Courtesy Translation – Not legally binding

Dynamic network tariff component: points of orientation in the AgNes determination proceedings

Draft

I. Introduction

The Bundesnetzagentur's Grand Ruling Chamber for Energy opened proceedings for the determination on the general electricity network tariff system (AgNes) for the period once the Electricity Network Tariffs Ordinance (StromNEV) has ceased to be in effect in accordance with section 29(1) in conjunction with sections 21 and 21a of the Energy Industry Act (EnWG) on 12 May 2025 [GBK-25-01-1#3].

Upon opening the proceedings, the Bundesnetzagentur published a discussion paper that presented the changes in the framework conditions brought about by the energy transition, a target vision, an analysis of the current situation, a comparison between the current situation and the target vision, and initial adaptation options based on this. The responses to the subsequent consultation on the paper and the contributions in the industry workshop held at the beginning of June 2025 helped to set out the various players' target visions and ideas and point to the advantages and disadvantages of different adaptation options. The Bundesnetzagentur published the responses to the consultation.

The Bundesnetzagentur is now condensing the options to be considered, taking into account the findings from the consultation and the workshop and in close dialogue with the experts commissioned to produce reports for the AgNes process. This status report contains specific proposals that indicate the direction in which the Ruling Chamber is tending at this stage as regards the introduction of a dynamic network tariff component. These proposals will now be discussed in detail and examined for their practicability in expert workshops.

The Bundesnetzagentur will also publish a report that analyses the different approaches in Europe to designing network tariffs. ((sofern nicht bereits veröffentlicht und sofern für dynamische Netzentgelte einschlägig))

This paper is based on the AgNes paper "Network tariff components: points of orientation" of 20 November 2025 and provides more detail on the proposals outlined there on the setting of incentives by making energy-based prices dynamic. It presents specific proposals for the objectives, underlying concept, areas of application and design of a dynamic network tariff component that are to serve as the basis for an expert workshop on this topic and the subsequent determination.

Draft

II. Current situation:

1. In future network tariffs are above all to comprise two types of tariff component that differ in terms of their purpose: tariff components with a financing function and tariff components with an incentive function. In addition, there are still to be tariffs for metering and meter operation and special tariffs such as construction cost contributions.

2. The purpose of tariff components with a financing function is to ensure that the network costs can largely be refinanced. Stable and plannable returns are also an important aspect given the network operators' large financing needs. These points of orientation were published on 20 November 2025 as the basis for two expert workshops on the topic in December 2025.

3. Tariff components with a financing function are not focused on controlling the behaviour of network users. It is important to prevent them from creating the wrong incentives as far as possible.

4. Tariff components with an incentive function may be designed so as to influence network users' behaviour and hence their use of flexibility. Where the incentives they provide are to relate to dynamically adjustable properties of the network status, they must be designed as dynamic tariff components. That is the focus of this paper. However, tariff components with an incentive function may also be exclusively focused on incentives for investment decisions (choice of location, connection network level and network connection capacity). Such tariff components are part of the process but are not the subject of this paper.

5. The dynamic network tariff component is primarily to be designed to relieve network congestion by incentivising changes in behaviour and thus reduce the costs of congestion management (redispatching). If this is successful in the longer term, there might be less need to expand the network as well. At the same time, overreactions should be avoided as far as possible so that flexibility is not employed in an excessively network-oriented manner and thus taken out of the market.

6. The Bundesnetzagentur's approach is that incentives for users to behave in a network-oriented way that reduces congestion should be set using a dynamic energy-based price component in addition to an energy-based price component with a financing function (where this is imposed on a group of network users).

7. Although making other network tariff components dynamic is conceivable, the Bundesnetzagentur does not ultimately consider this to make sense. The requirements

Draft

of a dynamic capacity-based/power-based price are no less challenging and it is questionable whether the price signal would be as accurate for network users. While capacity-based/power-based prices are always an expression of average costs, a dynamic energy-based price component can also reflect, at least approximately, marginal costs, that is to say, the actual cost effects of a deployment decision.

