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Submitted to TYNDP 2024 Scenarios Input Parameters
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Introduction

1 What is your full name?

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3 What is your organisation?

Organisation:
currENT Europe

Scenario Strategy & Storylines

4 Please provide your comments about the TYNDP 2024 scenarios strategy.

Specify :

• Europe should have a 30-year network development plan compatible with 55% GHG reductions before 2030 and full decarbonization before 2050. Overall, the approach to Scenarios continues to be an incremental approach that builds on the existing grid and adds projects. A significant shortcoming with the current approach is that it will not necessarily result in the most efficient pan-European system. We need to assume an optimal system for 2050 – ideally, for Europe as a whole - and work our way back, planning and designing a transition to a fit for purpose, modern pan-European grid. Projects that deliver the highest contribution earliest should be delivered first, while factoring in their lead times.

• The Scenarios need to not simply be an evolution of the last scenario e.g. with higher percentages of renewables, adjustments to load closer to 2050 expected levels in 2030 and 2040, but should be designed to show the new phenomena that will arise that need to be managed. For example we know clearly now about low inertia systems and the need for responses to this but little has been done to model this from scenarios, let alone call for new projects to resolve this. We can expect high use of electronic devices to be a major issue to manage, as well as resource shortages, as well as building an entire new offshore network, something we have not done for 100 years, in a marine environment no less. Also as the same time with greater than ever before uncertainty, we need all this in our 2030, 2040 and 2050 models as they become dominants to drive the right transitional network development strategy, policy and projects.

• The Scenarios assume carbon neutrality in 2050 and 55% GHG reduction in 2030. What does “meaningful transition” mean? It is too loose a term to define the scenarios in 2040 and 2035. 2045 should also be covered.

• It is vital that the scenarios fully reflect the energy efficiency first principle and the Union’s 2030 targets for energy and climate and its 2050 climate neutrality objective. The TYNDP Scenarios must also consider the non-binding agreements for the offshore sea basins in Article 14 of the revised TEN-E Regulation, for the development of the TYNDP scenarios. Moreover, it is essential that Scenarios reflect the draft National Energy and Climate Plans (NECPs), due by 30 June 2023, as has already been foreseen.

• currENT suggests that the ENTSOs fully implement ACER’s recommendation for the ENTSOs “to prepare a living roadmap document detailing planned changes and larger innovations to be implemented” and that “At the start of each scenario cycle, the ENTSOs shall clearly communicate on the innovations that will be implemented in that cycle.” (ACER Framework Guidelines of 25 January 2023).

• Most importantly, it is crucial that the decarbonization scenarios are actively used in identifying system needs. We must avoid repetition of the approach taken in TYNDP 2022, where two decarbonization scenarios were developed and consulted on, but never reflected in the System Needs Study. In the TYNDP 2022, the Global Ambitions scenario was not discussed at all in the System Needs study, and the other decarbonization scenario (Distributed Energy) was allocated only one page. However, none of the conclusions from the decarbonization scenarios were used to identify system needs. For example, the System Needs report only reduces gas-based power generation by 2.3% in 2030 compared to a situation with no additional infrastructure investments. It states that gas-based power generation “would decrease by 75 TWh per year in 2040 (equivalent to 14% of the electricity generation from gas in the EU in 2021)”. That effectively means that 86% of the gas generation will still be operating in 2040. This would be incompatible with both the GHG targets and energy independence ambitions established by the EU. Whilst any of the three Scenarios might not come to pass, the reason for their development is that it is more than possible that one of them will. Not building the knowledge, let alone a strategy, on how the network development should develop to address this and whether the time, energy and valuable resources that are being currently used to develop what is considered the most likely strategy will be wasted if nonsensical. This has been raised in the past for the TYNDP 2022 and the response was that there was not enough time or resources to do this, and it should be considered for TYNDP 2024. It appears from the approach being adopted that the ENTSOs will again not use the additional scenarios for the same reasons - time and resources to do the analysis - but far more valuable time and resources of the entire industry are being lost if they are not considered, and major projects and plans need to be altered, or as is more likely reversed. The DE and GA scenarios need to be assessed, and if the ENTSOs resources currently are still not sufficient to meet this within the project of common interest process, then alternatives

must be developed and pursued.

