Response ID ANON-78DT-5GUP-8

Submitted to **Mid-term Adequacy Forecast 2018**
Submitted on **2018-11-16 10:21:05**

Introduction

1 What is your name?

Name:
European Affairs & Regulatory Coordination Department

2 What is your email address?

Email:
ead@engie.com

3 What is your organisation?

Organisation:
ENGIE

Consultation questions

4 What is your opinion on the MAF2018 outcomes and, especially, on the low-carbon sensitivity analysis?

Opinion on the MAF2018 :
ENGIE acknowledges the fact that performing a mid-term adequacy forecast at a European level is a challenging task. As highlighted in the context of the Clean Energy Package such an adequacy assessment will be needed to help the authorities and the market identifying the adequacy issues that could occur in the future. However, this European exercise performed by ENTSO-E should certainly be complemented by more detailed regional analyses, which allow a finer granularity and the possibility to perform more specific scenarios on the various risk factors (demand, firm generation, intermittent RES generation, storage, demand response, interconnector capacity, etc…).
In our answers below, we focus on the main improvements compared to the MAF2017, as emphasized by ENTSO-E in their report (p.3). We refer to the answers provided by ENGIE in the context of the previous MAF consultations for other aspects already discussed (e.g. mothballing sensitivity analysis modelling of demand-side response, flexibility assessment, etc…)

1) Low-carbon sensitivity analysis
Assessing system adequacy requires assumptions on a set of risk factors. Clearly, the supply-side assumptions cannot be overlooked and a specific attention should be devoted to them. The task might be more challenging for system operators, which are probably more familiar with demand-side assumptions or grid infrastructure assumptions. In addition, the supply-side is obviously facing more uncertain in the context of the energy transition. ENTSO-E should therefore take some care when devising the level of reliable capacity assumed in the future, and perform all relevant sensitivity analyses needed to cope with this uncertainty.
The low-carbon sensitivity is partly fulfilling this requirement. In particular, it illustrates that a choice of energy policy in some countries (i.e. acceleration of "low-carbon (environmental) policies") could impact the system adequacy across Europe and, more specifically, in other countries.
Concretely, this low-carbon sensitivity is considering that ~23 GW of generating capacity would not be present anymore compared to the supply mix of the Base Case. Although no capacity would be removed in Belgium or in France within this low-carbon sensitivity analysis, these two countries are among the most impacted in terms of adequacy (e.g. LOLE criteria).
This observation therefore illustrates on a practical example why :
(i) adequacy assessments should be performed at least at a regional level ;
(ii) appropriate sensitivity analysis on the supply side should be performed to account a.o. for energy policy uncertainty (e.g. low-carbon sensitivity / coal phase-out, nuclear energy policy) or for economic circumstances (e.g. economic mothballing or retirement, impact of capacity markets) ;
(iii) ensuring adequacy within a country that relies on imports during scarcity situation requires securing the effective availability of cross-border capacity (generation, storage, demand response) – in other words, explicit cross-border participation of foreign capacity within capacity markets should be seen as compulsory and not as an optionality, which is in line with the view of DG Competition.

2) Flow-based innovative analyses
The use of a flow-based sensitivity for Central Western-Europe is interesting as : (i) it could better reflect the physics of the system (impact of grid infrastructure between countries, but also within countries) and (ii) it is closer to the operational planning approach in place today.
The key take-away of this sensitivity is related to the implementation of the MinRAM20% sensitivity. As recalled by ENTSO-E: "The PLEF agreed a MinRAM level equal to 20% of the maximum allowed power flow, which is applied on each critical network element and contingency. The feasibility of the MinRAM application is currently verified by CWE TSOs for each day. The implementation of a MinRAM will provide more capacity for commercial exchanges inside the CWE flow-based market coupling. Planned grid development between 2018/19 until 2020 will play an important role for TSOs in this respect, so that commercial exchanges can be realized in a safe manner through the physical grid in real time." In practice, the increase in commercial exchanges has a positive impact on adequacy. This observation is exactly the reason why the allocation of interconnection capacity to the market should be maximized provided that overall economic efficiency is preserved. This is a key aspect to make the European electricity markets converge to a single European electricity market.
Conversely, it also shows that the management of the transmission grid in one country could substantially affect the system adequacy of a neighbouring country. Going forward, ENTSO-E should probably investigate further this aspect and ENGIE recommends to perform a sensitivity analysis on the level of the interconnection grid made available to the market, esp. in times of system stress.
Finally, ENTSO-E should be more transparent on the assumptions retained in practice for the simulations of this flow-based sensitivity.