8. From the viewpoint of network users, this kind of dynamic tariff component can also be associated with effects on investment decisions (that are desirable from the network perspective). For this to occur, though, it must be possible to anticipate the future development of the network congestion that the dynamic tariff is targeting, at least roughly.

9. A dynamic energy-based price component focused on congestion is less suited to addressing shortages of network connection capacity or its surrender by network users. New installations (investment decisions) could be influenced by predictably constant price signals but to achieve this, congestion would have to be predictably constant as well. The Bundesnetzagentur considers that a one-off construction cost contribution related to the contractual network connection capacity is better suited to ensuring that the shortage of network connection capacity is taken into account in investment decisions. The Bundesnetzagentur can envisage a process outside the general network tariff system for the surrender of unneeded, contractually agreed network connection capacity.

10. The dynamic energy-based price component is not intended to be optional for those levels or network users in which or for which it is introduced. However, it should only be imposed where and when network congestion already exists or is foreseeable in the near future.

11. It follows that the dynamic energy-based price component is location-based and – depending on the forecast network usage situation – dynamically time-variable.

12. The dynamic energy-based price component is to be designed symmetrically, meaning it will be imposed at a particular location either positively for withdrawals and negatively for feed-in or vice versa, depending on the direction of congestion.

13. It is considered sufficient initially to apply the dynamic energy-based price component only for congestion at network levels 1 to 3 (very high voltage to high voltage), possibly also for level 4 (high-to-medium voltage transformer), as the great majority of the congestion that currently exists or is foreseeable in the short term occurs at these levels. In this way, the costs required to introduce it can initially be limited.

Draft

14. Essentially, however, network users of all connection network levels right through to the low-voltage level are to be included from the start. Depending on how the costs required to introduce it are assessed, however, it may be justifiable to introduce the dynamic tariff component at the medium and low-voltage levels a few years later.

15. In the long term, all groups of network users (consumers, producers and storage facilities) are to be addressed by the dynamic energy-based price component. The Bundesnetzagentur sees the first step as the introduction for storage facilities with their own connection to the network, as these are highly price sensitive compared to pure consumers or producers and have fewer accompanying conditions to fulfil to meet flexibility requirements.

16. The dynamic energy-based price component is to follow a top-down cascading process, ie each network level will be added positively or negatively as appropriate. The time frame of this process should be designed so as to permit downstream network operators to estimate the effects on their network of the dynamic tariffs determined by upstream network operators and to take countermeasures with their own dynamic tariff component where needed. The dynamic tariff component will not be included in the vertical cost distribution, however.

17. The development of a suitable methodology to calculate contributions for the dynamic network tariff component is challenging. The Bundesnetzagentur therefore considers that it should not be the job of the individual network operator but rather part of an industry process in coordination with the Bundesnetzagentur and representatives of different stakeholder groups.

18. The amount and timing of the dynamic energy-based price component should be determined in 15-minute intervals the day before and published before the day-ahead auction on the spot exchange so that market players can factor this network tariff component into their bidding behaviour.

19. It is worth considering whether time-variable price signals with a longer lead time (see module 3 – section 14a EnWG) should be applied as a transitional arrangement where it does not seem possible to communicate a situational price signal right before the day-ahead auction in the medium term.

20. The dynamic energy-based price component could be published on a central platform with standardised data interfaces to which all relevant players (network operators, network users, suppliers, aggregators) have access.

21. The amount of the dynamic energy-based price component should be set so that the desired reaction volume is achieved as precisely as possible – ideally, the relevant

Draft

congestion should just be resolved. A starting point could be the specific costs for (avoided) redispatching.

22. For network areas without acute congestion but where the remaining network capacity reserves are gradually being used up and congestion is looming with a foreseeable need to expand/reinforce the network, it should be explored from which level of usage of the available network capacity a dynamic energy-based price component should be imposed as a preventive measure.

23. The dynamic energy-based price component is to be paid to the connection distribution system operator (DSO) and then passed on proportionally to the upstream DSOs/transmission system operators (TSOs) in line with the cascading process mentioned above.

