

ENTSO-E Response to the Public Consultation on “Guideline for Cost Benefit Analysis of Grid Development Projects”

14 November 2013

1. INTRODUCTION

The European Regulation on guidelines for the implementation of European energy infrastructure priorities (EU) No 347/2013 requests ENTSO-E to submit to the Commission, by 16 November 2013, a harmonised energy system-wide cost benefit analysis (CBA) at Union level.

In addition, the Regulation mandates ENTSO-E to perform extensive consultation of his “Guideline for Cost Benefit Analysis of Grid Development Projects” (CBA Methodology) with stakeholders, and so a formal web-based consultation was held from 3rd July until 15th September 2013. During this public consultation, ENTSO-E received over one hundred and twenty different comments from 11 respondents.

This document lists ENTSO-E’s assessment of comments provided in the formal web-based consultation on the draft Guideline for Cost Benefit Analysis of Grid Development Projects in the period of 03 Jul. – 15 Sep. 2013. Rather than providing responses per individual comment received, an assessment of all input received is done on a clustered basis per topic, in order to give a coherent view on ENTSO-E’s approach towards the CBA Methodology document. Minor items, such as editorials or restructuring of clauses have been assessed in the review but are mostly not mentioned in this document. The clustering of comments and summary of the initial issue is based on ENTSO-E’s judgment, irrespective of the organization(s) providing the comment nor the number of times it was provided.

In order to provide a clear oversight of comments and responses, the issues mentioned in this document may have been summarized with respect to the original comments provided. For a full overview of all comments provided in the web-based consultation, in their original formulation, please refer to <https://www.entsoe.eu/consultations/>

This document is not legally binding. It only aims at clarifying the content of the CBA Methodology, based on feedback provided during the formal consultation period. This document is not supplementing the CBA Methodology document, nor can it be used as a substitute to it.

ENTSO-E acknowledges and thanks stakeholders for the effort that they have invested in providing feedback for the consultation on the CBA methodology; this feedback is a major contributor to bringing improvements and transparency to the process.

| Topic | Comment/Proposal | Decision |
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| ENV/SOC | Asks for clarification that analysis includes a “serious and all-encompassing” evaluation of ecological footprint. Should include all input factors, for example rare earth elements used. | ENTSO-E did not consider this comment in the document, because its degree of detail goes beyond what this CBA methodology is meant for. |
| ENV/SOC Sensitivity regarding biodiversity | Come up with a more detailed specification of the definition for biodiversity sensitivity. | ENTSO-E will consider take this comment into account in the next version of the CBA methodology. |
| ENV/SOC Social impact. Sensitivity regarding population density | <p>1) Be more specific regarding factors that could be a cause for an area to become sensitive (e.g., nearby schools)</p> <p>2) Consider lines that are to be built over land that is difficult to obtain (by TSOs) as a sensitive area by definition.</p> <p>3) Legal limits (in meters) for building lines next to residential areas.</p> | <p>1) ENTSO-E will increase the number of factors that are explicitly mentioned as a possible cause for an area to be considered sensitive.</p> <p>2) ENTSO-E did not consider this comment in the document, because although it may pose a risk for TSOs, it is not related to social sensitivity in the definition used by ENTSO-E in the scope of CBA</p> <p>3) ENTSO-E did not consider this comment in the document, because defining legal limits for building power lines next to residential areas is not within the scope of CBA.</p> |
| ENV/SOC Section 3.8.1 | Assessment of social and environmental sensitivity is not clear in main text (section 3.8.1 mentioned) | ENTSO-E did not consider this comment in the document, because the main text already introduces the indicators (section 3.5) and clearly refers to Annex 7 for an extensive discussion of the sensitivity assessment of these factors itself. |
| ENV/SOC | <p>1) Risk of double accounting</p> <p>2) Indicate costs related to mitigation of social and environmental impacts</p> | 1) ENTSO-E did not consider this comment in the document, because the methodology includes only <u>residual impacts</u> , hence no double accounting takes place. However, since this question has been raised multiple times in the consultation, ENTSO-E will put more emphasis on the fact that no double accounting takes place with respect to |

