ENTSO-E Mid-Term Adequacy Forecast 2018 consultation

A Eurelectric response paper

November 2018

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:
- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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WG Wholesale Market Design and Investment Framework

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KEY MESSAGES

- We welcome the public consultation of the new Mid-term Adequacy Forecast (MAF) 2018, since the methodology is improving every year. We particularly welcome the addition of:
  - a scenario analysis featuring a reduced-level of firm capacity ("low-carbon sensitivity analysis");
  - a scenario on Central-Western Europe featuring more realistic cross-zonal exchange capacities ("Flow-based sensitivities"), which corresponds better to the current situation;
  - more detailed information of the power plant characteristics.

- Despite those improvements, Eurelectric regrets that the MAF 2018 does not include several scenarios for the future level of electricity demand and additional scenarios for the supply side (e.g. based on the economic viability of existing assets, development of RES capacity, including decentralised generation). It is crucial to correct this in the next edition of the MAF.

- In Eurelectric's view, adequacy forecasts should mostly focus on defining the level of reliable/firm capacity needed in the mid to long term in order to satisfy a predefined reliability standard and the estimated demand. As a prerequisite, ENTSO-E should define a consistent methodology to analyse the demand forecasts and assumptions provided by TSOs, and display the level of firm capacity needed in each bidding zone to achieve the standards of security of supply of each Member State.

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

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 some 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 facing more uncertainty in the context of the energy transition. ENTSO-E should therefore take some care when devising the level of capacity assumed reliable in the future, and perform all relevant sensitivity analyses needed to cope with this uncertainty.

The proposed low-carbon sensitivity on the supply side is thus going in the right direction. In particular, it shows how a choice in energy policy (i.e. acceleration of "low-carbon (environmental) policies") could impact system adequacy across Europe.

Concretely, this low-carbon sensitivity is considering that circa 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) **MAF assessments should be complemented with regional and national assessments**;

(ii) **Appropriate sensitivity analysis on the supply side should be performed to account energy policy decisions** (e.g. low-carbon sensitivity, nuclear energy policy) **and for economic circumstances** (e.g. economic mothballing or retirement, impact of capacity markets). From this perspective, Eurelectric continues promoting the inclusion of sensitivity analysis considering scenarios of economic mothballing/retirement ;

(iii) **Ensuring adequacy within a country that relies on imports during scarcity situation might require securing the presence of cross-border capacity** – 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 sensitivity

We welcome the addition of a sensitivity analysis based on alternative values for cross-zonal capacities (scenario named "Flow Base Market Coupling").

We nevertheless wish there was even more transparency, particularly with respect to model inputs and outputs. In particular, the application of a "Flow-Based" (or of any CACM-compliant) capacity calculation methodology requires a larger dataset that was not reflected in the data published by ENTSO-E.

In Eurelectric's view, before applying a complex "Flow-Based" approach, ENTSO-E should first clarify the way NTCs are defined in the base case scenario, and propose a realistic NTC capacity calculation approach conform to the principles set by the CACM guidelines for all borders. Only then, a Flow-Based approach could be defined and applied to all borders. As of adequacy assessment, ENTSO-E should strive to model what the physical infrastructure can perform.

As of the consideration of minRAM settings in the MAF, Eurelecric believes it could indeed be consistent to mimic Day-Ahead (DA) capacity allocation (thus including the measure) if the MAF remains a "Day-ahead" vision. But the report should make it clear that:

- As of today, minRAM is a voluntary agreement decided in a regional pilot project (CWE Flow-Based) and to which TSOs can derogate. How is it taken into account in the DA assessment?
- The problem of adequacy is not only a problem of DA. When too much capacity is allocated day-ahead with respect to what the infrastructure can transmit, countertrading can be used to reduce capacities. This is done daily on the DkW-DE border and could very well happen elsewhere in case of scarcity. If the MAF really intends to measure the risk of load curtailment, these situations should be considered, and it could be more relevant to rely on a capacity calculation based on physics and not on political decisions related to congestion rent/redispatching cost allocation.

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. Eurelectric supports the proposal that the contribution of neighbouring countries to system adequacy of a given country / Member States should be properly assessed in order to size capacity requirements and enable cross-border participation in these mechanisms. One should also keep in mind that a critical LOLE following national standards could also trigger reactions from market participants (generation, storage, demand response) to avoid the expected identified scarcity situation.

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 some firm cross-border capacity should be secured via a proper capacity market design to make sure that the import capacity will be firm.

Eurelectric 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.” It also shows the importance to perform a sensitivity analysis on the level of interconnector capacity made available to the market in case of scarcity conditions.

By the way, Eurelectric would appreciate some explanations on how LOLE in each country is estimated in the MAF in case of simultaneous scarcity, i.e. how cross-border energy flows are determined when both sides of the border are facing scarcity.

4) Hydropower model

We welcome the fact that hydro assets and management are integrated in the analysis, as proper simulations of hydro stock management over the year are a must.