Draft

III. Objective: network use behavioural incentives

The purpose of network tariff components with an incentive function is to cause network users to take account of the effects on their network costs as precisely as possible when they are making investment or usage decisions. This kind of internalisation of network cost effects can, if the design is right, contribute to an efficient use and development of not just the network itself but the whole electricity supply system. Tariff components with an incentive function may thus be an important element of the network tariff system, especially in the future situation in which the networks will have to be operated closer to their capacity limits and expanded at great expense owing to growing demands, while network users will also have access to increasing flexibility and other leeway for decision-making. Nevertheless, the integration of incentive elements into the tariff system must be carefully weighed up and should only be implemented if various conditions are met.

1. Incentives with a particular objective should only be set if this objective is not already being pursued by other means, such as through mechanisms for influencing the choice of location for new generating installations. Either only one instrument should be used for a particular steering function or, if there is a combination of instruments, there should be a clear distinction as to which is to perform which function.
2. Incentives are only useful if they target actually existing or realistically achievable decision options of a sufficient number of network users (eg potential flexibility) and can be sufficiently precisely designed. It is better not to set incentives if there are grounds to fear that they would be ineffective or even counter-productive. The objectives should also be achievable with a reasonable implementation expenditure and acceptable redistribution effects.

These conditions and the possible design of incentive elements need to be examined individually for each of the intended objectives. This paper deals only with tariff components relating to the usage behaviour of network users, that is to say, the use of their flexibility in the withdrawal or feed-in of electricity. While tariff components with an incentive function targeting solely network users' investment-related decisions – such as the choice of location, network connection point, connection network level or network connection capacity – are part of the process, they are not the subject of this paper.

A further focus of the tariff components discussed here is the cost dimension targeted by the incentives. The Bundesnetzagentur intends to prioritise the costs caused by network congestion in incentives for usage behaviour. In the short term, these are the congestion management costs, primarily redispatching carried out by TSOs and DSOs. If network congestion is not sustainably relieved, it also affects the costs of expanding the network to

Draft

remove congestion in the medium to long-term. “Incentives” rely on entirely voluntary network user behaviour that could also be different, be eclipsed by other effects (wholesale electricity price) or be employed strategically. A network that has not been expanded in line with requirements still needs to be operated securely, which is why the network operators’ obligation to participate in redispatching will remain an indispensable element of the toolbox for secure network operation. Curtailing consumers practically does not happen nowadays and is not to become a standard option in a future supply system for prosumers or households either.

There are no plans for an incentive system based on the amount of network losses and related costs. Network losses are influenced by network user behaviour as well but are less sensitive to the typical decisions about the postponement of withdrawals or feed-in that occur with many types of flexibility. In addition, the extent to which costs can be influenced by users’ decisions is much less overall in the case of the costs of network losses than in the case of congestion costs. For these reasons, incentives targeting the relief of congestion take priority.

Congestion activity in the German electricity networks is highly dynamic because it is affected by very volatile factors such as generation from renewable energy sources and cross-border electricity trading. A tariff component intended to set specific incentives to relieve congestion thus has to be dynamic as well, with the ability to be adjusted at short notice to the expected development of the network status.

To calculate a tariff component with an incentive function, it must be noted that, unlike for a tariff component with a financing function, the cost effect to be internalised cannot be identified simply by allocating a particular cost item to a particular volume of the total demand, for example the electricity consumption or concurrent peak load. Rather, it has to be predicted which changes in network costs are likely to be caused by the decisions of network users targeted by the incentive. At issue is the effects on the network marginal costs caused by the network users’ behaviour.

It follows that an efficiently designed incentive element cannot be calculated with the aim of achieving a particular financing contribution. In fact, the financing contributions arising from the tariffs with an incentive function have to be taken into account in the calculation of tariffs with a financing function. In a dynamic tariff component, this is by its very nature only possible as a forecast, so differences between the forecast and actual financing contributions will arise and will have to be balanced subsequently via the regulatory account. However, this approach is already well established since tariffs with a financing function can only be calculated on the basis of forecasts as well. Differences between the forecast and actual financing contributions

Draft

can be balanced via the regulatory account. This has no effect on the network operator's revenue cap.