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| | | <p>social and environmental impact to make sure that it is clearly understood. (In section 3.5 of the methodology, under C.1., ENTSO-E will mention that when mitigation measures are taken (which are reflected in project costs) some impacts will remain, which are then included in the indicators S1 and S2. Since these are discussed right afterwards, ENTSO-E believes this will contribute to the understanding of the issue by those reading the methodology.)</p> <p>2) ENTSO-E did not consider this comment in the document, because this is very difficult to do in practice. Decisions related to a project (e.g. routing) are influenced by a variety of factors, so it would be difficult to provide a full and accurate overview of the cost components that were caused by additional expenses that were made in order to mitigate certain social or environmental impacts. For instance, what is the additional cost if a route is altered to go around a sensitive area (=mitigation measure) in an early project stage, while there is no clear alternative (with associated project cost) through the sensitive area to compare these additional costs to.</p> |
| <p>ENV/SOC STORAGE</p> | <p>1) Introduce hard fact-KPIs, related to technical characteristics of pumped storage projects; Investment costs of non-TSO storage vs TSO storage</p> <p>2) Investment costs: TSO vs non-TSO projects</p> <p>3) External effects: emissions not included entirely.</p> | <p>1) ENTSO-E did not consider this comment in the document, because these technical characteristics should not be a criterion for CBA or the overall presentation of projects in the TYNDP, but are to be dealt with in the Regional Investment Plans instead. 2) ENTSO-E did not consider this comment in the document, because projects should be compared on their social costs and benefits (rather than an investment case),</p> |

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| | | <p>so there is no difference between TSO and non-TSO projects.</p> <p>3) ENTSO-E did not consider this comment in the document because the most important emissions (primarily: CO₂) are included in the scenarios.</p> |
| ENV/SOC 2. | <p>Make a clear distinction between 'no information' and 'no impact' when presenting environmental and social impact of a project.</p> | <p>ENTSO-E will make sure the TYNDP makes this distinction clearly in its project assessment overview. Also, the methodology now explicitly mentions that this distinction should be clear (see Annex 7).</p> |
| ENV/SOC 3. | <p>Differentiate between residual and potential impacts</p> | <p>ENTSO-E will clearly distinguish whether an environmental or social impact that is presented is residual (i.e., it <i>will</i> not be mitigated or compensated) or potential (i.e., it <i>may</i> not be mitigated or compensated).</p> |
| ENV/SOC Row 35: 11 Annex 7: Environmental and Social impact | <p>1) Chapter 10: Environmental assessment should deal with local specificities only</p> <p>2) Additional mistake in CBA found: Chapter 10: S.1 mentions both social and environmental impact, but social impact is now S.2.</p> | <p>1) ENTSO-E will explicitly add to Chapter 10 of the methodology that the assessment should take into account the national legal framework regarding environment.</p> <p>2) Fixed, S.1 and S.2 are now separate.</p> |
| ENV/SOC Row 36: | <p>Chapter 10: Social impact assessment should deal with local specificities only.</p> | <p>ENTSO-E will explicitly add to Chapter 10 of the methodology that the assessment should take into account the national legal framework regarding social impact.</p> |
| General | <p>To include storage, as storage is a PCI.</p> | <p>ENTSO-E did not consider this comment in the document, because it is already included in the methodology, further improvements will follow.</p> |
| General | <p>Agree with high valuation of market issues. Strong active and active involvement of all market actors is</p> | <p>ENTSO-E did not consider this comment in the document, because this matter falls</p> |

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| | necessary to complete internal market. So would like publication of all relevant data, information policy, workshops, consultations, etc. | outside the scope of CBA. |
| General | States that a “secure regulatory environment is needed to ensure business decision for infrastructure projects.” States support for market coupling. | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | To foster acceptability; data, methodology and scenarios should be undisputed or at least consensual. | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | EDF supports the formation of a neutral platform at European level where experts can participate and issues around CBA can be discussed, to support interest of the whole system. LTSG mostly focuses on scenarios. | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | Supports a common approach across Europe to assess costs and benefits of transmission assets and storage facilities. | ENTSO-E did not consider this comment in the document, because this is already the approach. |
| General | Implementation in the field needs better monitoring | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | The investment in grid infrastructure and competitiveness of energy intensive industries is not treated in the document | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | Economic key parameters should include 20% industrial activity | ENTSO-E did not consider this comment in the document, because this matter falls outside the scope of CBA. |
| General | Change the title of the guidelines | ENTSO-E did not consider this comment in the document, because it believes that, at this moment, the title accurately reflects the scope of CBA as a methodology for transmission expansion project assessment. Depending on how the role |

