ACM consultation on the introduction of an injection grid tariff

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Tesla Energy answer

Tesla Energy takes note of ACM's intention to introduce an injection grid tariff. This initiative requires careful consideration with the aim of reducing the overall cost of the energy system for end consumers and society as a whole. It is therefore important to design such a tariff to avoid competition distortion, reflect the costs and provide the best incentives for network users.

In particular, as it would be reflected in pricing, the tariff should not create distortion regarding participation to ancillary services or contribution to the system flexibility.

As the infrastructure stays the same, bidirectional assets should not bear a higher charge than monodirectional assets for the same grid capacity: a unique capacity-based fee should be charged both for injection and withdrawal, regarding the maximum parameter among both directions.

Time-of-Use energy-based (€/kWh) fees would be a good way to incentivize flexible countercyclical network use, and charge the infrastructure costs during peaks.

Please find below our answers to the detailed questions of ACM regarding grid tariff methodology. We remain at your disposal for a meeting to provide more insights or share foreign experiences.

Question 1. Do you agree with the above breakdown of cost categories for the purpose of setting an injection tariff? Do you see any other options?

Yes, the proposed breakdown is good.

However, power losses should be distinguished between flow-dependent (joule losses) and independent (iron losses in transformers, metering mistakes and fraud).

Question 2. ACM states that the costs incurred by injectors for infrastructure and congestion management are mainly related to (peak) grid capacity and less to energy consumption.

a. Do you generally agree with the description of the costs for infrastructure and congestion management? If not, can you explain your answer?
b. Do you agree with the ACM's view of how these costs are related to importers' grid usage? Can you explain your answer?

Infrastructure and congestion costs depend on the amount of energy transiting during peak periods. Indeed, the volume of congestion depends on the volume of energy to curtail. The infrastructure sizing by the TSO depends on the statistical amount of Lost Load or energy curtailment. Making high maximal injection or withdrawal while the network is not saturated does not generate congestion or network sizing costs. On the contrary, injection in an area saturated by withdrawal will save costs, and withdrawal in an area saturated by injection will too.

Charges per contracted kW are a good proxy for the infrastructure close to the user (last mile) but not for shared branches and major arteries of the network.

Infrastructure costs should therefore be collected through Time-of-Use energy tariffs, per kWh. The peak and off-peak periods should be defined for each area regarding the local conditions. Therefore, a consumer or producer that increases the (risk of) congestions should pay more than a flexible asset with a countercyclical behavior.

Question 3. ACM assumes that the costs for ancillary services caused by injectors most closely related to the total volumes of electricity imported and purchased.

a. Do you agree in general with the description of the costs for ancillary services? If not, could you explain your answer?
b. Do you agree with ACM's view of how these costs relate to the grid usage of injectors? Can you explain your answer?

Balancing and frequency regulation costs are hard to attribute specifically to producers or consumers.

We would like to raise the attention of the regulator about the importance that bidirectional flexible assets such as storage, which contribute directly to the ancillary services, should not bear a higher charge (injection + withdraw) intended to pay for those services. Especially, as it would be reflected in pricing, the tariff should not create distortion: storage should not bear a higher cost for ancillary services than producers contributing to the same services.

Reactive power or voltage regulation costs should be paid by the users creating the need.

Question 4. ACM states that the costs of grid losses incurred by producers are mainly related to the total volumes of electricity fed into and consumed from the grid.

a. Do you generally agree with the description of the costs of grid losses? If not, can you explain your answer?
b. Do you agree with ACM's view of how these costs are related to the grid usage of injectors? Can you explain your answer?

Power losses should be distinguished between flow-dependent (joule losses) and independent (iron losses in transformers, metering mistakes and fraud).

Iron losses in transformers are not linked to the volume of electricity produced or consumed and should not be charged the same way as joule losses.

Only the flow-dependent losses should be reflected in the tariff structure, as they are caused by the user behavior and choices. Those losses should be charged per kWh, on a time-of-use basis regarding the losses price and the direction of flows on the network.

The user's impact may diminish the losses when the use of the network reduces the flows. If, in an area and at a certain time, a positive cost for the losses is charged for withdrawal (respectively injection), then a negative cost should be applied for injection (respectively withdrawal) as it would reduce the flow and losses on the network.

Question 5. In this section, ACM describes three possible tariff carriers for injection tariffs (kWh, kW contract, and kW max) and their possible application per cost category.

a. Do you agree with this description of the different tariff carriers and their characteristics? If not, can you explain why?
b. Which rate carrier(s) do you consider most desirable per cost category and why?
c. Do you see any other relevant advantages or disadvantages of the tariff carriers that should be taken into account? If so, which ones?