The Bundesnetzagentur sees a dynamic energy-based price component as the most suitable design of incentives to orient user behaviour to the network in a way that relieves congestion. This component would be settled in addition to an energy-based price component with a financing function (where this is imposed on the network user group) and calculated independently of it. The dynamic energy-based price component should only be imposed in network areas to be defined and where and when network congestion already exists or is foreseeable in the near future and the definition of network areas must be subject to uniform criteria. It therefore results that the component has to be location-based and – depending on the forecast network usage situation – dynamically time-variable. This separates the incentive component from the ownership boundaries of a network and focuses on network-related effects.

As well as effects on the use of flexibility, a dynamic network tariff component may also cause effects on investment decisions for network users, for example on the choice of location for new, flexible consumption or storage facilities. Although this may well be desirable in terms of the need for network expansion, it does require network users to be able to anticipate a sufficiently strong price signal even for a longer time period in the future. The extent to which this is possible depends on the type of underlying network congestion. While major structural congestion can persist for decades, more minor congestion and congestion on the lower network levels generally can be resolved relatively quickly. The uncertainty associated with this for network users means that the creation of incentives for investment decisions is not the primary goal of dynamic network tariffs, but it is not harmful if these do occur.

Although making other network tariff components dynamic is conceivable, the Bundesnetzagentur does not ultimately consider this to make sense. The requirements of a dynamic capacity-based/power-based price are no less challenging than those of a dynamic energy-based price. The anticipation of network congestion by network operators and the communication of a price signal to network users at short notice (day-ahead) would be equally necessary, but it is questionable whether the signal would be received by network users as accurately.

The dynamic component could, for example, be designed so that exceeding a specific capacity or network connection capacity (in the event of a dynamic capacity-based price) or exceeding the previous individual annual peak load (in the event of a dynamic power-based price) before the location of the congestion would be rewarded (weighted price, with weight < 1). Exceeding after the location of the congestion, on the other hand, would incur a premium (weight > 1).

Draft

Consumers whose consumption was below and not in the direct vicinity of the previously determined capacity/the previous individual annual peak load at the time of congestion would not notice any price signal. In front of the location of the congestion, where it would be desirable to increase consumption, consumers would act freely within their capacity/previous individual annual peak load without an additional price signal. The next unit to be consumed would not be any cheaper. Behind the location of the congestion, where it would be desirable to reduce consumption, consumers would also act freely within their capacity/previous individual annual peak load without an additional price signal. The next unit to be consumed would not be any more expensive. The price signal would not be received by all consumers actually addressed by the dynamic tariff component.

Neither power-based nor capacity-based prices can precisely reflect the actual costs (marginal costs) of an additional unit of consumption in a 15-minute period as they rather represent the average costs of the provision of a unit of capacity/power over a whole year or the remaining part of a year. To enable a cost-reflective incentive system, the time intervals to which the dynamic capacity-based/power-based price component refers would have to be shortened, which would ultimately be the equivalent of a dynamic energy-based price component. Dynamic capacity-based/power-based prices are therefore less suited to internalising congestion costs than a dynamic energy-based price component by means of which marginal costs of a deployment decision can be reflected, at least approximately.

This would also be an attempt to contain the financing function and the incentive function in one network tariff component, which would result in further challenges related to the passing on of price signals across network levels. Tariff components with a financing function are part of the vertical cost distribution in the target vision. The upstream network costs of a network operator, however, are part of the costs not subject to efficiency benchmarking. Price signals would not be passed on between network operators although the passing across network levels is essential (see section VII.6).

Draft

IV. Essential design issues

1. Distribution effects

The dynamic energy-based price component should be applied to the whole amount of consumption or generation for the network user groups for which it is declared applicable. It is not likely to be practical to distinguish between flexible and inflexible shares of consumption/generation within the incentive component and doing so would also raise considerable conceptual distinction problems. It follows, however, that the introduction of the dynamic tariff could result in systemic additional burdens or discounts for network users. Whether these are positive or negative and their size depends on the location of the connection point in relation to the network congestion targeted by the dynamic tariff and on the correlation of the network user's natural consumption or generation behaviour with the temporal progression of the congestion intensity and thus on the dynamic tariff component. Network users with a lot of flexibility can counteract any additional burden by deploying their flexibility in accordance with the dynamic price signal, whereas less flexible network users might not be able to offset this kind of burden.