• The ‘cost of delay’ must be reflected in the assessment of TYNDP projects, and flexible solutions must be fairly valued. currENT advocates for optimizing the use of existing grids and reinforcement of grids, using innovative grid enhancing technology, already commercially available. There is often a scope to better utilize available capacity on the existing grid by using flexible grid enhancing solutions. This can deliver earlier benefits to consumers while new infrastructure is ‘in permitting’ or under construction (e.g., by reducing constraint costs), continue to benefit or improve new infrastructure and can defer or eliminate some of the network needs. The value of reducing carbon emissions in the near-term and making progress towards a high-RES grid now is far greater than reducing the same carbon emissions in 10 years’ time. This ‘cost of delay’ associated with large infrastructure projects must be taken into account when considering which project should be taken forward to meet an identified system need.

• currENT welcomes that the Draft Implementation Guidelines include the notion of hybrid interconnectors and proposals on CBA options 1 and 2. However, introducing truly meshed DC overlay grids (within same market and / or between bidding zones) in the implementation guidelines, is very important moving forward.

5 Do you agree on one central scenario in 2030 aligned with ACER's Framework Guideline?

No

If you selected No, please specify:

currENT agrees on adopting one central scenario in 2030, aligned with and fully reflecting ACER’s Framework Guideline. We also suggest that the ENTSOs fully implement ACER’s recommendation for the ENTSOs s “to prepare a living roadmap document detailing planned changes and larger innovations to be implemented” and that “At the start of each scenario cycle, the ENTSO's shall clearly communicate on the innovations that will be implemented in that cycle.” (ACER Framework Guidelines of 25 January 2023).

Moreover, the scenarios must reflect the new overall short-term EU objective of becoming energy independent from Russian fossil fuels, following the Russian invasion of Ukraine, Europe, including the REPowerEU objectives of accelerating renewables, diversifying energy supplies and energy savings.

6 What are your views about the updates for the 2024 Scenarios Storylines Report?

Specify :

See answers for question 4.

7 What would be the other important drivers (please see the 2024 Scenarios Storylines Report, Figure 3) that you would like to see in the next cycle? (Please provide an explanation on how it could be included and differentiated among scenarios)

Specify :

In addition to the existing drivers, currENT would recommend that a driver is also from managing the network due to uncertainty. Consistently over all preceding TYNDPs, projects of common interest have been delayed and/or significant policy/market changes have accelerated needs. A scenario with a delayed delivery of the infrastructure should form another driver, with the delays based on the scale/size and the resulting risk due to complexity, public acceptance, material/supply resources as a driver for scenario.
Scenarios only track targets and do not track resource shocks – so keeping down resource needs should be another driver i.e. restricted copper and steel delivery, personnel shortages, financial support failings.

8 What are your views about the gap closing methodology for NT+ scenario? (Please see the TYNDP 2024 Scenarios Storyline Report, Annex 2)

Specify :

• Consider breaking down the economic sectors (e.g. transport) into further subsets
• The outcome depends on how often (a) the economic sector shares and (b) demand shares are revisited.
• Consider the effects of member country investments on forward projections
• How will international aviation and shipping be treated (within and outside EU)?

Demand Figures for DE & GA Scenarios

9 What are your views about the added value of this transition to the new tool (ETM) for the transparency of the scenarios building process?(1 - no added value ; 10 very high added value)

Not Answered

10 Do you think the demand figures within DE & GA scenarios are consistent with their storylines?

Not Answered

If you selected No, please explain:

11 Do you think the market shares of technologies within DE & GA scenarios are consistent with their storylines?

Not Answered

If you selected No, please explain:

12 Do you think the amount of biomass in the scenarios is sustainable?

Not Answered

If you selected No, please explain:

Supply Figures for DE & GA Scenarios

13 In your view, are the RES trajectories (wind, solar, battery) & nuclear capacities reasonable?

RES trajectories:

The RES trajectories seem reasonable, although the onshore wind figures seem generally optimistic with offshore wind figures on the low side.

