

**BMWi Study „Network tariffs“:
Assessment of reference studies and
scenarios on future development of
electricity network tariffs**

Study commissioned by

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Summary

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Summary

Analysis of relevant network cost for network tariffs

Network tariffs in the transmission and distribution networks have risen in recent years. Increasing network tariffs are also expected for the future due to investments into network expansion. This study examines the underlying network costs and estimates the future development of network tariffs. The analysis is focused on the regional development of network tariffs and examines the effects on different types of network users.

Network costs rise by 2030 due to investments into network expansion

The greatest impact on network costs will result from the expected investments in the expansion of the transmission networks, which can reach a volume of 30 billion euros by 2030 and can lead to an increase in annual costs of 2.5 billion euros. Annual costs in the distribution networks can also increase by around 1.5 billion euros by 2030 as a result of the expected investments of around 18 billion euros.

Cost increase partly compensated by cost reductions related to payments for “avoided network charges” and to congestion management

Costs related to payments to generation operators for “avoided network charges” in distribution networks will be reduced from 2.7 billion euros in 2017 to an estimated 1.3 billion euros by 2020 as a result of recent regulatory changes (Grid Charge Modernisation Act, “NEMoG”). This is a reduction of 1.4 billion euros. Congestion management costs, which include costs for redispatch and curtailment of renewable energies, account for a high proportion of current network costs. This is expected to fall from over 1.6 billion euros in 2017 to less than 600 million euros per year as a result of the expansion of the network until 2030. The high congestion management costs in 2017 also result from the fact that both actual costs from 2015 and planned costs for 2017 are incurred as charge-relevant costs in 2017. In the future, the allocation will change so that only the planned costs assumed in the respective year plus differences between actual and planned costs for a previous year are relevant for network tariffs. Further costs for system services, such as balancing energy or costs for network reserves, cause a relevant share of costs of approx. 600 million euros. It is expected that these costs decrease by 150 million euros to 450 million euros in 2030.

Tariff-relevant total network costs are estimated at 25.6 billion euros in 2030

According to the estimates of this study, the total tariff-related costs for the electricity networks could rise to 25.6 billion euros per year in 2030, of which approx. 6.7 billion euros relate to the transmission networks and approx. 18.9 billion euros to the distribution networks. This means an increase in the annual transmission network costs of around 1.5 billion euros compared with 5.2 billion euros in 2017. In the distribution network, the total network costs are expected to remain constant at 18.9 billion euros also in 2030. For this estimate it is assumed that 50 % of gross electricity generation is generated from renewable energies.

Additional costs of approximately 1.5 billion euros per year will be incurred for the additionally planned offshore network expansion. However, these are not relevant to network tariffs, as these costs are to be financed in future by an offshore levy. The offshore levy is also intended to finance the existing costs of the offshore network, so that the estimated costs relevant to network tariffs in 2030 are reduced once again. This cost reduction has not been considered in the estimated network costs of 25.6 billion euros in 2030 so far.

Status quo and development of network tariffs until 2030

The future development of network tariffs is estimated by simulating the effects of the cost development for selected network users on the basis of the current methodology to distribute network costs to network users. This is based on the network costs per voltage level and the quantities relevant for the distribution (maximum load and delivered energy).

Historical structural differences in network tariff levels have further increased as a result of the integration of renewable energies

For 2017, the network tariffs of the network operators considered in the study vary greatly from region to region. For residential customers the range of average tariffs per kWh is between 4.9 ct/kWh and 11.6 ct/kWh and thus differs by a factor of 2.4. For industrial customers, the relative difference is even greater with a factor of 5,3. Network charges in the upper network levels range between 0.5 ct/kWh and 2.5 ct/kWh.

Regional differences exist in particular between rural regions (high tariffs) and urban regions (low tariffs). Moreover, there are significant differences between network tariffs in North and

North-East Germany (high tariffs) and West and South-West Germany (low tariffs). The analyses show that these differences are primarily caused by structural differences. They already existed before the massive expansion of renewable energies, but have increased in recent years.

Further increase in network charges, especially in the transmission network, if offshore network is financed via network tariffs

The expected increases in network costs in the transmission and distribution networks by 2030 will also increase network tariffs. For an industrial customer in the network of Amprion or Transnet-BW, they would rise from approx. 1 ct/kWh to approx. 2 ct/kWh, if – contrary to the current legal framework – no standardisation of transmission network charges were carried out and the offshore network expansion costs would also continue to be re-financed via the transmission network charges (and not via the offshore liability levy). In the network areas of TenneT and 50 Hertz, network charges would also increase, although percentual less strongly (from approx. 2 ct/kWh in 2017 to approx. 3 ct/kWh).