3) Import level during simultaneous scarcity situations
Following the EC proposal made in the Clean Energy Package, the MAF should become one of the key ingredients for setting up capacity mechanisms across Europe. Obviously the contribution of neighbouring countries to system adequacy of a given country / Member States should be properly assessed in order to enable cross-border participation in these mechanisms.
The import/export level during simultaneous scarcity situations will therefore be a very important metric when designing and operating capacity markets. Although one should acknowledge that interconnectors play a crucial role in maintaining adequacy, one should at the same time acknowledge that the interconnectors are not providing firm capacity by themselves and that the some firm cross-border capacity must exist and be secured via a proper capacity market design.
ENGIE therefore fully supports the following statement from ENTSO-E : "Lack of power in these situations [simultaneous scarcity situations in a certain macro-area] is typically related to the lack of available resources to generate the needed power in the specific macro-area. Typically in those cases, although the adequacy problems are not linked to a lack of interconnection capacity, the affected countries (part of the macro-area) might present import levels lower than their maximum simultaneous importable capacity. Such low levels of imports are, rather, related to a global/regional deficit of available power generation inside the perimeter encompassed by the countries in scarcity."

4) Hydro modelling
The modelling of hydro assets is a specific case of two broader issues, the simulation of weather-related generation across Europe and the modelling of storage assets. The first aspect should be tackled by a consistent use of the Pan-European Climate Database (PECD), the second one by an appropriate use of the features of the various system modelling tools.
Taking into account the dispatch flexibility provided by centralized as well as decentralized storages is critical for the reliability appraisal, esp. with more and more renewable resources such as solar and wind generation. For instance, the hydro resources in Europe (e.g. located in the Alps, Pyrenees, Norway, Spain, Italy, etc) could economically adapt their dispatch throughout the year(s) according to the expected risk of unsatisfied demand (scarcity).
ENGIE shares the observation of ENTSO-E that more efforts should be devoted to an accurate representation of storage in this adequacy assessment. Some of the tools used by ENTSO-E (e.g. Bid3, Plexos) could have the proper features to deal with such a dynamic modelling of storage. Alternatively, other tools developed to model electricity systems with a large share of hydroelectricity (like SDDP) could be investigated. In any case, ENGIE believes that ENTSO-E should provide more details on how the hydro modelling features are (or will be) used and to which extent an appropriate management of storage could contribute to security of supply.
The current reporting of the impact of hydro constraints and its relaxation on the adequacy results is not extremely informative. It only focuses on the relaxation of a given constraint (i.e. reservoir trajectory / levels), not on more detailed parameters (e.g. opportunity costs/water values).

5 From your perspective, which would be the most relevant and useful additional methodological improvements or insights for the future MAFs? Please explain in line with the specific needs of your field of activity.

Additional Improvements:
1) Decentralized generation and storage
Given the on-going energy transition to a low-carbon economy, decentralized generation is expected to play an increasingly important role in the future electricity supply-demand balance. It is therefore extremely important that ENTSO-E could rely on accurate figures for existing capacity (and related generation) of decentralized generation as well as for the expected development (coherent with other assumptions, like RES deployment targets). Other actors in the electricity systems (like DSOs) should also provide more visibility and transparency on the potential impacts of activities in their scope on the system adequacy (e.g. aggregated information on "prosumers" connected to the grid, both in terms of type, capacity, generation, demand, etc…).

2) Sensitivity on key assumptions: demand
The demand forecasts (levels, but also profiles) are clearly part of the important drivers of adequacy in the future. Unfortunately, the assumptions underlying the load / demand data are still not fully transparent in the MAF report open for consultation.
In particular it is not clear whether all countries are basing their forecasts on coherent underlying assumptions for some key parameters (e.g. demography, GDP growth, energy efficiency, etc.) and which structural changes are included in the (future) consumption patterns as a consequence of the energy transition.
ENGIE believes that ENTSO-E should ensure consistency in the forecasts considered in the analysis and that ENTSO-E should propose - if needed - a way forward for more harmonization and more transparency on the demand assumptions.

3) Sensitivity on key assumptions: Supply
In the past two years ENTSO-E has provided some sensitivities on the supply side of the adequacy analysis (2017: mothballing sensitivity, 2018: low-carbon sensitivity). As explained in Q4, such a sensitivity on the supply is key in assessing the overall system adequacy, but also the local system adequacy. More specifically, any change on the supply in one country could have important impacts on the adequacy of another country.
ENTSO-E should carefully monitor the capacity assumed reliable in the future, and perform a sensitivity analysis when needed. In particular and given the energy transition, ENTSO-E should make sure that the capacity considered as reliable in the future is also economically viable. Otherwise, the analysis could rely on some capacity that might not be present when needed and – a fortiori – that cannot contribute to security of supply. This would significantly lower the expected system adequacy.
ENGIE is therefore encouraging ENTSO-E to consider more scenarios on the supply side to address the underlying uncertainty. More specifically, one of the key sensitivities should be related to the presence or not of a capacity market, as discussed in the context of the Clean Energy Package.

