

GRAND RULING CHAMBER
FOR ENERGY

Key elements

Key elements for the determination
of a regulatory framework for
electricity transmission system
operators [GBK-25-01-1#2]



Bundesnetzagentur

Key elements for the determination of a regulatory framework for electricity transmission system operators

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1 Introduction

Electricity and gas distribution and transmission system operators all face significant investments associated with the energy transition, which are adequately addressed in the NEST process. Nevertheless, the four electricity transmission system operators have a much more prominent position in the system and, for example, must invest considerably more than all the 900 or so distribution system operators together. They also carry the main burden for guaranteeing security of supply by means of balancing energy, redispatching, inertia and black start capability, among other things.

According to the request for amendment of the Gas Network Development Plan 2022-2032, the gas transmission system operators will be faced with an expected investment volume of about €4.1bn. This may be supplemented by costs for “start network measures” from the previous network development plan (2020-2030) that have not yet been implemented. The challenges for the gas transmission system operators are therefore not comparable to those facing the operators of electricity transmission systems.

These key elements therefore relate to the electricity transmission system operators in their particular role in the German and European electricity system. On account of the marked special developments and investment requirements and the system service tasks in Germany and the European internal market, it seems necessary to diverge from the current regulatory system in this case.

The incentive regulation system is based among other things on the budget principle, according to which operators can and should make their own business decisions on how to use their resources over a certain period of time. The aim of a time-shifted evaluation of the operators’ business strategies with a base year and efficiency benchmarking is to pass on the benefits of innovation to network users later on. The practicability of this principle is fundamentally challenged in the case of the electricity transmission system operators since their cost structure cannot currently be accommodated and regulated with the principle. Costs that need to be adjusted annually (capital costs for new investments and the current permanently non-controllable costs, including voluntary commitments) account for more than 80% of the operators’ total costs. The four transmission system operators with responsibility for the control areas will need to invest around €320bn in their networks (onshore and offshore) in the period up to 2045.

The electricity transmission system operators are generally bound by the requirements determined under public law in the Federal Requirements Plan Act (BBPlG) and the Energy Industry Act (EnWG) to make the above-mentioned size of investments in the given target time frames; they therefore have relatively little leeway as to the scope of their expansion obligations but do have leeway as to the economic efficiency of their implementation. On account in particular of the annual increases in capital costs for all electricity transmission system operators, which can be seen as a distinctive characteristic of their business activity, a budget approach would currently seem to complicate regulation rather than provide flexibility. In addition, operating costs may still initially be shaped by strong volatility and new necessary system services in the next few years, which again means that a budget principle would not seem to make sense.

At the same time, the manageable number of electricity transmission system operators and their full unbundling permit more practicable regulatory approaches to accommodate these marked special developments more individually.

Lastly, the fact must be taken into account that the regulations for the electricity transmission system operators' onshore and offshore businesses, which are becoming increasingly equal in economic terms, are currently different but should be aligned more. The regulation of offshore network costs is not based on the budget principle but on an annual assessment. Legislation requires onshore network costs to be refinanced through network tariffs and offshore network costs to be refinanced separately through the offshore network surcharge. Under European legislation, the costs must be calculated according to the same basic rules irrespective of how they are refinanced.

The widely diverging perspectives and tasks of the electricity transmission system operators compared with the distribution system operators and gas transmission system operators suggest that, in the short to medium term, it will no longer be appropriate to maintain the present parallelism in cost regulation but instead for at least individual aspects of the system for the electricity transmission system operators to differ. This is to be accommodated by issuing a separate determination for these operators.

The Bundesnetzagentur has made a thorough analysis of the known figures and developments and is now presenting for public discussion a proposed approach for developing the regulatory framework for the electricity transmission system operators.

The new system will be evaluated in line with investment activities at the latest in 2034 so as to enable any necessary adjustments to be made to the regulatory framework from 2038.