These additional burdens or discounts are the result of a tariff design that reflects network-side cost effects far more precisely than today's network tariff system so they are, in principle, appropriate in view of the objectives of the tariff system. Initial, rough estimates also suggest that the possible additional burdens will likely be in a reasonable range, even in heavily congested network areas, due to the limited number of hours in which the dynamic network tariff will be effective. Nevertheless, the expected additional burdens or discounts will have to be forecast and monitored for those network users that are permanently inflexible for technical reasons.

It would have to be examined whether the dynamic tariff component should initially be introduced with a reduced range of price levels that was then increased over several years until the spread that was appropriate from an economic point of view was reached. This would reduce additional burdens in the early stages and provide an incentive to gradually expand potential for flexibility or make it usable.

2. Voluntary vs mandatory

With regard to the question of whether dynamic network tariff components should be a requirement or designed as a voluntarily applicable element, it is necessary to distinguish between the following aspects.

Draft

Application of the instrument for congestion in the network of a network operator

The question of the conditions under which a network operator should apply the dynamic network tariff to relieve congestion in its own network is not easy to answer. Whether this application leads to sufficient benefit compared to the associated cost depends on the type, intensity and duration of the congestion. The Bundesnetzagentur is working on the basis that it will at least be justifiable to restrict the application of the tariff to congestion in the upper network levels at first (see section V). Even there, it may be expedient initially only to look at major structural congestion that requires the regular use of redispatching. The details of the sensible scope of this instrument will have to be worked out between the affected network operators and the Bundesnetzagentur.

Passing a dynamic tariff component on across network levels

As explained in more detail in section V, a dynamic tariff component should be applied not just for network users connected to the network level in which the congestion addressed by the tariff component is located but for all network users at downstream levels as well. An initial phased introduction could be justifiable, at all events with a view to the technical implementation of the necessary processes and systems. Except during the possible phased introduction, all network operators should be required to settle dynamic tariffs with their own network users, even if they do not apply this instrument for congestion in their own network but only receive a dynamic tariff passed on from upstream network operators.

Options for network users

For network user groups for which the application of a dynamic tariff has been determined, the application of such a tariff calculated for the connection network level and the location of their connection point is to be mandatory. Otherwise, there would be a risk that many network users, presuming negative consequences or just in ignorance of the rules and effects, would choose not to have the tariff applied. Their flexibility would then not be available for use to relieve congestion in the network.

Of course, an exception is consumers in the low-voltage network that are not (yet) fitted with a smart metering system, since in these cases it is not possible to settle time-of-use tariffs or provide the network operator with information about a change in load behaviour. The network operator could not gain any advantage from the changed load behaviour of these consumers since the operator does not know what it is. A dynamic tariff component will not be applied to such consumers (see section VII.6).

Draft

V. Differentiation by network level

The question of which network levels the dynamic tariff component should apply to has two aspects that may be answered independently. Firstly there is the distinction of the network levels and types of congestion, the burden of which the incentives set by the dynamic tariff are supposed to address. Secondly there is the issue of in which network levels the connected network users should be incentivised using the dynamic tariff. These aspects will be discussed separately below.

1. In which network levels will congestion be priced using a dynamic network tariff?

A dynamic network tariff relates to at least one specific instance of network congestion and is intended to incentivise behaviour that will relieve it. The tariff component can also be made up of multiple contributions relating to different instances of network congestion. This is possible and useful where network users' behaviour at a certain point in the network affects the burden of multiple instances of congestion that may be located partially on the same network level and partially on different ones. To allow this, the system should be designed in such a way that contributions to the dynamic tariff component for multiple instances of congestion and across multiple network levels are added together and can each be passed on to downstream network levels. This approach is explained in more detail in section VII.

First, this paper will look at the types of congestion for which contributions to the dynamic tariff are intended. Network congestion can essentially occur at all network levels. From a technical point of view, therefore, there is no particular reason to focus on certain levels. Nevertheless, the Bundesnetzagentur is considering initially applying the mechanism at network levels 1 to 3 (very high voltage to high voltage) and possibly also at network level 4 (high-to-medium voltage transformer). There are various reasons behind this line of consideration.

