Response to Creos
Public Consultation on the future network tariff structure for the medium, high, and very high voltage levels in Luxembourg

15/07/2025

Introductory and general remarks

Enovos Luxembourg welcomes the opportunity to participate in the public consultation organized by Creos Luxembourg (Creos) on the future network tariff structure for the medium, high, and very high voltage levels in Luxembourg.

As grid fees represent a significant part of the cost of power at medium, high and very high voltage levels – to which mainly industrial customers are connected, grid tariffication is an essential lever in maintaining Luxembourg's economic and industrial competitiveness. It is also an effective instrument to steer customer behaviour. When redesigning the grid tariff structure, we would suggest taking these aspects adequately into consideration alongside the fundamental function of grid tariffication that is to ensure that grid costs are recovered and allocated fairly amongst grid users. In view of this preliminary remark, we would like to invite Creos to take the following general elements onboard in its reflexions on the tariff structure review.

We would plead for:

- Dynamic grid tariffs incentivizing system-beneficial grid use and incentivizing flexibility at medium,high and very high voltage levels.

- A fairer allocation of grid costs between all voltage levels: the Consentec study (page 15) shows that currently, the existing cascading mechanism leads to a share of 0,6% of costs that are borne by customers on the 220 kV level (very high-voltage level), 9,8% by customers on the 65 kV level (high-voltage level) 38,3% by customers on the 20 kV level (medium voltage level) and 51,3% by customers on the 0,4 kV level (low-voltage level). Considering that an increasing share of network costs is arising from decentralized power production and grid use at the BT level, a review of the cascading model aimed at shifting part of the network costs towards lower voltage levels could contribute to rendering the overall cost allocation fairer and more proportionate. At the same time, affordability of increased grid fees at lower voltage levels should be maintained and could in part be supported by aid measures.

- A review of the legal, contractual, and economic framework for system services (currently provided by German TSO Amprion for Creos), with the aim of identifying potential cost reduction opportunities in this area, while also analyzing the possibilities of providing system services through other means or with different partners.

- An integration of the grid tariff structure review at medium, high and very high voltage levels into the wider industrial strategy for Luxembourg in the medium and long-term, notably accounting for the fact that attractive grid costs for industry may help to increase costs mutualization. Indeed, making power grid tariffs more attractive for industry is important to support decarbonization efforts of existing industrial sectors while allowing them to remain competitive in Luxembourg. It is also a significant factor in attracting new

industries to Luxembourg (such as clean tech production, data centres…) which, by increasing overall power consumption in the country, could contribute to lowering grid fees for all grid users because of a wider cost mutualization.

Specific questions for stakeholders:

1. How far do you share Consentec report's assessment of the current tariff system's strengths and weaknesses, particularly regarding the tension between incentivizing flexibility and ensuring cost recovery? Which issues do you see as the most urgent to address?

In general, we agree with the dilemma explained in the study between the incentive and cost-recovery functions of network tariffs. However, we consider that the study neglects the potential positive effect of incentivizing flexibility on the overall network costs. One of the main benefits of flexibility is indeed that it contributes to removing local congestion and to stabilizing power grids by lowering peak demand and injection (which in turn allows further integration of renewable energy into the system), overall allowing costly grid expansions or reinforcements to be deferred. This illustrates a key area where both functions of grid tariffication are aligned: incentivizing network users to adopt flexible production and consumption patterns can lead to overall cost savings, thus easing full cost recovery. We consider that the cost saving potential of incentivizing large-scale flexibility in Luxembourg should be further investigated, as we believe it could possibly lead to significant savings on ancillary services currently performed by Amprion for Creos in view of stabilizing the power grid at high voltage level.

2. Do you support replacing the current cost cascade based on maximum annual load with a simpler model based on gross annual consumption considering the expected benefits for stability, transparency and fairness as described in chapter 3 of the Consentec report? Why or why not?

We understand and support the request for a more stable allocation of costs to the different voltage levels and thereby a more stable and foreseeable development of the grid fees per voltage level. We think this can be achieved by a replacement of the current cost cascade based on maximum annual load, without a judgement on a specific alternative approach.

3. What is your view on the shift from tariffs based on actual peak load to a reference capacity? In this model, users subscribe to a capacity and face surcharges when they exceed it, like the new tariff structure applicable to low voltage customers since Jan 1, 2025.

Considering the evolution of production and consumption patterns (notably the development of self-consumption) and related grid usage, we understand and support the shift towards a model where the fixed cost component of the grid tariff becomes more significant. After implementing a model based on reference capacity for low voltage customers in 2025, we think such a model can also be implemented for other voltage levels. We appreciate the replacement of the current model, which poses several difficulties in implementation and application as well as in understanding for the end-customer.

We however strongly suggest that the grid operators and the regulating authority should consider lessons learned from the implementation of the capacity-based model at low voltage level.