The kW contract or kWmax is a good proxy for the costs of the network infrastructure close to the user (limited mutualization). Whether this infrastructure is used to withdraw, to inject or both, the cost stays the same. A bidirectional user should not have to pay twice (a kW / kWmax for withdraw and a kW / kWmax for injection). If a user injects and withdraws on the network, its kW / kWmax fee should not be higher than the one of another user with the same maximum and contracted power that would be only for injection or only for withdrawal.

Therefore, the capacity fee should be calculated as the maximum of the injection or withdrawal contracted/maximum power at the connection point.

A charge per kWh may be more reflective of the costs of (flow-dependent) power losses and network sizing for mutualized infrastructure, at the condition of being time-differentiated and to reflect the partial offsetting between injection and withdraw. This implies that the kWh tariff should vary according to seasons and the hour of the day, to reflect losses price and grid saturation. When the grid is locally congested by consumption, withdraw should have a high peak fee, and injection should have a negative fee. When the grid is locally congested by injection, injection should have a high peak fee, and withdraw should have a negative fee. Such a tariff has been introduced in France by CRE.

As pointed by ACM, a kWmax tariffication is hard to implement in the strategy of market participants, as opposed to a kWh tariffication. However, a kWh tariffication has a major impact on the bidding strategies of market players, and so on market prices. If not well designed, it could reduce the interest to provide balancing services or participate in load shifting. This is why it is crucial for a kWh tariff to be time-differentiated and coherent with the network needs: it should not be costly to withdraw or inject electricity if it does not increase losses or congestion.

Question 6. In this section, ACM has discussed the possibility of including a form of time differentiation in the feed-in tariff.

a. Do you think some form of time differentiation should be included? If so, how should this be structured? If not, why not?
b. Do you see any other options for time differentiation in the feed-in tariff?

Yes, the tariff should vary according to seasons and the hour of the day, to reflect losses price and grid saturation. ACM should look for a compromise between simplicity and accurate reflection of the local flows on the network, on the basis of statistical probability of peak and off-peak hours. Those time periods should be different according to the area of the grid (regarding the flow of electricity, the local production or consumption profile, etc.).

The ToU tariff, should incentivize to provide flexibility to the grid, and adjust injection or withdraw periods according to the network needs.

Question 7. Do you share the ACM's view that it is not desirable (for the time being) to include location differentiation in the feed-in tariff? Can you explain your answer?

The time-of-use periods should be differentiated locally to reflect the network needs, but we should be careful if introducing a locational price differentiation. Indeed, this would create a distortion between current network users, and with the new ones which would be able to select their location accordingly. Penalizing already connected assets would undermine confidence in the regulation framework. Incentives for the location of new network user are already carried by the connection charges.

Then, the tariff should be designed to allow similar network bill for similar assets regardless of their location, providing they follow the behavioral incentives carried by the tariff. This goal can be reached either:

- With one price table for all the network (at the same voltage level) and a fixed number of hours for each time-period, even though the repartition of the time-periods in the day or year are not identical between areas.
- With a few price tables defined by “network area type”, each of which would have a specific number of hours per time-period. The price table would be adjusted to the number of hours of each time-period to ensure a similar average bill in each area type.

Question 8. Based on its analysis, ACM expresses a preliminary preference for a 50/50 distribution of costs between importers and customers rather than a distribution based on network usage between importers and customers.

a. Do you agree with the description of a 50/50 distribution? Can you explain this?
b. Do you agree with the description of the distribution based on network usage? Can you explain this?
c. Do you see any other options for allocating these costs? If so, what are they?
d. How do you think ACM should allocate the costs between customers and importers? Can you explain your answer?

A simple and previsible distribution is indeed preferable. However, a 50/50 distribution of the overall costs between injection and withdrawal might not be that simple and may have side effects. For example, if the sum of the contracted/maximum capacity from consumer is substantially higher than the sum of the contracted/maximum capacity from producers, dividing the same amount over a smaller base would result in a higher capacity fee for injection.

The simple distribution should be achieved by the equalization of the injection and withdraw fee. On a defined voltage level, 1 kW of capacity should be priced the same, whether it is used for injection, withdraw or both.

Question 9. Do you share ACM's view that the EU limit should also be applied at the distribution level? Can you explain your answer?

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Question 10. In the first part of this section, ACM discussed the desirability of cascading the costs covered by a feed-in tariff.

a. Do you share ACM's view that cascading these costs in some form is desirable? Can you explain your answer?
b. Do you share ACM's view that cascading, whereby higher-level grid areas contribute to lower-level grid areas, is the best option? Can you explain your answer?

The electricity grid is structured of high-voltage arteries and lower-voltage branches for distribution. The network users (producers or consumers) connected to the lower voltage grid needs their grid level and the higher-level grid. However, those connected to the high voltage grid do not need the lower-level grid, as they could function with producers/consumers connected to the high voltage, and with the interconnections to other countries. Those users do not generate the need for lower-level grid.