The focus of this paper is solely on the principles of calculating costs and revenues. It does not deal with the more specific aspects of setting tariffs or with access regulation, which will be the subject of separate determinations. If regulations from other determinations under the NEST process are to be applied, this is explicitly stated.

2 Key elements

2.1 Principle of annuality

The Bundesnetzagentur considers an annual cost-plus regulation based on forecast costs with efficiency incentives and a subsequent comparison with actual costs – similar to the current regulation for offshore network costs – to be appropriate for the time being in order to best accommodate the developments challenging the electricity transmission system operators in the next few years. The system will therefore be designed until at least 2037 specifically for the foreseeable huge expansion of the transmission networks so as to enable investments to be refinanced very quickly. The move away from the budget principle under the current Incentive Regulation Ordinance (ARegV) for the transmission system operators will lead to the necessary costs being refinanced annually as well as to more transparency and simplified regulation. It would, for example, no longer be necessary to split the costs into controllable and permanently non-controllable costs. There would also be no need for any voluntary commitments or for account to be taken of any other elements (such as the consumer price index and a productivity factor) in the revenue caps.

The regulatory system would be applicable to onshore and offshore costs and – where not subject to special rules – to the costs of the transmission system operators' interconnectors. This would make regulation more uniform.

2.1.1 Comparison between forecast and actual costs

Each transmission system operator would make a careful forecast of their network costs for year t+1 before the beginning of each year. This forecast should be made in line with the following, among other things:

- good practice and due diligence
- applicable cost calculation rules in the Energy Industry Act and the StromNEF Determination
- the applicable determination on the return on equity
- other future methodology determinations on individual topics such as efficiency incentives (see 2.3.) or research and development (see 2.5.)
- other official cost calculation rules, for example for grid reserve costs.

The forecast must take best possible account of various factors such as the forecast change in operating costs (for example servicing and maintenance costs or personnel costs), capital costs (for example increasing capital costs due to new investments) and the situation in the energy sector.

Annual current expenses and imputed capital costs of network operation can be recognised as long as they are operationally necessary and efficient. The rules would guarantee a reasonable, competitive and risk-adjusted return on capital employed and create incentives for efficient service provision. Costs and cost components that would not arise to the same extent in a competitive environment cannot be taken into account (section 21(2) sentence 3 EnWG).

The network costs are the sum of current expenses, imputed depreciation and imputed return on capital minus cost-reducing revenue and income. In this respect, the rules envisaged for the distribution system operators in the StromNEF Determination would also apply to the transmission system operators.

At the end of each year, the transmission system operators would make a comparison between the forecast and actual costs and submit the comparison to the Bundesnetzagentur together with the necessary data.

Each transmission system operator would be subject to an audit at least once every four years. Supervisory proceedings in individual cases would still be possible under the general rules. To create legal certainty, approval would be assumed five years after the end of a calculation period and submission of the full documentation to the Bundesnetzagentur. The five-year period would begin on 1 January of the year following submission of the data. This means, for example, that approval of the costs for 2029 submitted to the Bundesnetzagentur on 30 June 2030 would be assumed on 1 January 2036.

2.1.2 Treatment of differences between forecast and actual costs

A method based on forecast costs and a subsequent comparison with actual costs will by nature always lead to differences that have to be taken into account in the following years. On account of costs that are very difficult to forecast, such as for system services, there will be significant differences (for example more than 10% of the annual network costs) in some cases and some years.

To prevent extreme fluctuations in the network tariffs, the Bundesnetzagentur plans to introduce a mechanism that would stabilise differences between forecast and actual costs in the onshore network tariff calculations in cases where, for example, the differences amount to 10% of the annual volume of costs. The

resulting consistency and predictability of tariffs could be of significant value for network customers. Inappropriate incentives created by interest rate effects should be avoided.