1. Congestion in the upper network levels currently dominates the congestion picture and thus the costs of managing it. In the annual adjustment of their revenue caps, only nine DSOs estimated congestion management costs of over €1mn for 2025. Removing this congestion takes up so much time and resources that a dynamic tariff directed at it can often create a relatively stable incentive for several, or even many, years. At the same time, the management of it using redispatching is largely focused on generating installations, so it is desirable to include flexible consumer devices and storage facilities in the congestion management by creating dynamic incentives.
2. There have so far been at most isolated areas of congestion in the medium and low-voltage networks and these can be resolved comparatively quickly by expanding the

Draft

networks. Moreover, the new provision and implementation of section 14a EnWG introduces special tools for congestion management, in particular for congestion triggered by new, powerful consumer devices in the low-voltage network, such as electric vehicle charging points. For this reason, adjustments in this area do not have top priority.

3. To gain initial experience with the introduction of dynamic network tariffs, the Bundesnetzagentur considers it beneficial to focus on comparatively large areas of congestion that give rise to considerably lower granularity requirements of tariffs than congestion in the lowest network levels. Consequently, the group of network users whose changed behaviour can contribute to relieving the congestion is also bigger in this case than for small areas of congestion in the lower network levels. The likelihood that reliable contributions to relieving congestion will occur is greater for larger areas of congestion than for smaller ones.
4. In order to identify the precise contribution to the dynamic tariff, network operators in whose networks the relevant congestion is located have to be able to monitor their network state sufficiently accurately and have processes in place to predict and manage congestion. TSOs (network levels 1 to 2) fully meet these requirements. The majority of level 3 to 4 networks (high voltage and high-to-medium voltage transformer) can already be monitored as well, but the above-mentioned congestion processes have often only been established where relevant congestion already exists, so many network operators will need to carry out further work with a view to expected future congestion. The networks at the lower distribution levels 5 to 7 can only partially be monitored sufficiently and congestion management processes are only available in places, if at all.

The next steps in the process need to include exploring whether there is a need to include network level 4 congestion in the first stage of the introduction of dynamic network tariffs and to what extent the related requirements can be fulfilled at this level by the time of introduction.

As far as the time needed to introduce a dynamic network tariff component is concerned, the Bundesnetzagentur is working on the basis that if it is restricted to congestion at network levels 1 to 3, the necessary conditions can be put in place by the beginning of 2029. This includes establishing processes to forecast and manage congestion in the network levels and network areas in which such processes do not yet exist but relevant congestion is to be expected in the next few years. Conditions for the passing on and billing of the dynamic network tariff across network levels and to network users need to be created as well. If this is

Draft

not fully possible by the beginning of 2029, a phased introduction would be an option. The second part of this section will go into more detail on this aspect.

The Bundesnetzagentur considers it necessary to discuss whether a transitional arrangement should be made to introduce time-of-use network tariffs first to combat congestion in the network levels that are not initially going to be included in the system of dynamic network tariffs. Time-of-use network tariffs differ from a dynamic energy-based price component as regards the lead time of their publication and the granularity of the price signal. Their time window and areas would have to be published before the year of application. Although these tariffs could clearly only act against previously known, recurring congestion patterns (such as electricity peaks caused by solar power) and the precision of this instrument would be significantly lower, the introduction of time-of-use network tariffs could still make sense to test process chains and reactions of network users. Whether the introduction of time-of-use network tariffs would ultimately help the introduction of a dynamic energy-based price component or only delay it further by taking up a lot of capacity for its implementation would have to be considered.

A decision on the further expansion of dynamic network tariffs to congestion in the subsequent voltage levels should follow quickly thereafter. The current finding of relatively isolated points of congestion and relatively rapid removal of congestion is not a stable situation. The Bundesnetzagentur does not consider it expedient to wait years for experience from network levels 1 to 3 and only then to decide on the expansion. A decision at least on the criteria by which the network operators of downstream network levels are to assess congestion and introduce the imposition of dynamic network tariffs should be made promptly. The necessary implementation period (eg IT implementation cycles) must be looked at realistically, however.