On offshore wind: currENT agrees on the approach taken for offshore renewable trajectories in which “LOW” and “Best Estimate” figures will be according to the non-binding agreements of the Member States. The TYNDP draft supply model suggests that the “HIGH” figures are taken from the submitted TSOs HIGH figures, if this is higher than Member State (MS) agreement. currENT agrees in principle, but proposes that the HIGH figures are made subject to public consultation and assessed within the context of reaching the 2030 and 2050 decarbonisation targets. It should be noted that consulting on the HIGH figures is essential even if the outcome of the consultation comes after the need to start using scenarios. Failure to not consult would undermine the premise that the scenarios are developed with the best combined knowledge of the industry to make the most robust and deliverable development plan. As the European energy technology with the largest production potential, offshore wind and its related infrastructure should be assessed as a potential technology to fulfil any generation gap to be filled.

On nuclear energy: Nuclear energy is not an option within the model and will be defined ex-ante according to the story line and national policies. The figures for the Global Ambition Scenario – 108 GW in 2030; 137 GW in 2040 – seems unrealistic based on on past experience on timelines and costs to build new nuclear facilities (see e.g. https://energy.mit.edu/news/building-nuclear-power-plants) and would require transparent assumptions on cost and feasibility within the EU State Aid framework.

The TYNDP cost for onshore wind seems realistic, but somewhat high towards the end of the modeling period. The large cost differences between the DE and GA scenarios’ cost assumptions for 2030 and 2040 would be difficult to explain.

The assumed trajectories for offshore wind in the DE scenario seem unrealistically high towards the later period when compared to the cost development in GA scenario.

On batteries: The scale of the batteries being proposed in the DE or GA scenarios would seem to be very ambitious. Based on current expectations of growth in these sectors the IEA already expects key material shortages for battery production: "However, looking further ahead in a scenario consistent with climate goals, expected supply from existing mines and projects under construction is estimated to meet only half of projected lithium and cobalt requirements and 80% of copper needs by 2030."
https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary

Whilst supply shortages do not preclude growth in either domestic or grid scale batteries in the DE and GA scenarios, the scale being predicted by 2030 of up to 400% over the NT+ scenario and growing into future years does not seem reasonable even for these less probable scenarios. The IEA notes a typical 16-year period to develop new mining resources so assertive and large-scale action now will have little impact globally before 2040.

14 In your view, are the technology costs appropriate?

technology costs:

It seems highly unrealistic that the cost of HVDC cables and Onshore HVDC Stations are assumed to continue to be relatively low and develop flat throughout the period, if copper-based cables are assumed. Most commodity price analysts assume large price increases for copper and other materials needed for the global energy transition. The assumptions on cable technology need to be more transparent, justified and with clear explanations on the underlying assumptions regarding size, voltage level materials (copper, aluminum, superconductors) and cost. The same transparency of justifications and cost assumptions should apply to the assumed cost of HVDC Onshore Stations. Moreover, the draft supply inputs do not appear to include offshore HVDC Stations. These should be added together with the underlying assumptions.

15 In your view, are the prices (presented in the 20230704 – Draft Supply Inputs for TYNDP 2024 Scenarios.xlsx, sheet 3) appropriate?

prices:

16 In your view, are the extra-EU methane import potentials reasonable?

Not Answered

If not, please provide us an alternative source (should be reliable and cover 2050 time-horizon):

17 In your view, are the extra-EU H2 import potentials & prices reasonable?

No

If not, please provide us an alternative source (should be reliable and cover 2050 time-horizon):

The sources from the TYNDP 2024 scenarios, 1st public consultation on input parameters & methodologies Brussels, 13 July 2023 10:00 – 12:00 CEST, outlined a number of H2 import sources and the scale of these. The H2 import growth figures provided for notably the Ukraine, and North Africa given the scale of new infrastructure and/or the geo-political position by 2030 seems highly unlikely.

Also the 'by ship' category makes up a meaningful contribution, which is not broken down, but will undoubtedly require a new fleet of shipping and a production source with resulting shipping cost that is difficult to comment on, but seems competitive to these other sources.

As actual candidate projects have been collected by the ENTSOG process, and these represent the development of infrastructure in well developed stable industrialized nations, it is instructive to consider how developed these proposals and timelines.