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| | | of storage (which is currently mentioned in an annex) develops in the future, the title of the methodology may be updated to reflect the role of storage. |
| Indicators - Reporting | Double accounting of CO2 and RES leads to misunderstandings | ENTSO-E did not consider this comment in the document, because CO2 and RES are explicitly mentioned on their own to reflect their societal importance in the assessment of transmission projects. |
| Indicators – CO2 | Emissions have to be included in the model | ENTSO-E did not consider this comment in the document, because CO2 emissions are already included in the models used within ENTSO-E. The separate indicator only displays the benefit in tons, in order to avoid double accounting) |
| Indicators - CO2 / Env/Soc | <p>Take into account CO2-Balance of new assets and land use for new lines</p> <p>Whole environmental impact should be accounted for.</p> <p>Current focus is just energy side of grid and reduction in CO2.</p> <p>Whole value chain should be considered, for example emissions associated with construction (steel/concrete etc.).</p> | ENTSO-E did not consider this comment in the document, because the residual environmental impact of transmission projects is already covered under indicator S.1. |
| Indicators - Costs | A clear categorization of costs and benefits for the system must be carried out in order not to forget some of them (i.e. stranded costs, value destruction, ancillary services, CAPEX, etc.) as well as to avoid double counting. | <p>ENTSO-E did not consider this comment in the document, because this information is currently not available. In the future, if the EC decides to provide this kind of information, this may be included.</p> <p>For ancillary services see B7 and Annex 5.</p> |
| Indicators - Costs | <p>Section 3.5.C1:</p> <p>Project promoters should provide a detailed account of the cost components of the project.</p> | ENTSO-E did not consider this comment in the document, because the cost and commissioned data of projects should include these kind of uncertainties |

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| | In case unit investment costs of a project differ from those proposed by the NRAs, the project proposal should provide an explanation of the reasons for the discrepancy. Project uncertainties should be included in the definition of project costs. | |
| Indicators - Costs | Give a residual value for the assets after the time horizon of 10 years. | ENTSO-E did not consider this comment in the document, because costs are discounted to the present and an appropriate residual value will therefore be included in the end year, using the standard economic depreciation formula used by each TSO or project promoter. |
| Indicators - Costs | Why is cost an impact indicator and why is it not compared to benefits? | ENTSO-E did not consider this comment in the document, because cost is one element of information, along with a number of benefits and non-monetary costs (social and environmental impact). All these serve as an input for multi-criteria decision analysis (MCDA), which is not performed by ENTSO-E itself. The role of this methodology to provide inputs for MCDA will be more extensively discussed in the document (probably section 3.3). |
| Indicators - Costs | What includes costs? CAPEX, OPEX, Financing costs? | ENTSO-E did not consider this comment in the document, because this is already specified in the methodology, under C.1, page 25. |
| Indicators - Costs | Cable-Costs should be considered | ENTSO-E did not consider this comment in the document, because these are indeed considered. |
| Indicators - Losses | Losses should be taken into account not as an absolute value, but in relation with the transmitted energy | ENTSO-E did not consider this comment in the document, because the main benefit of transmission reinforcements is to facilitate cheaper generation to displace more expensive generation. This cheaper generation is typically more remote from |

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| | | demand and so greater flows and hence transmission losses ensue. Hence the Guidelines require that Losses are assessed including the impacts of generation re-dispatch. |
| Indicators -Monetisation | Full monetization due to transparency, uncertainties for monetization are not higher than uncertainties in the scenarios. Inevitably requires an estimation of the VOLL | Projects should be assessed from economical point of view with costs and benefits that can be monetized, followed by other relevant non-monetary factors should be considered afterwards. Although the Council of European Energy Regulators (CEER) has published a methodology for studies of national Value Of Lost Load (VOLL), this methodology has only been applied in a few European countries. Once the methodology has been applied throughout Europe in a homogenous way, ENTSO-E will be able to accurately monetise loss of load (FAQs, chapter 5). |
| Indicators - Monetisation | Some benefits are not included, such as ancillary services, which could be monetized and included. | ENTSO-E did not consider this comment in the document, because this aspect is included (see indicator B7 in the methodology). |
| Indicators - Monetisation | Every indicator should get a monetary value (e.g. by using a converting code) | <p>ENTSO-E did not consider this comment in the document, because not all indicators can be accurately and objectively monetised. Also see Indicators –SEW:</p> <p>A “pure” CBA cannot cover all criteria specified in annexes IV and V of the EIP Regulation, since some of the benefits are difficult to monetise. As stated in the EC Guide to Cost Benefit Analysis (2008): “In contrast to CBA, which focuses on a unique criterion (the maximization of socio-economic welfare), Multi Criteria Analysis is a tool for dealing with a set of different objectives that cannot be</p> |