2. The network users of which network levels will be addressed with a dynamic tariff?

To answer the question of which network levels a dynamic network tariff component should apply to, it is necessary to assess which network users influence the strain caused by congestion with their behaviour. Usually, these are at least the network users connected to network levels below the level with the congestion. For example, if there is congestion of the transformation capacity of a high-to-medium voltage transformer station, all network users of the network levels from the low voltage (level 7) to the medium-voltage side of the transformer station (level 4) in the part of the network downstream of the station influence the strain posed by the congestion. To create an incentive for the greatest possible potential behavioural changes to relieve the congestion, it would make sense in this example to charge the dynamic network tariff to all network users of the connection network levels 4 to 7 in the affected sub-area of the network.

Draft

To generalise, therefore, the dynamic network tariff component should be introduced for all network levels, even if it is initially only addressing congestion in levels 1 to 4 (with reservations for level 4 as explained above). The achievable benefit would be very limited if the contribution to the dynamic network tariff component relating to a particular instance of congestion was only applied to connection users of precisely the level in which the congestion is situated. For example, in the transmission system (network level 1), this would mean that only a few (albeit very large) consumers that were directly connected to that level would be included and could contribute to relieving the congestion with their flexibility.

The Bundesnetzagentur therefore considers it expedient to introduce dynamic network tariffs for network users of all network levels in the future. However, to start with it has to be clarified whether an introduction for the lowest network levels at the same time as for the higher levels is practical. If the tariffs are introduced at different times, this would only be justified on grounds of practicality as to timing and not because of any reservation in principle about the application of dynamic tariffs at these network levels.

Draft

VI. Network user groups addressed

The nature of the different network users is not generally relevant to achieve the objectives of the dynamic network tariffs; only the effect on the network of the change in behaviour targeted by the incentive is. In principle, therefore, it is actually the change in consumption or generation behaviour that can be observed at the network connection point that should be incentivised and assessed.

However, due to the secondary effects of incentive components typically associated with different types of network user and their differing flexibility, it may make sense to look at the groups separately, which is in no way meant to suggest that there should ultimately be different forms of dynamic network tariffs.

1. Storage facilities

Regardless of the technology they employ, whether battery storage, pumped storage power station, etc, the point of electricity storage facilities is to provide flexibility so that the generation and consumption electricity can to a certain extent occur at different times. They are therefore particularly obvious addressees of a dynamic network tariff component intended to create an incentive to use flexibility to the benefit of the network. This could also mitigate a problem that has been the subject of much discussion recently, namely that storage facilities that only respond to market-side price signals can end up driving congestion. A combination of market prices and dynamic network tariffs could indicate market-side and network-side scarcity at the same time, enabling operations to be more directed towards the needs of the market or towards the needs of the network depending on the situation.

These considerations are particularly relevant for storage facilities with their own connection to the network and not coupled with generating installations and/or consumption equipment. These storage facilities do not have a natural use profile (such as optimising self-consumption, for example) but are used solely on the basis of price or control signals (eg for balancing capacity) that they receive from the electricity supply system. They consequently do not have the problem discussed in section IV of a systemic additional burden/discount caused by inflexible behaviour. On the contrary, a dynamic network tariff brings additional opportunities for storage facilities to generate earnings by factoring the price signal into their usage calculation. Of course, this idea only works if storage facilities are paying network tariffs at all, so it will not be possible to continue their near-complete exemption from such tariffs in accordance with the transitional provisions in section 118(6) EnWG.

The Bundesnetzagentur thus views it expedient to apply the dynamic tariff component for storage facilities with their own network connection from the start (and to make it mandatory,

DRAFT

as explained above). Should it arise in the course of further discussion that the application of dynamic tariffs can only be implemented at the lower distribution network levels at a later date, it would also be possible to restrict them initially to large-scale storage facilities connected to network levels 1 to 4.

These considerations cannot be fully transferred to storage facilities coupled with consumer devices or generating installations behind the network connection point. In such cases, there is usually a natural usage scenario motivated by objectives such as optimising self-consumption or limiting network connection capacity. In the Bundesnetzagentur's opinion, these storage facilities are to be regarded as facilities within the sphere of consumers or producers and should be treated as such with regard to network tariffs, including for the dynamic tariff component (see sections below).