A cross comparison to these should be made before acceptance of the report in its entirety as a foundation stone for the scenarios used to develop both the Ten Year Network Plan for Gas or Electricity. Recent criticism in the latest ACER report on the quality and lack of pricing information submitted for H2 projects from the project promoters themselves, undermines the pricing, maturity or proposals and timelines. The arguments used by the promoters as to the volatility of the pricing for this type of infrastructure and lead-time as a reason for this vagueness of their proposals only support this. As the validity of the scenarios are wholly reliant on the development of significant H2 infrastructure both within and notably outside of Europe (Africa, Norway, Ukraine, etc.) then the use of the full range of scenarios in the 2040 to cover such a highly uncertain new industry development is essential.

There are significant plans to import H2 from Gulf states and likely North America in the longer-term (North America for ease of access to Northern European ports). See Exhibit 5 in the following link: https://hydrogencouncil.com/wp-content/uploads/2022/10/Global-Hydrogen-Flows.pdf

However, the scenarios need to be specific on H2 import prices and carrier energy density. e.g. as H2, Ammonia or via LOHC (according to type of consumption). The latter 2 have local conversion requirements to deliver H2 which add to baseline costs/MWh.

Worked example (piped hydrogen - 2050)
LH2 (piped from Algeria): $1.6/Kg (for Germany: source Hydrogen Council - https://hydrogencouncil.com/wp-content/uploads/2022/10/Global-Hydrogen-Flows.pdf)
1MWh H2 = 25Kg hydrogen (Source: Energypost - https://energypost.eu/investing-in-h2-is-there-a-first-mover-advantage)
 Cost = $40 or €36/MWh cost in 2050. The projection seems reasonable.

18 Do you agree with the methodology on how the demand is supplied per energy carrier and how the conversion factors are used? (See 20230704 - Draft Supply Tool (EU-level).xlsx)

Not Answered

If you selected No, please specify:

19 Do you think the preliminary supply figures are differentiated according to the storylines?

Not Answered

If you selected No, please specify:

20 What are your views on the cost methodology of H2 investment projects? I.e., 75% repurposing and 25% new build, European Hydrogen Backbone report as cost basis, 15% distance between capitals?

Specify :

These proposals in the European Hydrogen Backbone report should as much as is practicable be verified. Industry criticism from the use of a third-party report from a vested interest group report can reasonably be expected to be challenged as to why one vested interest group's reports should be used over another. A key cause for concern will be the estimated lead-times and costs within the report. As actual candidate projects have been collected by the ENTSOG process, cross comparison to these should be made before acceptance of the report in its entirety as a foundation stone for the scenarios used to develop both the Ten Year Network Plan for Gas or Electricity.
Recent criticism in the latest ACER report on the quality and lack of pricing information submitted for H2 projects from the project promoters themselves, undermines the pricing, maturity or proposals and timelines in the 'European Hydrogen Backbone' report. The arguments used by the promoters as to the volatility of the pricing for this type of infrastructure and lead-time as a reason for this vagueness of their proposals only support this.
As the validity of the scenarios are wholly reliant on the development of significant H2 infrastructure both within and notably outside of Europe (Africa, Norway, Ukraine, etc.) then the use of the full range of scenarios in the 2040 to cover such a highly uncertain new industry development is essential.
Based on the 'European Hydrogen Backbone report' many of these projects are presumed to be enabled before 2030, and the report primary assumption can simply be verified by crossing checking against the H2 project applications received for the TYNDP's. If this H2 trajectory is verified, then the impact of the roll out of H2 introduction to the European Energy system should be analyzed in the interim years to 2030 to determine what the network needs for the phased introduction of the H2 infrastructure. Given the impact other forms of energy production have created on the network (wind, solar, energy efficiency measures) ignoring the risk of this new transition before 2030 on system security of supply, network stability and new network phenomena, is necessary and dangerous to ignore. These types of issues have been experienced with these other changes (wind, solar, energy efficiency) in early years, which has proven to seriously delay their introduction and can naturally be expected with a more unknowable joint sectorial (gas and electricity) impact of H2. National plans will be insufficient to consider these widespread European impacts especially given the disparate sources of H2 across Europe.
The sources of mentioned capital cost of 75% repurposed and 25% new build is not evident in the European Hydrogen Backbone report. However, it is

