Answer to ENTSO-E consultation

TYNDP 2016 public consultation

September 2016

This consultation has 4 main parts (three for the TYNDP 2016 and one for TYNDP 2018). Your feedback will be used to:

1. Improve the current TYNDP 2016 which ENTSOE will deliver to ACER in October 2016 and publish as final end December 2016.
2. Design and improve the TYNDP 2018 process and deliverables.

Contents

TYNDP general questions

5. Is the TYNDP 2016 easy to read and navigate through?

Yes / No

-

6. Do you like the idea of having a main report and individual thematic insight reports?

Yes / No

-

7. Are the graphs, maps and tables easy to understand?

Yes / No

-

8. Do you find the information presented in the TYNDP useful to you?

Yes / No

Despite the real efforts in terms of transparency and readability of the TYNDP, an important share of the information related to demand-side flexibility appears approximate or scarce.
- ENTSO-E should include clear and consistent estimations of this resource across the different scenarios used (see our answer to question 24 for our detailed comments).
- The TYNDP should fully take into account demand response as a system resource, as any other resources of the energy mix and proceed to a reliable monitoring of this resource (answer to question 41).
- Finally, the TYNDP should adopt a neutral position regarding Capacity Remuneration Mechanisms, ensuring that, if and when such a mechanism is put in place, its impact on scarcity prices is limited and demand-response participation is fully enabled. (answer to question 41)

9. What value do you see in providing a very long term perspective (e.g. 2050) in future TYNDPs? What type of results are valuable to you from this perspective?

The European Union as set itself the target of 80-95% $C0^2$ reduction by 2050. It could make sense to provide planning tools enabling market actors and decision-makers to monitor if grid developments are on track, and to anticipate the energy mix needed to match these objectives including the associate flexibility resources.

10. Do you want to give us further feedback?

- Yes - go to the overview page with all the consulted material
- No - I want to leave the TYNDP consultation page

TYNDP 2016 Insight reports Future system perspectives

The report answers questions like: Where does one start to plan network development 15 years ahead? How to make sure the assumptions used are realistic and at the same time future-looking enough? How to broaden the scope of possibilities but maintain a sufficient level of feasibility? Learn how long-term grid planning is done in the TYNDP.

The full report can be accessed here.

24. Comments/suggestions to the report

The insight report refers to the TYNDP 2016 Scenario Development Report (November 2015) concerning the assumption and figures used to describe the possible development of the European network by 2030.

The TYNDP should fully take into account demand response as system resources, as any other resources; and include clear and consistent estimations of this resource across the different scenarios used.

NEED TO FEED-IN CURRENT DEMAND RESPONSE FIGURES

Demand response resources are totally absent from the 2020 and 2030 tables "Installed capacities" (tables 3 to 12), whereas these same tables detail estimated capacities and volumes for all other resources. This demonstrates a way of thinking that still ignores demand response as a system resource. Moreover, volumes (GWh) are labelled as "generation" in tables titles (table 4, 6, 8, 10 and 12). As a consequence, in Vision 1 "Slowest progress", demand response is described as "largely untapped" And demand response by 2030 is evaluated to 0% showing that today's resources have not even been taken into account.

ENTSO-E should have access to at least the demand response used by national TSOs. Indeed, the Regulation on data in electricity markets requires TSOs to provide the information related to the amount of balancing reserves under contract (MW) by the TSO, specifying the source of reserve (generation or load); and the amount of activated balancing energy (MW) per balancing time unit and per type of reserve. (Cf. article 17 of Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council.)

A consistent assessment of existing Demand Response resources (implicit and explicit) and development potential should be developed as part of the Energy Union governance framework. As long as this measures are not in place, ENTSO-E should explore to its maximum current information available and assess with the same level of details than for other resources the potential capacity and volumes of demand-side resources for all scenarios.
(For more information on SEDC proposed demand-side flexibility indicators, see our position paper *Monitoring demand-side flexibility*, available on SEDC website: http://www.smartenergydemand.eu/?page_id=2543.)

NEED TO REVIEW DEMAND RESPONSE POTENTIAL IN THE DIFFERENT SCENARIOS

Demand response resources appear under-estimated in several scenarios. **In vision 1** "slow progress".

Demand response is estimated as “0%” ignoring the level of resources.