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| | | <p>aggregated through shadow prices and welfare weights, as in standard CBA”;</p> <p>“Multi-criteria analysis, i.e. multi-objective analysis, can be helpful when some objectives are intractable in other ways and should be seen as a complement to CBA</p> |
| Indicators - Monetisation | Value Of Lost Load (VOLL) should be used for Security Of Supply (SOS), EC should do an analysis throughout Europe and establish a value | Currently there is no reliable source available that specifies the VOLL in Europe. The Council of European Energy Regulators (CEER) has published a methodology for studies of national VOLL, this methodology has only been applied in a few European countries. Once the methodology has been applied throughout Europe in a homogenous way, ENTSO-E will be able to accurately monetise loss of load . |
| Indicators - Monetisation | One should distinguish between reduction of cost for Ancillary Services and reduction of the total volume of Ancillary Services | ENTSO-E will take up this issue. It is an R&D-Issue as mentioned at the WS in June 2013. |
| Indicators - Monetisation | Separate monetised and non-monetised indicators | These indicators are separated. See Indicators –SEW |
| Indicators - Reporting | Non-monetised indicators should be separated from monetized ones | These indicators are separated. See Indicators –SEW |
| Indicators - Reporting | Avoid expert view (KPI) to avoid subjectivity and untransparency | ENTSO-E did not consider this comment in the document, because although the KPI score will be determined by experts from the regional groups, this will be done on the basis of demonstrable results from grid studies that are performed using detailed network models of the area under consideration. |

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| Indicators - Reporting | GTC should not be reported, because it is a double accounting with SEW | ENTSO-E did not consider this comment in the document because delta GTC must be reported, but it is not taken as a benefit indicator |
| Indicators - Reporting | Why is the red color not used in more indicators? | ENTSO-E did not consider this comment in the document, because colors were only included for additional guidance. The actual figures should be used, which provide a better (and complete) overview. |
| Indicators - RES | <p>Capacity credit of wind power should be included. (This is the provision of adequacy of wind power, albeit lower than conventional generation.</p> <p>EWEA also calls for ENTSO-E to develop a common approach to establishing a method of determining capacity credit for wind.</p> | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. |
| Indicators - SEW | <p>CBA should focus on a reduced number of indicators, and in particular SEW. SEW should include other factors, such as RES and CO2 indicators etc.</p> <p>CBA is a purely monetary tool and not a multi-criteria analysis (which can include non-monetary factors). A CBA can be part of a multi-criteria analysis but these two tools should not be confused.</p> | ENTSO-E did not consider this comment in the document, because a “pure“ CBA cannot cover all criteria specified in annexes IV and V of the EIP Regulation, since some of the benefits are difficult to monetise. As stated in the EC Guide to Cost Benefit Analysis (2008): “In contrast to CBA, which focuses on a unique criterion (the maximisation of socio-economic welfare), Multi Criteria Analysis is a tool for dealing with a set of different objectives that cannot be aggregated through shadow prices and welfare weights, as in standard CBA” ; “Multi-criteria analysis, i.e. multi-objective analysis, can be helpful when some objectives are intractable in other ways and should be seen as a complement to CBA. |

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| Indicators - SEW | As a cost for one actor can refer to a benefit for another one, it is essential that ENTSO-E provides a methodology taking consistently into account the costs and benefits for all actors. | ENTSO-E did not consider this comment in the document, because benefits are assessed on a pan-European level. |
| Indicators - SEW | Decrease of congestions should be reported | ENTSO-E did not consider this comment in the document, because it is already taken into account. |
| Indicators - SEW | Congestion rent should not be included in SEW because it does not reflect a positive impact for market participants because this revenues should be used for new lines | ENTSO-E did not consider this comment in the document, because it is mathematically correct to include congestion rents in the SEW calculations. In this light it is irrelevant how they are eventually used, although one should bear in mind that these funds must generally be used for network development because this is considered to create positive benefits for market participants in the longer term. |
| Indicators - SEW | Do not use Generation cost approach, because in 10 years we will have elastic demand | ENTSO-E did not consider this comment in the document, because the figures for elasticity are not available at the moment. Moreover, since the TYNDP is developed on a two-year basis. ENTSO-E will be able to take this into account once it is needed, even though it is currently not included. |
| Indicators - SEW | RES should be monetised. | ENTSO-E did not consider this comment in the document, because RES is already monetized and included under SEW. |
| Indicators - Time | Sensitivity analysis to address impact of project delays | Included under Indicator B7. |
| Indicators - Time | The time advantage of a very fast upgrade of existing lines with ACCR vs. building a new line should be taken into account | ENTSO-E did not consider this comment in the document, because it is a matter of project comparison, rather than assessment guidelines such as provided by this CBA methodology. CBA considers that in mid and long term assessed new |