clear from figure 1 in this report that the projects proposed to date will rely on a significant proportion of the proposed c.28,000km proposed by 2030 to be completely new infrastructure. Given this and also the already submitted H2 proposed development projects into the TYNDP 2024 process, it should be reasonable to work out how much of the cost of this infrastructure arises due to new or repurposed infrastructure and use this as a base for the capital costing. Also, if a significant portion of the gas network is to be repurposed the cost of abandonment of existing gas generating sources and their replacement with suitable alternatives should be factored in or the cost of the transition is being understated. For example, long term supply contracts with these generators for fuel will not allow a simple cessation of supply or transition without incurred compensation costs and maintaining necessary security of supply generation capacity margins with an orderly transition of natural gas to H2 generation.
The Scenarios Hydrogen Level 2 requires candidate projects to be included into the scenarios, but it is not clear if these require electrolysis to provide Hydrogen to support these projects. It is not clear, but if so, then some gas infrastructure (projects) may appear in the ENTSO-G TYNDP to meet EU targets, that do not have the necessary electrolysis power demand modelled in the ENTSO-E TYNDP due to its lack of maturity i.e., these are not in permit planning stage. This would be nonsensical and should not be permitted.

21 What are your views on the cost methodology to for electricity investment candidates? I.e., to use submitted candidate projects as electricity investment candidates?

Specify :

currENT has previously made statement as to its opinion that the electricity investment candidate methodology makes sense for linear project developments, but not for many of the newer innovative grid enhancing technologies required under the energy efficiency first principle. These projects can be developed from inception to commissioning in less than 2 years and provide benefits that are of a scale commensurate with a Project of Common Interest. For example, projects already identified in the ENTSO-E Technopedia (as real-life examples) demonstrate that GWs of additional capacity has been created using some of these technologies. The candidate investment methodology proposed will exclude such projects from the reference case. This makes the consideration of such projects not possible as transmission category projects of common interest, as they will be completed before they can even be considered in the TYNDP, which is of course a pre-requisite for PCI selection as a Transmission category project. This is not aligned with legislative requirements of being open for consideration and an unbiased assessment.
Similarly, the selection of a first 2030 scenario also automatically precludes the full benefit of these technologies been demonstrated and therefore eligible for Project of Common Interest selection.

Modelling Methodology and Assumptions

22 In your view, is the carbon budget methodology appropriate?

No

If you selected No, please provide an alternative source:

In principle, all energy-related greenhouse gas emissions should be included, including for example methane emissions from flaring and other energy related emissions.

23 What do you think about the EV innovation & its relevance to the scenario model? (rank 1 to 10 - 10 most satisfactory)

Not Answered

24 In your view, are the assumptions on the EV methodology reasonable?

Not Answered

If not, please provide us an alternative source (should be reliable and cover 2050 time-horizon):

25 How could the methodology be improved for the next cycle?

Please explain:

26 What do you think about the P2G innovation & its relevance to the scenario model? (rank 1 to 10 - 10 most satisfactory)

Not Answered

27 In your view, are the assumptions on the P2G methodology reasonable?

No

if not please provide us an alternative source (should be reliable and cover 2050 time-horizon):

The proposals in the European Hydrogen Backbone report should as much as is practicable be verified. Industry criticism from the use of a third-party report from a vested interest group report can reasonably be expected to be challenged as to why one vested interest groups reports should be used over another. A key cause for concern will be the estimated lead-times and costs within report. As candidate projects have been collected by the ENTSOG process, cross comparison to these should be made before acceptance of the report in its entirety as a foundation stone for the scenarios used to develop both the Ten Year Network Plan for Gas or Electricity.

Recent criticism in the latest ACER report on the quality and lack of pricing information submitted for H2 projects from the project promoters themselves, undermines the pricing, maturity or proposals and timelines in the ‘European Hydrogen Backbone’ report. The arguments used by the promoters as to

the volatility of the pricing for this type of infrastructure and lead-time as a reason for this vagueness of their proposals only support this.