2.2 Return on capital

The imputed return on total capital would be calculated – as in the model for the distribution system operators to be set out in the methodology determination on the return on capital – using a weighted average cost of capital (WACC). This type of method for calculating the cost of capital is also used in the large majority of European countries. In view of this, the Bundesnetzagentur assumes that an alignment with international standards in this respect will also increase transparency and clarity for investors, network users and the general public. Partial decoupling of the return on capital from the transmission system operators' actual, individual financing situation would allow the operators to optimise the capital costs of their business irrespective of whether or not the costs can be recognised under the regulatory system. This is necessary in particular in view of the scope and need for flexibility with regard to accounting, organisation and company law. In this respect, calculating the return on capital using the WACC method is a means of increasing efficiency as required under European legislation as well. In addition, using a flat-rate cost of capital can reduce the administrative work involved for both regulatory authorities and operators.

2.2.1 Rate of return basis

The Bundesnetzagentur plans to fully apply the system of general price level accounting when calculating the value of tangible fixed assets. The current mixed system of general price level accounting and net value maintenance would be replaced by a uniform valuation using general price level accounting, as for the distribution system operators. It will be ensured that any financial disadvantages arising from the switch to general price level accounting will be compensated. For this purpose – similar to the rule envisaged for the distribution system operators in the StromNEF Determination – the equity-financed portion of the residual values of the existing assets would be valued at replacement cost once and for the last time when the switch is made. These residual values would then provide the basis for retaining and valuing the imputed tangible fixed assets.

As regards calculating the assets to bear interest, the Bundesnetzagentur plans rules similar to those for the distribution system operators, taking into account specific factors relating to the transmission system operators. Under European legislation, for example, auction income from marketing cross-border capacity (congestion income) must not be incentivised. It is therefore not possible to treat this congestion income like other financial contributions with an interest bonus as is used for the distribution system operators.

2.2.2 Gearing

At present, the Bundesnetzagentur still considers the ratio currently used in regulation of 40% equity to 60% debt to be appropriate for the WACC method for the transmission system operators as well. These considerations are supported by the report of 13 January 2025 on the methodology for calculating the cost of capital from the fifth regulatory period onwards produced by Frontier Economics together with Professor Zechner and Professor Randl. According to the report's authors, the WACC method only has a low level of sensitivity to changes in the gearing ratio. Nevertheless, a financing structure that is efficient overall can still be assumed given a ratio of 40% equity to 60% debt.

2.2.3 Cost of equity

The Bundesnetzagentur plans to use the rate of return on equity from the general determination and, unlike the other cost components, not to adjust and compare the rate annually but still to set a rate in advance that would apply for the whole of the general regulatory period. A fixed rate of return on equity for a certain period would give the transmission system operators stability, predictability and investment certainty as regards their capital costs. Setting a fixed rate would enable investors to make more predictable investment decisions and long-term financial plans.

2.2.4 Cost of debt

The Bundesnetzagentur plans to lay down a general method for calculating the cost of debt in the WACC annually. This method would essentially apply to the transmission system operators as well. Unlike the method for the distribution system operators, the annual adjustment would use an individual interest rate for each transmission system operator. A sector-specific bond index that is adjusted to each transmission system operator's rating would be appropriate here. Unlike distribution system operators, transmission system operators' ratings relate solely to their task as a network operator. This approach would also have a high level of transparency.

2.3 Efficiency assessment

European legislation requires incentives to be created for efficient service provision.

At present, it is not possible to carry out national efficiency benchmarking based on total costs (operating and capital costs) for the transmission system operators because of the small number of operators. Nor is it possible to apply the international efficiency benchmarking also carried out for transmission system operators to national regulation because of numerous restrictions on transparency to protect commercially sensitive information. In addition, there are methodological challenges such as the difficulty of comparing costs or valuing fixed assets. This is another reason why for the time being there should be a move away from the budget principle and efficiency benchmarking based on total costs.

The Bundesnetzagentur therefore plans to create in the methodology determination a basis enabling comprehensive assessments in order to guarantee efficiency and compliance with the rules with respect to operating costs or capital costs. Possible options would be partial benchmarking, activity-based costing and output-based setting of costs.

