RWE Supply & Trading GmbH

Response to the study on the future design of the ancillary service of voltage and reactive power control

A. Introduction

RWE Supply and Trading GmbH (RWEST) very much welcomes the opportunity to comment on the study on the future design of the ancillary service of voltage and reactive power control as published by Elia on 10 September 2018 (hereinafter the "Study"). RWEST is part of the RWE Group which is a leading pan-European energy company with over 40 GW of installed capacity in Germany, the UK and Benelux. RWEST is, amongst other things, responsible for the marketing of ancillary and other grid services out of the T-Power power plant and in this capacity, RWEST is providing reactive power to Elia for the purposes of voltage control.

In general, we believe that electricity markets and markets for ancillary services can always deliver the best welfare results when allowed to function properly without unnecessary regulatory intervention. Instead of regulation, another way to achieve these positive welfare results could be the opening of the market for MVAR services to all technologies which would increase the liquidity and eventually drive down prices. Making the provision of MVAR mandatory would further increase the number of providers and thus also have positive effects on the liquidity. It would have been our expectation that the Study also considers market-based design improvements (such as a new innovative tendering process) in order to compare the results of different future strategies.

However, we also respect the specific technical limitations when it comes to the provision of voltage and reactive power control as set out in the Study. Ultimately, whether or not the procurement of voltage and reactive power is organised through a regulated service, as proposed by Elia, or market-based, through an annual tendering process, may not make a material difference as long as the remuneration reflects all respective costs incurred by the provider of such services.

With respect to the Study, we would like to request that further details be made public and looked into in order to complete the review. In assessing the most effective future design, all results of the EU benchmarking study should be made public. Furthermore, a thorough legal analysis will have to be conducted, especially with respects to the necessary changes to the Federal Grid Code, to the potential discriminatory character of certain design proposals as well as on the reasonable and fair remuneration and price structure. A thorough analysis can only be completed once such complete concept has been laid out to market participants.

Consequently, this response will focus on the correct remuneration in answering the specific questions posed by Elia and provide our expert opinion on the items under question.

B. Remuneration and Price Structure

1. Should the service be remunerated?

In general, a fair remuneration of investment, service and costs will be the best incentive for any generator to provide the maximum MVAR capacity to the Belgian market and support security of supply to the grid operator. Moreover, the more generators provide the service to the TSO, the cheaper the service can be purchase.

RWEST is of the opinion that all reserved and activated MVAR shall be remunerated, regardless of whether the activation occurs automatically or manually. That is because leaving out the majority of the provided service from the remuneration would, firstly, let providers of these services recover only a fraction of the cost incurred and, secondly, give no incentive to generators to voluntarily provide MVAR to the system operator.

In addition to a variable compensation based on the delivered reactive energy and respective fuel costs, **the provision of reactive power service requires significant investment which creates significant incremental fixed costs that should be compensated for**. Since these costs are no longer variable at the point in time when the power plant is dispatched, these costs should be reflected as a fixed price component. These costs include the additional cost for larger or more complex machinery, additional administrative costs, additional operating costs (including increased outage and related market risks), additional contract risks as well as a compensation for losses and maintenance related to wear and tear as also established as part of the EU benchmarking within the Study.[1]

To provide more detail with regards to the different fixed price components that a generator may incur, the additional cost for larger or more complex machinery would relate, *inter alia*, to the increase of transformer capacity and the generator design as the combination of active and reactive power results in higher operational currents, which in turn requires more robust machinery and more robust wiring in the transformers and the generator. This also applies to the connection between the generator and the transformer. Additionally, it should be noted that the generator control for reactive power management is more complex and thereby requires additional investments. This is also true for the required monitoring and measurement system as well as for the necessary real-time information system required to inform the TSO of the related power plant capabilities.

In terms of additional administrative costs and contract risks, the provision of reactive power service incurs additional costs for legal functions, contract management and commercial functions, as well as potential penalties, depending on the to-be designed contractual arrangement between the generator and the TSO, and all these costs and risks should be reflected in the remuneration appropriately.

[1] See page 22 of the Study, noting that *"The price value mostly represents a compensation of losses and maintenance related to wear & tear caused by delivering reactive power regulation."*

Finally, higher operating risks are incurred by additional operating hours and operating currents. Providing reactive power services increases the probability of an operational failure and the resulting cost or damage must therefore also be reflected in the remuneration. This can also be seen from the events at the Tessenderlo plant on 29 November 2016, during which the provision of reactive power to Elia led to a technical failure of the power plant.