Therefore, the costs of a voltage level should be considered as only imputable to their direct users and the users connected to a lower-level grid. Cascading should only be one-way : from high-level to lower-level.

Then, whether cascading should apply to injection is a complex issue: an injection on a lower-level grid has an impact on the higher-level grid. But this impact can be positive or negative. When the lower-level grid is mainly used by consumers, local injections reduce the losses and the flows on the higher-level grid. However, when there are a lot of injection on the lower-level grid, it can induce peak injection flow on the higher-level grid. Therefore, if cascading is applied, all positive and negative effects should be considered.

Question 11. ACM has discussed above which cascading it considers most appropriate per cost category for designing a feed-in tariff.

a. Do you agree with ACM's view that reverse cascading for network losses is the best option? If not, what do you think is the best option and why?
b. Do you agree with ACM's view that reverse cascading for costs below the EU threshold is the best option? If not, what do you think is the best option and why?
c. Do you agree with ACM's view that a uniform tariff is the best option for ancillary services? If not, what do you think is the best option and why?

No.

As discussed above, low-level grids are only present to distribute or collect electricity by low-level connected users, as are the losses on those network levels. Reverse cascading would not reflect the marginal cost really generated for the grid by the injectors connected to the high-level grid.

Therefore, cascading should only go one-way, and all positive and negative effects should be considered (especially when the user offsets the flows on the network).

Question 12. In this section, ACM expresses its preference for classifying the offshore grid at the same level as the EHS grid in the cascade.

a. Do you agree with ACM's view that the offshore grid should be included in the cascading? If not, why not?
b. Do you agree with ACM's conclusion that classification at the level of the EHS grid is most appropriate? If not, how should the offshore grid be classified?

Offshore production should contribute to the national EHS grid at least as much as producers on the national EHS grid. The remaining question is how to allocate the costs of the offshore grid (specifically to offshore producers or mutualized with the EHS grid users).

Question 13. In this section, ACM shares its opinion on the desirability of exempting small consumers on the low-voltage grid from the feed-in tariff.

a. Do you agree with ACM's view on this exception? Can you explain your answer?
b. In your opinion, which party or parties should bear the costs of feed-in by small consumers? Do you see any other possibilities than those described above? Can you explain your answer?

Low voltage grid costs should be paid by low voltage grid users. Overall, injection on the low voltage grid (mainly used for consumption) reduces the flows and the costs. Therefore, there is no reason to introduce an injection charge on this voltage level. However, in some

areas of the low-voltage grid, at some times of the day or year, injections may become superior to the local consumption and generate losses or network reinforcement. In the forthcoming reform of distribution grid tariffs, a (positive and negative) Time-of-Use tariff could be introduced for injection to reflect those effects on the grid. In the meantime, the capacity charge already reflects both injection and withdraw capacity need.

Question 14. In this section, ACM expresses its preliminary preference not to exempt feeders to the offshore grid from (part of) a feed-in tariff.

a. Should offshore grid feeders be exempted from (part of) a feed-in tariff? If so, from which part and why? If not, why not?
b. In the event of an exemption, where should the costs of offshore grid feeders be allocated? Can you explain your answer?

No, injection from off-shore production should be subject to the same treatment as other producers.

Question 15. How should the injection tariff for bidirectional grid users be structured?

The capacity tariff (kW contracted or kWmax) reflects the grid capacity needed by a network user. Whether the capacity is used to inject, withdraw or both, the network is sized to this capacity. Bidirectional grid users should only pay one capacity tariff injection and withdraw.

As an example, if a user withdraws up to 100 MW and injects up to 90 MW, his total capacity charge for injection and withdraw should correspond to the same capacity charge as a consumer of 100 MW.

Regarding the charges on the quantity of energy, a bidirectional asset can generate costs both when injecting or withdrawing. However, it can also reduce network costs if its behavior goes in the opposite direction as the local flows on the network. Especially, storage assets are grid-relievers with their countercyclical behavior. Time-of-Use tariffs should be used to reflect the costs and results in a bill reduction if the bidirectional asset adopts a grid-friendly behavior. When the asset contributes to reducing the network flows and losses, a negative charge should apply to partially offset the positive charges. A bill floor could be defined to prevent any side effects.

Question 16. Should ACM apply a transition period/phase-in path when introducing the feed-in tariff? If so, what should this phase-in path look like? For example, what timeframes should ACM apply? If not, why not?

The pricing of injection could increase progressively throughout the years to reach the target level.

Question 17. In this section, ACM discusses the possible application of a cap or bandwidth for the feed-in tariff.

a. Should the ACM apply such a cap or bandwidth? If so, how high should it be? If not, why not?
b. In your opinion, is a cap or bandwidth compatible with the principle of cost reflectivity? Can you explain your answer?

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