We here in particular consider the following elements:

- Customers and market actors should receive reliable information in due time on the specificities of the new model as well as on the new applicable tariffs. Complete specifications allowing a smooth implementation and transition to the new model should be provided well in advance. This includes a transition and test planning phase between the suppliers and the grid operators (data exchange in Market Communication "MaCo" and without MaCo).

- For the implementation date of the new grid fee tariff model, we highlight that any adaptation must be reflected in the appropriate MaCo processes, which are currently under complete review. We therefore strongly recommend aligning the timeline for implementation with the release planning of the new MaCo model.

- We would strongly suggest that the new grid fee model clearly incentivizes participation in demand-response and flexibility schemes.

- We also suggest that the new grid fee model, contrary to the new low-voltage capacity-based model, does not penalize customers who have massively electrified.

4. What is your opinion on the proposal to remove the simultaneity function and instead apply fixed shares on the repartition between capacity and volumetric tariff components given the operational and conceptual challenges highlighted in the Consentec study (see Consentec report 5.4)? Should the tariff still consider usage hours? In your opinion, what balance between capacity in €/kW, and consumption in €/kWh would you consider most fair and effective in encouraging efficient and flexible use of the electricity grid? Would a 40% capacity / 60% commodity split be appropriate (see Consentec report 5.4.1)?

We strongly suggest considering implementing a model that is:

(i) easy to understand for the end-customer,
(ii) easy to implement in the billing and market communication systems,
(iii) providing stability in planning for the end-customer,
(iv) guaranteeing stability for the implemented solution to all market actors, to avoid successive adaptations of the model and associated costs and
(v) incentivizing flexibility.

We suggest considering to no longer incorporate usage hours in the new tariff model.

5. What approach should be considered for self-consumption from renewable and non-renewable production in the future tariff structure, ensuring that all users contribute fairly to network costs? How should the tariff structure address electricity injection into the grid from renewable and non-renewable production without creating distortions in investment decisions or in the dispatch of generation units (Consentec report chapter 4)?

Currently, exemptions from grid use fees apply to an increasing number of users — whether they are renewable energy producers, individual or collective self-consumers, or members of an energy community. Indeed, the current legal framework stipulates that grid use by producers, as well as by prosumers injecting their production[1] or surplus electricity into the grid, is exempt from usage fees. Similarly, self-consumers, whether individual or collective, as well as certain forms of energy communities, benefit from an exemption from grid use fees for self-generated electricity consumed on-site[2]. These exemptions apply even when, in many cases, the self-consumed or shared electricity effectively transits through the grid.

At the same time, these users still rely on the electricity grid to meet their residual electricity needs when their self-produced or shared electricity is insufficient, as well as to inject their surplus into the grid when their production exceeds their consumption. As a result, a growing number of producers and prosumers benefit from these exemptions, which has the effect of shifting an increasing share of overall system costs onto pure consumers – at all voltage levels leading to a cross subsidization

We suggest examining grid use tariffs that, on the one hand, incentivize system-beneficial customer behaviours such as self-consumption and the production and sharing of renewable electricity, while on the other hand ensure that self-consumers, members of energy communities, and renewable energy producers contribute in a proportionate and fair manner to network costs.

Such a modification could be aligned with the broader tariff structure review to consistently reflect the impact of both consumption peaks and injection peaks. If we take the example of the low-voltage level, the capacity-based model places a greater burden on network users who have electrified their mobility and/or heating, without offering any incentive for self-producers to limit the injection power of their photovoltaic production.

[1] The principle of exemption from grid fees is enshrined in Article 20(5ter) of the modified Law on the Electricity Market dated 1 August 2007 and in Article 4(4) of the amended Grand-Ducal Regulation of 1 August 2014 on the production of electricity from renewable energy sources. In addition, the Renewable Regulation, for its part, states that electricity producers using renewable sources who benefit from remuneration under a feed-in tariff or market premium contract are exempt from network usage fees for the electricity they inject.

[2] The modified Law on the Electricity Market dated 1 August 2007 stipulates that electricity produced by a renewable self-consumer is exempt from network usage tariffs when it is used on-site, even after being stored, or shared in the following cases: between supply points of the same user located within a 100-meter perimeter, within the framework of collective self-consumption on the same site, or between up to three users within a 100-meter perimeter, or within an energy community within a 300-meter perimeter.

6. Should specific tariffs be introduced for storage facilities to better reflect their ability to withdraw and inject electricity flexibly? What design principles would you propose?

Yes, we believe that specific grid tariffs should be introduced with the aim of incentivizing grid- and system-beneficial use of battery energy storage systems (BESS) at all voltage levels. More specifically, this could be achieved by:

- For large-scale BESS directly connected to the grid at higher voltage levels:
  - Ensuring current grid tariff structure to very-high voltage (220 kV) grid remains favorable and stable over time for BESS,
  - Introducing dynamic or capacity-based grid fees for BESS at high voltage (65 kV) and medium voltage (20 kV) levels.