One further cost component that should be considered as part of the remuneration is a certain share of the common plant cost. Although these costs cannot be unambiguously allocated to a single service, these costs are nonetheless created and must be covered. In the case of a power station the common costs relate to the capital costs for electric machinery and IT equipment, fixed costs for operation and maintenance as well as the cost of labour.

The corresponding cost allocation convention should be established through expert opinions and the consultation of market participants and at least the following two common cost allocation rules should be considered:

- An allocation based on volumes and/or outputs, in this case the MVARh/a divided by the total output in reactive (MVARh/a) and active power (MWh/a).
- An allocation proportional to the value of outputs, in this case the revenues from selling MVARh/a will be divided by the total plant revenues from all markets.

2. Should there be a remuneration for capacity or for provided energy?

The MVAR service is only possible by having two components. The first one is the technical possibility that the generator/seller provides to the TSO/buyer which already comes with fixed installations, risks and service costs. All these elements would be best reflected with a fixed capacity charge as part of the fixed cost component. The second component is the activation of the provided capacity which would be best reflected with the degree and duration of activation (capacity per 1/4h for reactive energy delivery MVARh).
Consequently, RWEST believes that the dual pricing of capacity and energy will be a fair, most cost-reflective and most efficient compensation.

3. Should the remuneration be technology based or should universal pricing be applied?

Different generation technologies result in different cost structures to ensure and/or to deliver the MVAR service. Insofar a universal pricing will cause a discriminatory treatment of generators. RWEST strongly opposes a unified pricing for capacity and delivery of the MVAR service.

4. Should the prices be fixed or should they vary depending on the reactive power range?

We agree with the Study that different prices according to reactive power bands and differentiation between injection and absorption are more efficient in reflecting costs incurred by different market participants. As in the past, due regard should be given to different reactive power ranges. Since a higher range comes with higher operational risks and costs, these differences should be reflected in different prices depending on the reactive power range. RWEST also supports simplified pricing

structures (e.g. fixed delivery payment for activated MVAR per h, regardless of the delivered volume).

5. Should the remuneration relate to requested or delivered energy?

We believe that the delivered energy should be measured and remunerated for and that once the measurement has been finalised the application of penalties will not be required. Remunerating solely the requested energy, and therefore only manual activation of MVAR, would not respect the automatic provision of MVAR and thus not remunerate for the majority of the MVAR provided.

6. What could a potential price structure look like?

Again, we would like to point out that defining the price structure will be crucial in order to cover the costs incurred by generators that have the obligation to provide MVAR to Elia as well as to attract the voluntary provision of these services.

In our view, the reactive power price $\mathbf{P_{Mvar}}$ should consist of the indexed variable price component $\mathbf{V_R}$ and a fixed price component **F** and we propose the following price structure as one alternative that should be analysed in the future design proposal:

$$\mathbf{P_{Mvar}} = V_R * (\text{Index(y)}/\ \text{Index(x)}) + F \qquad €/\text{Mvar/h}$$

Where

$\mathbf{V_R}$ shall be the variable part for the specific range R, which covers the delivery costs (Joule losses, Hysteresis losses and Foucault losses of the generation due to less efficiency) such as fuel costs, CO2 costs, extra cooling costs, outage costs, imbalance costs.

Index(y) shall be the arithmetic average of the end-of-day settlement prices for the baseload delivery in Belgium for the respective calendar year "y" as published by EEX on https://www.eex.com/en/market-data/power/futures/belgian-futures during the fourth quarter of the preceding calendar year "y-1". The result will be rounded to two decimal places.

Index(x) shall be the arithmetic average of the end-of-day settlement prices for the baseload delivery in Belgium for the respective calendar year "x" (x is a base year, when this price structure for reactive power will be fixed) as published by EEX on https://www.eex.com/en/market-data/power/futures/belgian-futures during the fourth quarter of the preceding calendar year "x-1". The result will be rounded to two decimal places.

F shall be the fixed costs as addressed throughout this document.

C. Conclusion

To conclude, we would like to note that we are concerned about the very ambitious high-level implementation plan. Due regard must be given to the careful regulatory design of the future services and remuneration of the ancillary service of voltage and reactive power control, allowing all stakeholders to provide their views and experience through public consultations.

***