In Vision 2. “Constrained progress” **and Vision 3** “National green transition” Demand response by 2030 is evaluated to 5%. Whereas in Vision 3, CO^2 prices are high and development of RES is higher than in vision 2, Demand Response potential is deemed the same in both vision. Existing studies of the currently available potential already by-pass these estimations. Three examples are provided below:

- Hans Cristian Gils, from the DLR (German Aerospace Center), estimates the potential size of the DSR resource in the EU at 14%.

(Cf. Hans Cristian Gils, „Assessment of the theoretical demand response potential in Europe“, Energy 67, 2014, p.1-18)

- Jan Stede, from DIW Berlin, estimates the potential DR capacity in industry and tertiary sectors in Germany at 10% of peak load.

(Cf. Jan Stede, Demand response in Germany: Technical potential, benefits and regulatory challenges, German Institute for Economic Research (DIW Berlin) webpage, May 2016, available at: https://www.diw.de/de/diw_01.c.532689.de/presse/diw_roundup/demand_response_in_germany_technical_potential_benefits_and_regulatory_challenges.html)

- The UK Association for Decentralised Energy estimates that manufacturing sites, hospitals and retail stores could provide up to 16% of the UK's peak electricity requirement, or 9.8 GW.

(Cf. Association for Decentralised Energy, Flexibility on demand Giving customers control to secure our electricity system, July 2016, p. 5).

Morereover, Vision 3 “National green transition” seems to preclude the higher competitiveness of gas against central hydro storage (“*Demand response potential is used, however, the majority of the additional back-up capacity in 2030 would come from gas units since additional central hydro storage is not developed due to the lack of a strong European framework*”). Though, there are no reasons to assume that Demand Response would not as well provide a competitive back-up resource in the frame of more national configurations.

For these reasons, it appears important to provide Vision 3 with a demand response potential estimated between the ones of vision 2 and vision 4.

In Vision 4, “European Green Revolution”, “*the demand response potential is fully used to shift the daily load in response to the available supply, because it allows a saving on back-up capacity*.”… “*Smart metering and smart grids are fully developed and thus demand response has a strong take-up*” Demand response by 2030 is evaluated to 20%. It is would be important to reveal the details of the most optimistic scenario including the levels of implicit and explicit demand response and the contribution of related technologies (heat pumps, EVs, home automation, etc.).

NEED FOR TERMS CLARIFICATION

The TYNDP scenario document uses approximate terms:

- Digits expressed in % are not explained. It is not clear whereas it is % of peak consumption, of system resources capacity or of system resource volumes.
- What is encompassed under the term *demand response* is not defined. It should be clarified whereas this includes explicit DR, implicit DR or both.

Insight report - Viability of the energy mix

The energy mix has been and is facing significant changes across Europe, with a significant increase of production of electricity from renewable sources. While it lead to significant reduction of CO2 emissions of the power sector, it creates some additional challenges both from the technical and economic point of view that are being described further in this Insight Report.

The full report can be accessed here.

41. Comments/suggestions to the report

CAREFULLY ASSESS THE NEED FOR CRM & FULLY ENABLE DEMAND RESPONSE PARTICIPATION WHEN CRMs ARE IN PLACE.
Decision makers should take fully into account the impact of CRMs on scarcity prices at the wholesale level and how this affects investment signals for flexibility:
- The section "Need for flexibility" highlight the role that demand response – among other flexibility resources – can play: " *(…) and flexibility rewards to providers will be central aspects to the solution*".
- However, the section "Additional perspectives on the generation mix" claims "*Subsidies for some technologies, or Capacity Remuneration Mechanisms would probably complement the revenues modelled here to ensure a secure system"*.

Before such specific mechanisms are introduced, a state-of-the-art system adequacy assessment should take into consideration the full potential not only of power generation capacity, but also of demand-side flexibility, storage, interconnections and flexibility potentials in neighbouring countries. If this assessment leads to the conclusion that a capacity remuneration mechanism is justified, the following criteria should be incorporated:

• Any capacity mechanism should be transparent and monitored in order to ensure the establishment of a clear capacity price signal.
• Product requirements should be based on the system's needs, rather than the capabilities of the traditional supply-side technologies.
• The capacity mechanism should be market-wide and reward the contribution of all the resources in the same manner, including the demand-side.
• The market should reflect the structural advantages provided by demand-side resources, such as reduced need for transmission capacity times of peak.
• Independent aggregators should be able to participate directly in the market, without the need to access the market through suppliers, or the need to get the agreement from suppliers.
• A pay-as-cleared market is preferable to a pay-as-bid market.
• The market should also include secondary trading to allow resources to trade out of their capacity obligations.
• The performance of Demand Response should be measured during the certification process using the same methodology as for the delivered service.
• Capacity products should be defined with a time-horizon of no more than 3 years to allow for a reflection of evolving market conditions, competition and avoid contractual lock-ins.
• The same contract durations should be made available to all participants.
• Stringent penalties for non-compliance with delivery obligations are preferable to onerous qualification criteria.