As the validity of the scenarios are wholly reliant on the development of significant H2 infrastructure both within and notably outside of Europe (Africa, Norway, Ukraine, etc.) then the use of the full range of scenarios in the 2040 to cover such a highly uncertain new industry development is essential. Based on the 'European Hydrogen Backbone report' many of these projects are presumed to be enabled before 2030, and the report primary assumption can simply be verified by crossing checking against the H2 project applications received for the TYNDP's. If this H2 trajectory if verified, then the impact of the roll out of H2 introduction to the European Energy system should be analyzed in the interim years to 2030 to determine what the network needs for the phased introduction of the H2 infrastructure. Given the impact other forms of energy production have created on the network (wind, solar, energy efficiency measures) ignoring the risk that this transition before 2030 on system security of supply, network stability and new network phenomena, is necessary and dangerous to ignore. These types of issues have been experienced with these other changes (wind, solar, energy efficiency) in early years, which has proven to seriously delay their introduction and can naturally be expected with a more unknowable joint sectorial (gas and electricity) impact of H2. National plans will be insufficient to consider these widespread European impacts especially given the disparate sources of H2 across Europe.

As there are already submitted H2 proposed development projects into the TYNDP 2024 process, it should be reasonable to work out how much of the cost of this infrastructure arises due to new or repurposed infrastructure and use this as a base for the capital costing. Also, if a significant portion of the gas network is to be repurposed the cost of abandonment of existing gas generating sources and their replacement with suitable alternatives should be factored in or the cost of the transition is being understated. For example, long term supply contracts with these generators for fuel will not allow a simple cessation of supply or transition without incurred compensation costs, and maintaining necessary security of supply generation capacity margins with an orderly transition of natural gas to H2 generation.

The Scenarios Hydrogen Level 2 requires candidate projects to be included into the scenarios, but it is not clear if these require electrolysis to provide Hydrogen to support these projects. It is not clear, but if so, then some gas infrastructure (projects) may appear in the ENTSO-G TYNDP to meet EU targets, that do not have the necessary electrolysis power demand modelled in the ENTSO-E TYNDP due to its lack of maturity i.e. not in permit planning. This would be nonsensical and should not be permitted.

28 How could the P2G methodology be improved for the next cycle?

Please explain:

Whilst a scenario that meets European targeted objectives (NT+) should be considered to be a primary objective, alternative needs, and management of the energy system and security of supply must be considered specifically.

Currently the GA and DE scenarios are created but not used in the assessment of needs and projects in the TYNDP's but could provide a vital measure for the TYNDPs 2024 of the risk being imposed by assuming policy will remain unchanged and the global environment/political/economic performance continues unaltered.

P2G is unlike any other technological change seen to date, it is not a brand-new technology or party connecting to the gas and electricity network, but a fundamental replacement of one of these networks (gas), with a significant change in role and design of the other (electricity). currENT believes this needs to have a separate approach to scenario planning, compared to other variables (demand users, renewable and conventional generation, demand response, energy efficiency, etc.). Other variables will tweak the energy transition strategy, whereas P2G could fundamentally change it. Therefore, its realization (or not) should form their own binary scenarios and be used to promote projects best suited to support both, and/or provide safeguards.

29 What do you think about the offshore innovation & their relevance to the scenarios model? (rank 1 to 10 - 10 most satisfactory)

3

30 In your view, are the assumptions on the offshore methodology reasonable?

No

if not please provide us an alternative source (should be reliable and cover 2050 time-horizon):

Cost assumptions are made for "HVDC Cables" but it is not specified if these are offshore cables or onshore cables. Similarly, only Onshore HVDC Station cost are provided. Assumed sizes in terms of voltage and capacity are missing. There is no differentiation between copper, aluminum and superconducting cable technology. And there seem to be no differentiation in terms of differences in voltage levels required for a given capacity between superconducting cable systems and conventional HVDC cables.

31 How could the methodology for offshore be improved for the next cycle?

Please explain:

The assumed technology choice seems to be 525 kV. The scenario model has to take into account that this technology choice would not make it feasible, e.g., to integrate the 480 GW offshore wind assumed in the Baseline scenario for 2050 or the 370 GW in 2040. The implications of using high-capacity technology, such as superconducting cables, are ignored by the scenarios.

Likewise, the impacts in terms of economics, resilience, material use, and adherence to the energy efficiency first principle of a meshed pan-European offshore grid configuration for offshore hybrid interconnectors and offshore generation should be integrated in the scenario modeling.