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| | | investments and upgraded will be in operation and treat them in the same way. |
| Indicators -ANCILLARY SERVICES Row 73 | More ambitious approach towards monetizing the effects on cost of ancillary services (at least balancing and voltage control). Distinguish between (reduction in) volume and costs of ancillary services due to a PCI. | ENTSO-E did not consider this comment in the document, because such an assessment is not feasible due to there being no homogenous approach to Ancillary or Balancing pricing across Europe. |
| Indicators -Monetisation | Flexibility and Ancillary Services should be monetized. | <p>ENTSO-E did not consider this comment in the document, because it is infeasible to accurately calculate or monetise:</p> <ul style="list-style-type: none"> • the ability to comply with all cases • variances from foreseen reinforcements, • ability to modify project, • balancing services, <p>under a number of possible future developments on a Union-wide scale for each project. Additionally see first comment above.</p> |
| Method | Request for information on which market model will be used, in particular for the evaluation of Austrian PCI's. | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. |
| Method | Asks to specify if new flexible infrastructure development needs concern factors other than grid development. For example, demand side management and/or storage. | ENTSO-E will review this issue constantly, and update the TYNDP process accordingly if necessary. |
| Method | Rather than either the TOOT or the PINT approach, both methods should be used in most cases, with few exceptions. | Competitive projects will not be included in the reference model together. |
| Method | <p>Section 3.7.2:</p> <ul style="list-style-type: none"> - The methodology should provide guidelines for a minimum harmonization of model building and calculation assumptions. | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. Rather, these issues should (and will) be addressed by the Regional Groups performing the |

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| | <ul style="list-style-type: none"> - The assumptions for the generation dispatching models should be reported in detail. - All data used should be publicly validated. - Monte Carlo techniques should be used to assess model results in an exhaustive range of possible system states. <p>The building of the model should be tailored to the available set of data that has been publicly validated. If a regional group decides to adopt a set of detailed values for their regional model, then these data should be publicly validated.</p> | calculations through market and grid studies. |
| Method | <p>Section 3.6.4:</p> <ul style="list-style-type: none"> - TOOT may not identify competitive projects. Use both approaches. Large deviations could indicate competitive projects. <p>Consider impact of projects with high uncertainty. Use (1) TOOT and (2) TOOT without projects with uncertainty.</p> | Competitive projects will not be included in the reference model together. ENTSO-E will provide more guidance on how to deal with such situations. |
| Method | Even projects between two TSOs within one market area should be taken into account | ENTSO-E did not consider this comment in the document, because this is already the case. |
| Method | How to deal with competitive projects? What is the definition of strictly competitive projects? | ENTSO-E will clarify this in the methodology, also in the light of issues related to using the PINT/TOOT approaches. |
| Method | Use N-2 instead of N-1 as the standard for calculations (Standard UK). | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. |
| Method | <p>Extra interconnection leads to a positive external effect which should be part of a CBA</p> <p>-Not only analyses of interconnectors between markets but also inclusion of internal grid reinforcements</p> | ENTSO-E did not consider this comment in the document, because this is already the case. |