Existing rules on a bonus/penalty system for the efficient procurement of system services in the loss and balancing energy sectors would be kept and developed.

A cost efficiency assessment for the transmission system operators as part of partial benchmarking is crucial in order to restrict the operating and capital costs taken into account to the efficient costs. A systematic analysis and assessment of operating costs would also enable the operators to identify areas where they could make savings, use resources more effectively and improve activity processes. As with efficiency benchmarking, past processes would be analysed and conclusions drawn for the future.

Activity-based costing is a special form of accounting where costs are allocated to each business activity or process. It enables a detailed analysis and assessment of the costs associated with operational activities. Introducing activity-based costing would achieve various aims (such as detailed transparency in the structure

of costs for operational activities, the identification of cost drivers and efficiency potential, the comparability of costs for different activities, and the basis for optimising specific activity costs) with a tendency towards effects in the future.

The last option for achieving efficient service provision is an output-based regulatory method for individual operating cost components (such as certain personnel costs). This method would reflect the recognition of operating costs on the basis of the output achieved by the transmission system operators (such as the increase in circuit lengths) viewed separately from the input (actual costs). This would create incentives for cost efficiency, a permanent improvement culture and accelerated grid expansion. Incentives would be set for future behaviour.

2.4 Acceleration incentives

Speeding up the expansion of the transmission network is a key concern in regulation and is beneficial for the economy. The faster the network is expanded, the faster the need for redispatching and the associated costs will fall. In addition to the return from their network business, the transmission system operators can and should therefore benefit from additional returns if their individual efforts bring additional cost savings for the economy as a whole.

Experience has shown that in particular the large number of new projects combined with the limited market resources (service providers, underground cables, converters, etc) mean that processes have to be optimised. This includes staggering the launch dates for projects, if possible. Available resources should be used optimally, that is with the greatest possible effect. If the transmission system operators expand their networks in the right places, it will have a noticeable effect on the overall need for redispatching. The operators know best where and how it makes sense to speed up expansion.

The Bundesnetzagentur is therefore looking at the possibility of a system where substantial bonuses would be available if there were a proven decrease in the total redispatching volume. This would ensure that not only network users but also the transmission system operators, with their one-time expansion measures, would contribute to reducing redispatching volumes more quickly. The redispatching volume saved would be valued and remunerated with a one-off bonus. The bonus payments would be capped at an annual maximum to make the associated additional costs in the network tariffs calculable. If there were no reduction in redispatching volumes, no bonus payment could be claimed. This would create an incentive for the transmission system operators to manage their projects so as to achieve the greatest effects in reducing redispatching volumes.

2.5 Research and development

Research and development play a much larger role in network operations for electricity transmission system operators than for operators at other voltage levels. The possibility of implementing an instrument in the future regulatory framework to support and incentivise the transmission system operators' research projects is therefore being looked at.

2.6 Payments to third parties

Payments to third parties can help to increase acceptance for necessary grid expansion measures and thus speed up procedures. The Bundesnetzagentur therefore plans to essentially keep the rule for payments in connection with projects listed in the Federal Requirements Plan Act and the Power Grid Expansion Act

(EnLAG). This includes one-off payments for the entry of an easement under section 5a of the Electricity Network Tariffs Ordinance (StromNEV). The possibility of temporarily extending and then discontinuing the rule for compensation payments to regional or local authorities (section 5(4) StromNEV) is being looked at.

List of abbreviations

ARegV	Incentive Regulation Ordinance
BBPIG	Federal Requirements Plan Act
EnLAG	Power Grid Expansion Act
EnWG	Energy Industry Act
NEST	Networks. Efficient. Secure. Transforming.
StromNEF Determination	Determination on a methodology for calculating the base level for electricity distribution system operators
StromNEV	Electricity Network Tariffs Ordinance
WACC	weighted average cost of capital

Publisher's details

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