4) Sensitivity on key assumptions: Grid constraints
As explained in Q4, the management of the transmission grid, both at local level and across borders, could have an impact on the adequacy assessment. Depending on the management of the local transmission lines and on their local reinforcement, the cross-border transmission lines could allow (or not) more energy to flow from one country to another in time of system stress. Unfortunately, "the MAF does not consider network constraints within a zone", except (but to a limited extent) in the Flow-Based sensitivity in Central-Western Europe. This limitation calls for an appropriate sensitivity on the (cross-border) transmission capacities.
One should note that this observation on flow limitations is valid even if the physical capacity of the cross-border lines are kept constant. The key lever is indeed the interconnector capacity allocated to the market, which can be further improved, see ACER Monitoring Report 2017 (Section 3: Available cross-zonal capacity).
Any discrepancy between the interconnector capacities assumed in the MAF and the interconnector capacities made available to the market could hinder the

ability to forecast appropriately adequacy issues. Energy that is assumed to flow between countries in the MAF modelling might not be allowed in practice by TSOs !
Although ENTSO-E acknowledges the limitation of not considering the possible network constraints within a zone (p.2), this limitation is seldom included in the analysis of the risk factors. ENGIE agrees with ENTSO-E that the higher granularity of regional adequacy assessments could help alleviate partly this limitation, but ENGIE would then favour a pragmatic approach (e.g. including a sensitivity analysis) in the MAF.

5) More insights on adequacy
The set of adequacy metrics considered in the MAF report has to be complemented by at least the following ones:
a) The total need for reliable/dispatchable capacity per country (MW) : distribution, average, median, p95, standard deviation… Adequacy forecasts should mostly focus on defining the level of reliable/firm capacity that is needed in the mid to long-term to satisfy a predefined reliability standard and the estimates of the demand. This metric would help the various stakeholders in the market to assess the need for additional investments/divestments based on their own view on the development of the existing assets. In addition, it could become instrumental in setting up the capacity demand in capacity remuneration mechanisms. Providing such metric would also avoid having ENTSO-E struggling with the assumptions on commissioning/decommissioning of assets. In practice, this key performance indicator is a by-product of the analysis of the residual load (=load – intermittent renewable generation) and should therefore be readily available within the existing process with low efforts.
b) The capacity surplus / deficit (MW) : distribution, average, median, p95, standard deviation…

6 Would you find it beneficial to define a common reliability target – or range - (e.g. LOLE 3 or 5 or h/y) to be used in MAF as a reference? Which reliability target should be used in MAF as a reference?

Reliability Standard:
This question is similar to Question 7 in the consultation of MAF 2017. We are therefore reproducing our answer:
"As highlighted by DG Competition in its interim report of the sector inquiry on capacity mechanisms (see Section 4), the European countries have different views and practices regarding the adequacy metrics and criteria. In particular, some countries do not have legal reliability standards and, when available, there is not necessarily a link between this criteria, the value of loss load (VOLL), the cost of new entry, etc. As highlighted by DG Competition, this fact raises the question on how to ensure that the reliability standards are based on sound economic assessments.
In practice, ENGIE believes that all Member States should have their own reliability standard in place. Although desirable, harmonization of these reliability standards in a common reliability target for all countries should not performed by ENTSO-E, but driven by Member States. ENTSO-E should only provide all relevant elements needed by the Member States and the various market players to assess whether the reliability standards are achieved and which level of firm capacity would be needed to ensure the desired level of security of supply ."

The use of a single reliability threshold by ENTSO-E, which could be more or less stringent than the ones retained in the Member States, could be nevertheless be informative. More specifically, it could help identifying the amount of firm capacity needed to close the gap and to satisfy the reliability standard. This could be of interest when considering the sensitivity related to presence/absence of a capacity market (see Q5 – sensitivity on supply).

7 Please tell us below if you have additional suggestions or comment?

Other suggestions:
ENGIE believes that further clarity should be made on the following aspects in the :
1) Use of currently mothballed capacity – Is it brought back to the market or is it decommissioned after a few years (as part of the economic decommissioning)? How much and when ?
2) Day-ahead adequacy – in the main report, one can read that "the MAF focuses on and only observes the day-ahead situation with respect to adequacy" (p.12). The justification seems to be that "TSOs have various tools to resolve situations of scarcity in the intraday".
a. However, there is no further information on these tools and the associated capacity available to system operators to intervene after the day-ahead timeframe. These assumptions should be made visible to all market players.
b. In addition, strategic reserves seem to be considered as part of these diverse remedial actions and out-of-market resources. Nevertheless, this assumption creates a contradiction as the MAF could be used in the future to size the capacity allocated in capacity mechanisms, including the strategic reserve. This inconsistency should be clarified.
3) Maintenance schedule – The use of an optimized maintenance schedule (p.2) could tend to reduce the adequacy issues. It would be interesting to quantify the impact of having a less optimized schedule on the adequacy, as it might better reflect reality.
4) Force Outage Rates – It would be interesting to get some resulting KPIs (mean, median, p95, standard deviation…) on the simulated outages – capacity unavailable, length of outages,… In addition, it could be interesting to simulate common mode failure events (nuclear assets, water availability, etc…).
Although Figure 2.5 (Illustration of partial inadequacy to cover demand with the available resources) is illustrative, it should ideally be reviewed to better reflect the order of magnitude (e.g. level of RES generation vs thermal generation) and the dynamics (e.g. stable levels for hydro, thermal and imports ?; why would we import when the stack is above demand ?, etc…).