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| Method - CBCA | <ul style="list-style-type: none"> - Scope (1.2) to include note on CBCA. - How will CBA provide input for CBCA? Will total surplus approach be recommended? - Clarify how to split non-quantifiable benefits. Equally or pro rata? <p>Following CBCA how will costs be translated into grid tariffs? Will this be outlined in the network code for grid tariffs? These clarifications should be integrated into the CBA - in an annex.</p> | CBA <i>can</i> be used as an input for CBCA, but this methodology is not developed with this as its main goal. |
| Method - Clustering | Way of clustering | GTC is a main criteria for clustering because it is a way to quantify market integration as requested in Regulation 347/2013. In the Application Guideline that is part of the CBA Methodology package, ENTSO-E presents examples for clustering. All candidate investments should have the same opportunities. |
| Method - Compare | Section 3.7.2: The methodology does not consider the impact of a new project in deferring generation investments. Generation savings (from a societal perspective) have to be considered in the CBA, but impacts on revenues of individual generators (whether positive or negative) should not lead to any compensation. | ENTSO-E will look into this issue. |
| Method - Compare | <p>PCI under consideration should be compared with alternative projects like storage, DSM or Smart Grids</p> <p>CBA should assess alternatives to transmission solutions against the benefits of PCIs, evaluating what would be avoided by investing.</p> <p>Long term scenarios should include technological developments on TSO and</p> | ENTSO-E did not consider this comment in the document, because its task is to assess projects, but not to compare them. This is a task of the EC Regional Groups, which are also responsible for the trade-offs between different indicators, thereby implicitly valuing their importance. |

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| Method - Compare | DSO level, not just generation change and transmission expansion. For example new offshore, smart and super grid solutions. | ENTSO-E did not consider this comment in the document, because its role in this respect is merely to assess projects in the TYNDP. These projects are not proposed by ENTSO-E, let alone in the CBA Methodology, but are initiated by project promoters (e.g. TSOs). |
| Method - Compare | Avoided generation capacity should be reported | At the moment, ENTSO-E does not possess the tools to structurally include this in its project assessments. However, ENTSO-E considers this an important aspect and will continue to look into this as a future addition to the CBA Methodology. |
| Method - Compare | Assess lines against alternatives like DSM, SmartGridetc | See comment above. |
| Method - Compare | Generation CAPEX savings | ENTSO-E did not consider this comment in the document, because the CBA assesses short-run marginal costs of generation and demand response within SEW, given a particular scenario of generation and demand. Inclusion of generation capital costs would imply assessment of a different generation scenario, and is beyond the scope of our CBA. The further generation investments are not resulted from network analyses. Scenarios consider demand and generation capacity as it is expected. |
| Method - Compare | Only flexibility regarding grid development or demand side management measures? Has to be specified | See above. |

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| Method - Compare | Avoided Costs, Direct and indirect costs should be part of the CBA | ENTSO-E acknowledges the importance of these factors and considers this as a future improvement of the CBA Methodology. |
| Method - Consistency | There shouldn't be a difference in using the CBA between the RG (e.g. in case of taking into account the social and environmental impact indicators) | ENTSO-E acknowledges the importance of a consistent application of its methodology by the Regional Groups. ENTSO-E will be closely involved with the application by Regional Groups in the current TYNDP iteration and intends to provide guidance in future iterations of the TYNDP process to ensure consistency. |
| Method - Consistency | Different storage projects in the regional groups have to be comparable (e.g. max turbine power, storage content) | ENTSO-E did not consider this comment in the document, because its task with regard to the CBA Methodology is not to compare projects but to assess them in a consistent manner. |
| Method - Consistency | -Apply the CBA on an EU level -An overall EU approach regarding regulation is preferred | ENTSO-E acknowledges the importance of a consistent application of its methodology by the Regional Groups. ENTSO-E will be closely involved with the application by Regional Groups in the current TYNDP iteration and intends to provide guidance in future iterations of the TYNDP process to ensure consistency. |
| Method - Consistency | Do not use different ways of calculation SEW in RG due to transparency | ENTSO-E acknowledges the importance of a consistent application of its methodology by the Regional Groups. ENTSO-E will be closely involved with the application by Regional Groups in the current TYNDP iteration and intends to provide guidance in future iterations of the TYNDP process to ensure consistency. |
| Method - Discount rate | Suggest regional discount rate | ENTSO-E did not consider this comment in the document, because this is currently the case. |