We would nonetheless appreciate more transparency and information about the flexibility of hydro units as well as inflows/energy assumed within each hydro scenario (dry, wet or normal hydro conditions). This request is not only linked to the underlying datasets, but also to the methodology and model features used.

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.

Eurelectric welcomes the methodological enhancements brought by ENTSO-E to the MAF 2018, especially the sensitivity analysis on the supply-side capacity. Yet, in order to be as close as possible to the reality, some methodological improvements are still needed e.g. on demand and supply-sides assumptions.

1) Demand-side assumptions

Eurelectric believes that ENTSO-E should define a consistent methodology for the demand forecasts and assumptions provided by national TSOs. This would include among others an alignment on the macro-economic assumptions (e.g. coherent GDP or demography growth rates), on the energy efficiency gains, on the prosumer development, etc. across countries.

As a prerequisite for any adequacy assessment, it is crucial to define a consistent methodology for demand forecasts in order to obtain a more accurate/rigorous/coherent view on the level of demand that will need to be met (e.g. see our earlier suggestions for methodological improvements). If possible, it would be very valuable to include sensitivities based on different reliability standards and electricity demand growth pattern due to decarbonisation. This would allow a better understanding on how the desired level of adequacy influences the level of firm/reliable capacity needed.

In term of transparency and as in MAF 2016, Eurelectric would welcome to get access to hourly demand data (included in MAF 2016).

2) Supply-side assumptions

The supply-side assumptions are extremely important when assessing system adequacy as they represent the "second leg" in the reasoning. ENTSO-E should therefore take some care when devising the capacity assumed to be reliable in the future, and perform sensitivity analysis. In addition, we observe that the data on capacity do not always fully reflect current auction results and Member States plans on RES development. The report should at least explain in the annex the reason behind the different estimation on the supply-side.

In particular, and given the energy transition, we would welcome ENTSO-E to 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 at that moment in time and – a fortiori – that cannot contribute to security of supply. This would significantly lower the expected system adequacy.

In addition, Eurelectric acknowledges that supply-side capacities consist of only capacities "in the market" (no strategic or network reserves for examples). From this perspective, it would be of interest that the assumption book published by ENTSO-E also includes the level of capacity "out of the market", and a sensitivity analysis monitors the level of security of supply when those resources are also dispatched.

3) Decentralised generation

Given the ongoing energy transition, decentralised generation is expected to play a more and more important role in the future electricity supply-demand balance. It is therefore extremely important for ENTSO-E to be able to rely on accurate figures for existing capacity (and related generation) of decentralised generation as well as for the expected developments (coherent with other assumptions, like RES deployment targets). This also requires other actors in the electricity system

(like DSOs) to provide more visibility and transparency on the potential impact of their activities on system adequacy (e.g. aggregated information on "prosumers" connected to the grid, both in terms of type, capacity, generation, etc.)

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?

Member States shall have a reliability standard in place indicating their desired level of security of supply in a transparent manner. All Member States (not only those having a capacity mechanism) should define and publicly disclose their desired level of security of supply target, based on harmonised metrics. While the choice of adequacy metrics should be harmonised, each country should be free to set its desired level of adequacy.
Security of supply is a subsidiarity issue belonging to Member States. Therefore, Eurelectric believes that ENTSO-E should not choose a common European reliability target to be used in MAF as a reference. In other words, ENTSO-E should be able to assess the key performance indicators related to reliability standards, but each Member State should define its own threshold against which the ENTSO-E assessment should be compared.

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

Eurelectric would encourage TSOs and National Regulatory Authorities to closely follow future changes of generation capacity to have aligned national views on capacity development. It is also our understanding that estimates of decommissioning plants will be included in the national plans that member states should submit to the European Commission as part of the Energy Union's governance framework.
However, we are convinced of the necessity to include proper sensitivities on the supply side (including in particular high-level economic sensitivities/elements in adequacy studies. In particular, we believe that the economic assessment should rather be based on the economic position of 'classes' of power plants (e.g. CCGTs) and taking assumptions on a level of mothballing based on economic viability; e.g. a top-down approach looking at aggregate availability/mothballing instead of a bottom-up approach looking at individual power plants (such decisions may also be interdependent on other plants, so we believe it is not advisable to look at each plant individually). It is also sensible to use contrasted economic scenarios and to double-check that each scenario is economically consistent with the "economic presence / survival" of the plants needed to ensure adequacy. ENTSO-E does not need the data from market parties to make relevant sensibilities studies.

<u>Adequacy metrics</u>

As highlighted by Eurelectric during both the consultation processes on the MAF 2016 & 2017 reports, the set of adequacy metrics considered has to be complemented by at least the following ones:

- The total need for reliable/dispatchable capacity per country (MW) for each scenario as a function of the local adequacy criteria. In Eurelectric's view, 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 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 existing assets. In addition, it could become instrumental in setting up the capacity demand in capacity remuneration mechanisms. Providing such a 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 already provided by ENTSOE and should therefore be readily available within the existing process with low efforts.

