility services.

But as there is no perfect foresight then it is necessary to procure flexibility at least for one year to reveal the path that we are on, which also reveals the value that is locked through the first decision. The challenge is how to define the parameters i.e. node years and spread of the resulting branches. It is worth noting that adding branches increases the spread and hence the uncertainty benefit, which may be inappropriate.

Method 1 approach retains the scenario-based approach in the CEM and Tool but as the number of branches increase the complexity of modelling increases significantly and we are also needing to be mindful that the branches do not fan out across the original spread of the scenarios.

Method 2 – branching around a single scenario: This approach considers a single scenario or Best View (BV) with branches introduced at specific time intervals and branches showing the upside and downside from each node. This results in a fan shape as illustrated in the visual across. The user must define a series of node years i.e. where branches occur and the spread at each node year for the CEM and Tool to model the expected value at each node year moving from left to right. In the illustrative example there are three node years of 2025, 2027 and 2029 resulting in nine branches in 2030. However, the Method 2 approach doesn't reconcile with the scenario-based approach of the developed CEM and Tool and it is unclear how to define the parameters i.e. node years and spread of the resulting branches.



Optionality approaches

Q3. Do you think the Product team should take forward one of these options? If yes, which approach do you think the Open Networks Product team should take forward? If no, please explain.

Q4. Are there any other approaches to calculating optionality that you think are better suited to the CEM and Tool? Please reference any published work on optionality that you are familiar with.

Next steps

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You are invited to join a public webinar on 8 March 2022 or watch a recording of the webinar on demand at your own convenience. This will introduce and provide the opportunity to feedback on the consultation.

Further details on this event will be provided on ENA's events webpage and communicated to stakeholders on the project's mailing list. You can sign up for this mailing list on our website and ask questions by emailing the Open Networks project.

Once this consultation closes and all responses are received, they will be summarised in a separate report. It is our intention to review the responses to this consultation and publish our comments on the feedback by late May/ early June 2022 on ENA's website.

In addition, our aim is to publish a report in April 2022 that highlights the interactions between CEM and the Whole System CBA, including any opportunities for alignment. This report will also help clarify how CEM interacts with other available tools and methodologies, as well as Network Options Assessment processes. We intend to assess these interactions and alignment opportunities across various timelines e.g. from short-term to the longer-term.

Finally, we continuously seek for feedback on our flexibility developments from all stakeholders. **Hence, we welcome your views and comments on the development of CEM and Tool to date and we will be seeking views its future development as part of the Flexibility Consultation in July 2022.**

Next Steps

Q5. The CEM and Tool have been operational since July 2021, are you happy with the current scope and functionality of the revised CEM and Tool? Please explain.

Q6. The Product team has scheduled from July to December 2022 to develop the CEM and Tool further, what development, revision or update is most important to you. Please explain.

Q7. Are there any additional revisions or updates to the CEM and Tool that you believe the Product team should consider as part of their 2022 workplan? Please rank any suggestions in order of priority.

Summary of Questions

This is a consolidated list of the questions for this consultation.

General

Please tell us about your organisation and the type of industry party you are.

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