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| Method – Discount Rate | <p>The social discount factor depends on several factors.</p> <p>ENTSO-E should take the advice from an external study which has been approved by ACER.</p> | <p>ENTSO-E agrees that establishing a correct social discount rate is important, and will cooperate with external stakeholders, ACER in particular, to come up with an approach that enables it to use an adequate and consistent social discount factor.</p> |
| Method – Market Power | <p>Suggestion for further incorporation of “market power” together with the national regulators and competition authorities</p> | <p>ENTSO-E did not consider this comment in the document, because this falls outside the scope of CBA. In Annex 1 of the methodology ENTSO-E argues why it does not consider the impact on market power in its project assessments.</p> |
| Method - Weighting | <p>Improve harmonization & transparency of weighting process. Suggest multi-criteria method by combining project scores. Have we considered it or suggested it to the RGs?</p> | <p>ENTSO-E did not consider this comment in the document, because it falls outside the scope of the CBA Methodology. ENTSO-E is currently not responsible for valuing the indicators against each other (weighting), as it will not rank the projects itself.</p> |
| Method - Weighting | <p>The ranking should not be done by EC, because it is subjective. One avoid this problem when using a fully monetized method</p> | <p>ENTSO-E did not consider this comment in the document, because it is not its task to decide on the importance of the different indicators on behalf of society. It is ENTSO-E's task to assess projects in a complete and objective manner, but ranking projects in a multi-criteria decision analysis is subjective by definition because it implies implicit valuing of the importance of indicators. A fully monetized method essentially boils down to the same type of issue, because there is not always an objective measure to value certain indicators in monetary terms.</p> |
| Method - Weighting | <p>ENTSO-E should give guidance on the weighting to ensure transparency</p> | <p>ENTSO-E did not consider this comment in the document, because it is not its task to decide on the importance of the different indicators on behalf of society. It is ENTSO-E's task to assess projects in a</p> |

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| | | complete and objective manner, but ranking projects in a multi-criteria decision analysis is subjective by definition because it implies implicit valuing of the importance of indicators. A fully monetized method essentially boils down to the same type of issue, because there is not always an objective measure to value certain indicators in monetary terms. |
| Method - Weighting | SEW, SoS and RES | It is the responsibility of EU Regional Groups to rank candidate Project of Common Interest (PCIs) and gives weights within their Region. Then, it is the responsibility of the European Commission to approve the final European-wide PCI list. Note that there is no European ranking of PCIs (FAQ, chapter 1). |
| Scenarios | - Suggest sensitivity, multi-scenario & stochastic analysis Modeling tools & assumptions should be described in detail. | ENTSO-E did not consider this comment in the document, because it falls outside the scope of the CBA methodology. |
| Scenarios | Updated CO2 Prices should be used. | ENTSO-E did not consider this comment in the document, because it falls outside the scope of the CBA methodology. |
| Scenarios | Give more information on alternative scenarios, which one should be used and why | ENTSO-E adapted its methodology to provide more information on the scenario process (definition and use). |
| Scenarios | Take into account different fossil prices | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. |
| Scenarios | CO2 prices | ENTSO-E did not consider this comment in the document, because this is included in section 2.3.1. |

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| Scenarios | Increase CO2 price used in calculations to 25, and further. | ENTSO-E did not consider this comment in the document, because the CBA methodology should not prescribe values to be used for e.g. CO2. |
| Scenarios - Tools | It has to be known which market model was used | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. |
| Storage | TSO involvement should be strongly limited and properly controlled, in order to reduce influence on market behavior. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | PINT methodology should be applied to storage. This is because many project ideas are presented to TSOs by promoters and info is signal for TSOs with regard to grid connection. These should be viewed as competitive | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Storage should not be regarded as regulated assets. Should be assessed identically to Tx assets "as much as is possible." | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Storage and Tx assets should be assessed on a level playing field as they can be in competition or complementary. So, the methodology should be as similar as possible. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Rules for storage should be clarified. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Sections 3.2 & 10: Hydro storage is market-oriented...not planned or operated together with other infrastructure...not useful to have it in a clustered evaluation. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Sections 3.5 & 10: Extended investment horizon of storage to 100 years. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |

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| Storage | Section 3.6.4 & 10: Benefits for hydro storage should be described in a qualitative manner. | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | Rules for clustering of storage should be developed | ENTSO-E will develop rules for the clustering of storage, but not until after the 2014 iteration of the TYNDP. |
| Storage | Possible criteria for storage assessment should reflect the drivers which are interesting for investors | ENTSO-E will improve the assessment methodology for storage in the next review of the CBA guidelines. |
| Storage | HydroStorages benefits | ENTSO-E did not consider this comment in the document, because this aspect is included under indicator B.7. |
| Storage | HydroStorages benefits | ENTSO-E did not consider this comment in the document, because this aspect is included under indicator B7. In its CBA methodology ENTSO-E could not assess benefits on a DSO level, because these grids fall outside the scope of ENTSO-E and are not reflected in the models used (on a detailed level). |
| Storage | HydroStorages ancillary services | ENTSO-E did not consider this comment in the document, because generation adequacy falls outside the scope of the current CBA methodology. |
| Storage | SEW + ancillary service | ENTSO-E did not consider this comment in the document, because the CBA methodology does not consider the effect of ancillary services on SEW (This is explained in Annex 5.) |
| Storage | Extreme conditions | ENTSO-E did not consider this comment in the document, because this aspect is already included under indicator B.6. |