- The capacity surplus / deficit (MW) in terms of how much firm capacity is achieved within each bidding zone and for each scenario in comparison with the needed capacity.

Transparency

In terms of processes, we strongly support the fact that ENTSO-E is more and more consulting stakeholders (through the organisation of a webinar and a consultation). However, we would welcome more clarity on how ENTSO-E is taking into account and is integrating stakeholders' comments into their next MAF, especially as some questions are the same as the ones from the MAF 2017.

It would also be of interest to get a better visibility on the actual scenarios simulated by ENTSO-E. For instance, what are the distributions of certain KPIs (residual demand, renewable generation, amount and duration of forced outage, etc.).

We wish there was even more transparency, particularly with respect to model inputs and outputs. Specifically, the following elements would be appreciated:

- Explanation of NTC changes between 2020 and 2025 (the decreases in NTC on the following borders are somewhat surprising: AL-RS, BG-RS, PLE-CZ, particularly the last one);
- Fuel and CO2 prices (included in MAF 2016);
- Hourly demand data (included in MAF 2016);
- Average power prices, net interchanges and generation levels.

Country-specific comments

We also would like to point out some specific comments regarding certain countries:

1. **Spain**

It is necessary that the MAF improves sensitivity analysis.

- Regarding coal capacity:

The current version of the MAF shows 5,230 MW of coal capacity in 2020 and 4,660 MW in 2025, but the truth is that the 30th of June 2020 is the deadline to undertake the necessary investments to comply with the Industrial Emissions Directive (IED) and only 3,975 MW of coal capacity (Puentes, Litoral, Los Barrios, Aboño 2 y Soto 3) have announced that will undertake the investments. So MAF should show 3,975 MW of coal capacity in 2020 as well as in 2025.

- Regarding nuclear capacity:

The current version of the MAF shows 7,117 MW of nuclear capacity by 2025, what implicitly means that nuclear lifespan is 50 years; but if finally life span is limited to 40 years, only 3,040 MW (Ascó

2, Vandellós II y Trillo) of nuclear capacity will remain in operation by the end of 2025. Moreover, at the end of 2028 all nuclear generation will be off-line.

A conservative analysis on the lifetime of assets may be worth being considered in the MAF.

- As far as RES is concerned:

It has been considered an increase of 15 GW of RES from 2020 to 2025 mainly focused in solar PV (11.5 GW) with a very low level of new wind farms (1.7 GW). Recent analysis of energy transition in Spain point to incorporate 40-45 GW of new RES capacity in 2030, that means:

- In 2025 ENTSO-E should considered an increase of 20-23 GW of new RES (instead of 15 GW).
- There is not a balance between solar PV and wind capacity. It does not seem realistic to consider only an annual development of 340 MW of wind capacity additions.

As a conclusion, in the case of Spain, we would encourage ENTSO-E to revisit the supply scenarios considered to avoid that the expected reliability may be overestimated.

2. Italy

- The low carbon sensitivity analysis should include the case of complete phase-out of coal by 2025, as currently debated in Italy and as foreseen as hypothesis in the Italian National Energy Strategy issued in 2017.

- Concerning the grid development assumed by ENTSO-E and the NTC values reported, some values seem too optimistic both on interconnectors than between Italian zones inside the country. In the first case, it could be due to different assumptions on merchant lines. In the second case, some values are not in line with Grid Plan issued by Terna (Italian TSO). In particular:
    - Section Sud – Centro Sud: in 2025, ENTSO-E reports additional 900MW with respect to today. We would suggest to align data with Terna estimates (+400MW, 380 kV line Deliceto Bisaccia);
    - Section Centro Nord – Nord: in 2025, ENTSO-E reports additional 600 MW with respect to today. We think that the value should be changed to 400MW (380 kV line Colunga – Calenzano).

- Offshore wind is highly improbable in Italy.

- The assumptions and the sources on the number of Heat Pumps installed (no heat pumps foreseen in Italy neither in 2025 nor in 2030) should be clarified, in particular with respect to other countries, taking into account that the electrification of the heating sector is one of the levers for the decarbonisation of the heating sector.

3. Romania

- Nuclear – two new units are forecasted to be installed in Romania. However, this is expected to happen in 2030/2031 (if everything goes as planned), including by the Romanian Government. In the tables provided in the MAF report, the 2 units are already included in 2025, but it is rather unlikely to happen.

- Solar – In the 2025 projection, it seems that the generation capacity is around 1500 MW, which is not very different than what is installed today. This is not possible and it should be higher, also considering the recently adopted “prosumer” legislation and the Romanian government incentives for PVs for customers.

- Wind – Based on a study performed inside the Romanian Wind Energy Association, grid parity should be reached in 2024/2025. For this reason, the numbers showed in the 2025 scenario (3500 MW) are too low, which translates into just a few wind projects to be finalized by then.

- EVs – The ENTSO-E database considers a number of 24k EVs in 2025. Recent studies show up to 500k EVs in 2030, therefore a higher number should be available also in 2025.

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability

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