32 What do you think about the Hybrid Heat Pump innovation & its relevance to the scenario model? (rank 1 to 10 - 10 most satisfactory)

Not Answered

33 In your view, are the assumptions on the Hybrid Heat Pump methodology reasonable?

Not Answered

If not, please provide us an alternative source (should be reliable and cover 2050 time-horizon):

34 How could the methodology for hybrid heat pumps be improved for the next cycle?

Please explain:

35 Do you find the assumptions on the H2 steel tanks methodology appropriate?

Not Answered

If not, please provide us an alternative source (should be reliable and cover 2050 time-horizon):

36 What are the most important modeling innovations that you would like to see in the next cycle?

Please explain:

The following are summarized here from those detailed above:
· Shorter term scenario[s] than 2030
· Method for inclusion of innovative grid technologies into reference cases
· Pricing and time-line of H2 projects from existing projects
· Alignment TYNDP reference case methodologies and scenarios
· Binary H2 scenarios, with and without targets being met
· Anticipatory investment needs to be done in the context of a full decarbonization plan. The better the plan, the better the investment decisions will be. This is a big challenge in that few of the projects needed for 2050 will have a net benefit in isolation.
· A significant shortcoming with the current approach is that it will not necessarily result in the most efficient pan-European system. We need to assume an optimal system for 2050 – ideally, for Europe as a whole - and work our way back. Projects that deliver the highest contribution earliest should be delivered first, while factoring in their lead times. It would make sense to have reference grids for the different time horizons. The main reference grid should be the 2050 grid required for a decarbonized Europe – not the 2025 or 2030 grid.

In addition to those already detailed above, the following are additional important modelling innovations that currENT believe need to be included.

The modelling at present looks at the components that make up the scenarios on the basis of creating market or steady state models for assessment in the TYNDP's. It is recognised that dynamic modelling of systems becomes more dominant (as renewable and power electronics penetration increases) a consideration to the viability of a project solution, network plan or strategy. This has been flagged in the last three TYNDPs. The scenarios therefore must also collate dynamic component information in greater detail than today and represent this in the scenario modelling.
Meshed offshore networks are universally recognised as the outcome of offshore network investment, and should be modelled including their impact on market, system operation and network development, needs. This is necessary to ensure the benefits that offshore network provides in the TYNDP project assessments.

As the cost to consumers is key to cost benefit analysis the totality of the impact on redispatching costs based on the Ten Year Network Development Planned projects (PCI and others) should be calculated into future scenario modelling more fully. The impact on the new equivalent central scenario (i.e. the one to replace the current NT+) of the cost of network re-dispatching costs onto trading, security of supply and system operation should be included. At present the scenarios are used in market modelling in each TYNDP to provide the actual experienced dispatch needed to respond to conditions each hour in market and network analysis. However, the current national trends used to develop the scenarios used in these analyses reflect only the existing public policy based on the experience of the previous past years. The scenario modelling does not reflect the likely impact on these public policies of the changing economic and political outcome in future years, based on the previous TYNDP results for future years i.e., there is no feedback loop. Most political and economic issues are difficult to quantify but re-dispatch costs are and will be very dominant and can be assessed with a good level of accuracy. Consultation with member states could provide national adaptive policies in light of this for scenario building and modelling.

Similarly national adaptive public policy on the management of curtailment to meet future renewable targets and what is deemed acceptable (% of annual hours there is or scale of curtailment) can be used as a viability check for the scenarios. The previous TYNDP figures can be used in consultation to define where public policy is likely to intercede to restrict curtailment.

Conclusion

37 Privacy Policy

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Yes

38 If you tick this box, we will publish your comments, but we will not publish your name and organisation. However, your answer, without your name and organization, may be shared with EU and national authorities, drafting committee members, and other persons or entities involved in the adoption process of the consulted document to ensure the performance of ENTSO-E legally mandated tasks.

I want my answer to remain anonymous :
Yes

39 If you tick this box, we will not publish your answer to this consultation. However, your answer, without your name and organization, may be shared with EU and national authorities, drafting committee members, and other persons or entities involved in the adoption process of the consulted document to ensure the performance of ENTSO-E legally mandated tasks.

I want my answer to be confidential and not to be published:
Yes

40 Terms of Use

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