The introduction of capacity mechanisms can be expected to interact with the price signals on the wholesale market. It is crucial to minimise such effects so as to safeguard the functioning of the Internal Energy Market. Depending on the design, approaches based on reliability options may

interfere less with the market than other capacity mechanisms. It is important to note that the interference with market prices will be lower, the more Demand Response is included in a capacity mechanism.

ADOPT NEUTRAL EXPRESSIONS

System actors should adopt a neutral approach towards generation and demand side-resources. To monitor and accompany the development of demand response as a system resource, traditional *Generation Adequacy Assessments* should be replaced by *System Adequacy Assessments*, taking into consideration the full potential of demand response.

MONITOR DEMAND RESPONSE AS ANY OTHER SYSTEM RESOURCE

Demand response, despite being mentioned as a promising resource, and being an integral part of TYNDP scenarios, is not listed in the resources of the energy mix. Appropriate measurement tools are essential to enable the full inclusion of Demand-Side Flexibility in system adequacy assessments. Demand response should be monitored both in terms of volumes (MWh) and capacity (MW).

The indicators to monitor and assess progress towards meeting the Energy Union objectives should include Demand-Side Flexibility, ENTSO-E should lead this effort by monitoring both implicit and explicit Demand-Side Flexibility:

• Explicit Demand-Side Flexibility should be monitored through the capacity (MW) contracted and volumes (MWh) sold into the different markets, so as to assess the share of Demand-Side Flexibility in each segment of the electricity market.

• Implicit demand-side flexibility is not a dispatchable resource, so its contribution to system adequacy is more uncertain than in the case of explicit demand-side resources. It should be measured through an estimation of the capacity (MW) and volumes (MWh) actually available through it. This presupposes (a) a monitoring of the percentage of consumers with access to a smart meter; (b) among them the percentage of consumers that signed up for real-time (hourly or where applicable shorter-term) pricing; and (c) a methodology to assess the magnitude of the consumer reaction.

These essential indicators could be completed with complementary data on the amount of time flexibility is available or the type of consumers involved. Collecting this information will require the involvement of different actors in the electricity system, including TSOs, power exchange platforms, retailers and service providers. (More detailed information is available in SEDC position paper "Monitoring Demand-Side Flexibility", July 2016, available on SEDC website: http://www.smartenergydemand.eu/?p=6911.)

TYNDP 2018 questions

With each cycle ENTSOE, based on your input and its internal learning, is constantly improving the TYNDP processes, methodologies, outcomes and overall stakeholder interaction. Currently we are at a very early stage in the TYNDP 2018 building and your input (by answering the questions below) will help us better shape the future reports.

43. Imagine for a moment that you are the "Gepetto" of the European TYNDP 2018, you create it from the beginning and drive through your planning exercise.

How would your TYNDP look like in terms of structure?

-

How would your TYNDP look like in terms of content?

-

How would your TYNDP look like in terms of results presentation?

-

What new technologies and developments with regard to system planning do you consider relevant for the future?

A consistent approach regarding demand-side flexibility is needed. Demand-side flexibility will be key for a successful energy transition within a functioning IEM. The TYNDP 2018 needs:
- to include demand response within the energy mix and proceed to sound estimation of the available resource in volume and capacity, as it does for the other resources of the energy mix. Abandoning the terms and logic of *generation adequacy assessment* is essential; European TSOs should proceed to system adequacy assessment taking into account the resources of the demand-side
- to revise its different scenarios taking into account: demand response resources available as of today; existing studies on the potential of demand response. In particular, it appears that a 2030 "National transition" scenario limiting gives more opportunities for DR than the "Constrained progress" one.
(see our answer to question 24 for more details)

How would your European TYNDP be used and for what?

-

How and when the stakeholders would be involved in the process?

-

How would you promote and to whom the final outcomes?

-