- For BESS collocated with renewable energy production on commercial or industrial sites:
  - Creating a dynamic tariff to improve the economics for less charging during system peak hours (similarly to a-typical grid usage in Germany).

Additionally, we believe consideration could be given to maintaining a level playing field in this area with Germany, where specific BESS tariffication applies: due to the fact that Luxembourg shares a bidding zone with Germany, a big difference in costs for operating BESS in Luxembourg compared to Germany could create a competitive disadvantage (as was pointed out in the Consentec study on page 22 with regard to injection tariffs).

7. Which key elements should be included in a new network tariff structure to effectively incentivize demand-side flexibility (time-shifted consumption or injection) in a way that is cost-reflective and grid friendly?

To incentivize demand-side flexibility, we would suggest the network tariff structure to be:

(i) Dynamic, based on actual load forecasts, meaning that the grid use tariff varies with market-conform granularity (e.g., hourly or 15 min), depending on the forecasted grid load for the short-term future.
(ii) Transparently published, e.g., with several days lead time before delivery so that customers/producers as well as their suppliers have sufficient time for an informed decision and subsequent operations regarding the adjustments of their planned grid usage.
(iii) Although a dynamic tariff is favourable, the grid fee tariff should acknowledge that investment decisions require some certainty about future grid costs.

8. What practical considerations should be considered for implementing time-of-use network charges?

As mentioned in our response to Question 7, a key practical consideration relating to the introduction of the suggested dynamic tariff is to ensure transparent publication of the tariff sufficiently ahead of time to allow customers/producers to react to the price signal. We typically would recommend publishing it with several days of lead time before delivery so that customers/producers have sufficient time for an informed decision regarding the adjustments of their planned grid usage and the related operational measures.

9. How can industrial customers be incentivised to increase their consumption during peak generation hours, mainly during high PV generation at noon (weekday and weekend)? Do you think there is a potential, and if yes, for which type of assets?

Due to operational constraints faced by industrial customers, we do not think there is a lot of potential for pure demand side flexibility for industrials. Such flexibility is a scarce resource that generally comes with a very high opportunity cost for industrials due to the impact it has on the production process.

However, in electrified industrial processes, we see some potential for demand-side flexibility if associated with storage technologies (such as BESS and Thermal Energy Storage) which could provide a certain amount of load shifting capabilities in the energy conversion process upstream of the production process. The acquired flexibility would nevertheless have to be assessed against dispatch cost of flexibility (e.g. due to cycle efficiency of used storage technologies, degradation etc.).

10. Do you foresee technical or operational challenges for consumers and producers in adapting to a new tariff model based on reference capacities?

Incentivizing the consumer to certain behaviours should not create any excessive burden for the customer. As a matter of fact, grid friendly behaviour requires frequent observation of own behaviours, price signals from suppliers and grid operators. Ideally, such capacity-based tariffs – especially if associated with dynamic components (as suggested in our previous responses) should therefore be introduced alongside widely available technical solutions like BEMS (Building Energy Management Systems)[3] able to automatically react and optimize behaviours against parameters, price signals and rule-based constraints.

11. What kind of transition measures (e.g. gradual implementation, timing, communication, customer guidance or support (e.g. simulation tools)) would you consider necessary to ensure a smooth and equitable implementation of the new tariff structure?

As mentioned in our answer to Question 3, we believe it is key that customers and market actors receive reliable information in due time on the specificities of the new model as well as on the new applicable tariffs. Complete specifications allowing a smooth implementation and transition to the new model should be provided well in advance. This includes a transition and test planning phase between the suppliers and the grid operators (data exchange in Market Communication “MaCo” and without MaCo).

For the implementation date of the new grid fee tariff model, we highlight that any adaptation must be reflected in the appropriate MaCo processes, which are currently under complete review. We therefore strongly recommend aligning the timeline for implementation with the release planning of the new MaCo model.

We suggest therefore considering:

(i) Defining the aimed new grid tariff model
(ii) Defining a step-by-step implementation timeline that:

[3] An energy management system being a set of smart technologies integrating various interoperable devices to monitor, control, and optimise energy consumption in the house (“HEMS” - Home Energy Management System) or in larger buildings/industrial sites (“BEMS” - Building Energy Management System).

a. aligns with MaCo review and allows for running a test phase with suppliers regarding data exchange
b. Foresees sufficient time for communication of the new grid tariff model to customers
c. Can introduce new features in gradual approach as long as all implementation steps are set in advance and remain clear

(iii) Any change to the grid tariff model, if necessary, should be subject to consultation of the concerned parties and allow for reasonable time for market actors to adapt to any changes.