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| Storage CLUSTER Row 37: Annex 6: Assessment of Storage | Storage should never be clustered with transmission, because it is a private investment | ENTSO-E did not consider this comment in the document, because nothing is stated in the methodology about clustering them; this is an issue that should be dealt with within ENTSO-E's Regional Groups. |
| STORAGE Row 38: Annex 6: Assessment of Storage | Storage should be used for 100 years | ENTSO-E did not consider this comment in the document, because ENTSO-E does not consider projects on such long time horizons. Also, considering that a discount rate is applied to benefits, benefits on such a long time horizon would be (close to) irrelevant anyway. Also, |
| STORAGE Row 39: Annex 6: Assessment of Storage | Market oriented model that takes into account security of supply benefits of storage should be defined | ENTSO-E will better address this issue in Annex 6, and elaborate on how market studies are used to assess the benefits of storage, with network studies being used to complete this evaluation. |
| STORAGE Row 40: Annex 6: Assessment of Storage | Use WACC to assess commercial viability of project | ENTSO-E did not consider this comment in the document, because it assesses the social economic benefit of a project, but not the viability of the investment. |
| STORAGE Row 41: Annex 6: Assessment of Storage | Describe benefits from storage in a qualitative manner: define markets/places that ensure clear regulations for storage | ENTSO-E did not consider this comment in the document, because this falls outside the scope of the CBA methodology. The RGIPs will include text for each project to describe such benefits. |
| STORAGE Row 42: Annex 6: Assessment of Storage | Cluster benefits at different levels | ENTSO-E did not consider this comment in the document, because it falls outside the scope of CBA. For DSOs, CBA does not apply. |
| STORAGE Row 43: Annex 6: Assessment of Storage | Non-discrimination of storage companies for ancillary services | ENTSO-E did not consider this comment in the document, because it is out of CBA scope. |

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| Storage - Discount rate | Sections 3.6.3 & 10: WACC should be used for hydro storage. | ENTSO-E did not consider this comment in the document, because it assesses the social economic benefit of a project, but not the viability of the investment. |
| STORAGE Row 44: Annex 6: Assessment of Storage | Include contribution of ancillary services to social welfare | ENTSO-E did not consider this comment in the document, because tools are not capable of doing so. This is discussed under indicator B.7. |
| STORAGE Row 45: Annex 6: Assessment of Storage | Calculate benefits of storage projects in extreme climate events (e.g. outage of conventional plants due to cooling water restrictions). | ENTSO-E does not currently deal with this (see Annex 6). However, the assessment methodology for storage will be improved in the next review of the CBA guidelines. |
| Storage (row 31) | Link between storage evaluation and transmission evaluation | <p>With storage, competing projects are considered in a manner similar to competing transmission projects. This is something the RGs will need to deal with whenever it comes up.</p> <p>An FAQ entry was added that elaborates on how to deal with competing projects (both transmission competing with transmission, as well as storage competing with transmission/storage) and also regarding TOOT when there are competing projects.</p> |
| Storage ENV/SOC | Difference in environmental impact between transmission and storage. Criteria should be the same for all projects. The social and environmental impact of a storage project is different from transmission, and highly dependent on technology. | ENTSO-E did not consider this comment in the document, because the specificities of storage regarding environmental and social impact will be considered on a regional/local level. |
| Storage Row 46: Annex 6: Assessment of Storage | Calculate benefits of storage projects in extreme climate events (e.g. outage of conventional plants due to cooling water restrictions). | ENTSO-E does not currently deal with this in CBA, as is mentioned in Annex 6. The assessment methodology for storage will be improved in the next review of the guidelines. |

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| STORAGE Row 49: Annex 6: Assessment of Storage | CBA should not be applied to storage projects, these are private operations. In case of TSO owned storage, it is vital to keep storage costs/benefits separated. | ENTSO-E did not consider this comment in the document, because this deals with specific (market) rules regarding the ownership and operation of storage. This falls outside the scope of CBA. |
| Storage: ENV/SOC 1 | Impact of pumped storage projects. | ENTSO-E did not consider this comment in the document, because although storage is included in an annex, assessing storage projects is currently not a core part of the CBA methodology. This may change in the future. |