By issuing the NEMoG law in 2017, the government has decided that in future, transmission network charges shall be uniform throughout Germany and offshore network expansion costs shall be re-financed via a specific levy (the offshore liability levy) and no longer via network tariffs. This will not only lead to *uniform*, but also to *reduced* network tariffs at the transmission level. The reduction will have an annual volume of approx. 1.5 billion euros by excluding the additional offshore grid expansion costs from the transmission grid costs. In addition, the transfer of the existing costs of offshore connections to the offshore liability levy will result in an additional fee-relevant reduction in costs in the short term. The implementation of these measures will dampen the increase of network tariffs in the upper voltage levels of the network.

Increase in network tariffs at the low voltage level is compensated by the reduction of payments for avoided network charges

At the low voltage level, network tariffs for residential customers in 2030 increase in some networks slightly under the assumed conditions. In general, network tariffs will remain approximately at the level of 2017 (see Figure 1); the relative increase is significantly lower compared to the high voltage level. The low increase of network tariffs for residential customers is due to the reduction of payments for avoided network charges, causing the relevant level of network costs to decrease. This effect compensates for cost increases resulting from additional investments into the expansion of the distribution network.

Limited impact of self-supply on network charges

There is only a limited effect of self-supply on network tariffs. The analysis shows that for a network operator with a high penetration by low-voltage PV generation, network tariffs would be reduced by approx. 3 % in 2017 and approx. 8 % in 2030 if self-supplied volumes of electricity were included in the calculation of network tariffs.

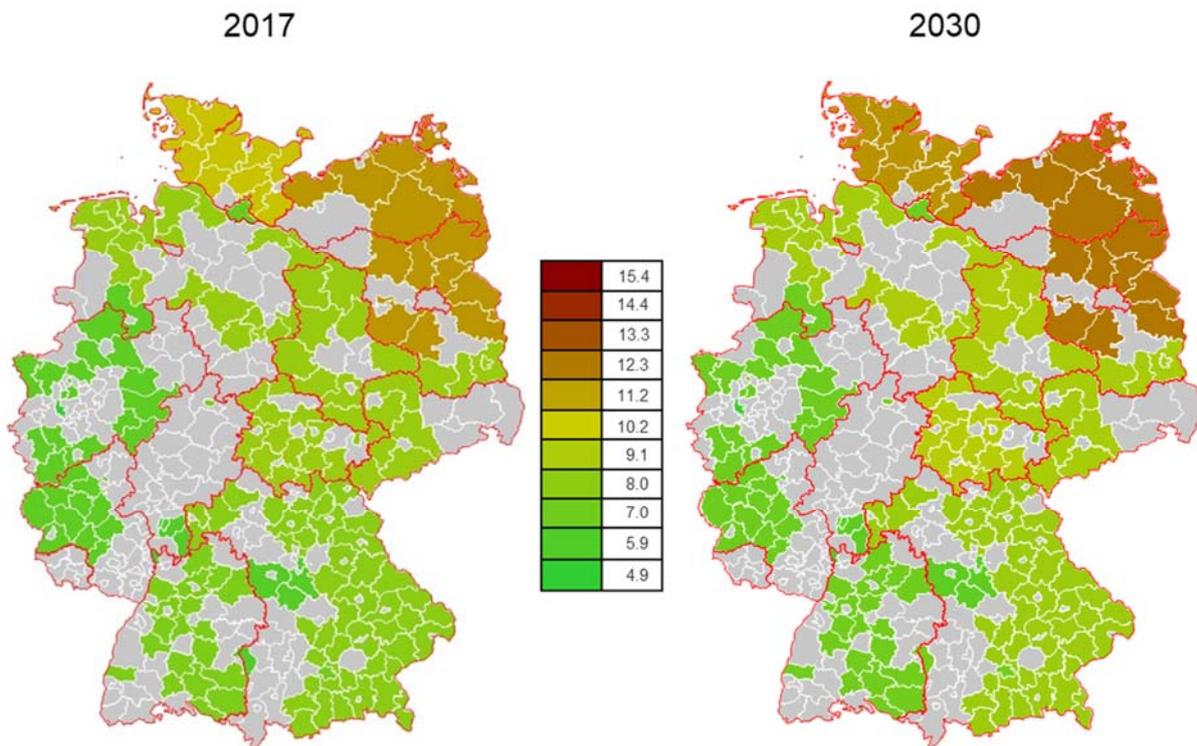


Figure 1: Comparison of network tariffs for residential customers in ct/kWh for 2017 (left) and 2030 (right)