However, if the dynamic network tariffs were introduced in a staggered fashion for different network user groups, it might not be possible to include storage facilities coupled with other facilities in the application of the dynamic tariff component, or not immediately. To enable this, it could be considered whether network users should be given the option of installing an additional meter at the storage facility. They would then be able to choose to apply the dynamic tariff to the storage usage measured by the meter. The Bundesnetzagentur sees a need for further examination of the possible design and effects of such an option.

2. Consumers

Electricity consumers also often have potential flexibility that can be used in response to a price signal. Consumers of all sizes are already doing this: private households, for example, with their own solar PV installation and domestic energy storage system that have taken out a dynamic electricity contract and control their devices using an energy management system, or industrial consumers that buy at least some of their electricity on the spot market and have flexible processes. In order to use this flexibility to relieve congestion, the Bundesnetzagentur takes the view that dynamic network tariffs should essentially also apply to consumers of all sizes. However, various constraints need to be borne in mind and could justify at least phasing in the dynamic tariff component.

1. Unlike storage facilities, it is not the core activity of consumers to provide flexibility for the electricity supply system. Their potential to do so is more limited and the provision of flexibility is only a part of their use of the network. It does not represent its own business case for consumers.
2. Consumers could incur systemic additional burdens/discounts from the introduction of dynamic network tariffs for the inflexible part of their electricity consumption. The

Draft

Bundesnetzagentur considers it necessary to examine further the scale of such effects on different consumer groups.

3. The cost of introducing a dynamic tariff component will depend on the number of network users affected. As there are by far the most users in the low to medium-voltage levels, it could be necessary – or at least make sense with a view to focusing initially on the greatest potential – to delay introducing the dynamic tariff for users of these network levels. However, as there are lower requirements to meet to apply the dynamic tariff for users of a network level than to calculate the contribution to the dynamic tariff for congestion at that network level (see section V), the Bundesnetzagentur expects a postponement of a few years at most to be justifiable.

3. Producers

Electricity generating installations are also flexible in their operation. For renewable energy generating installations, flexibility mostly consists of curtailing the generating capacity from the intermittently possible capacity, whereas for conventional installations, decisions about usage plans and (possibly short-notice) changes to these can be made in both directions. The flexibility of generating installations is necessarily used to a great extent today as part of redispatching for congestion management, resulting in considerable costs. To reduce these redispatching costs and take some pressure off the complex processes of identifying and ordering measures and settling compensation, the Bundesnetzagentur generally considers it sensible to apply the dynamic network tariff component to producers as well.

However, various reservations need to be explored and possible consequences examined in more detail in the further course of discussion.

1. If a dynamic tariff results in systemic additional burdens/discounts for generating installations that cannot be fully compensated for by use behaviour responding to the price signal, it must be considered whether these effects are desirable or not. It must be examined whether the costs for the network are reflected and whether reasonable measures can be used to ensure the ability to respond to price signals.

2. The dynamic tariff component could provide incentives for the choice of location of new generating installations, especially if the congestion targeted by the tariff component, and thus also the price signals sent, can be forecast to remain for enough years. While it may seem fundamentally desirable to steer behaviour in this manner, interactions with other instruments affecting locations in the field of renewable energy support and the support of new controllable generating installations need to be taken into consideration as well.

Draft

3. The effect of a dynamic network tariff together with other means of reducing congestion management costs or influencing location decisions, such as flexible connection agreements pursuant to section 17(2b) EnWG and section 8a of the Renewable Energy Sources Act (EEG) or the “redispatching restriction” in the current network connection discussion, have to be considered as well.

The Bundesnetzagentur considers it beyond dispute that the rules and processes for redispatching will still be needed even if a dynamic network tariff component is introduced for producers. Even if it is possible to reduce significantly the use of redispatching measures with these incentives, an incentive-based mechanism will still not guarantee full and secure removal of congestion under all circumstances. Moreover, congestion is influenced by factors that cannot be covered with the proposed dynamic tariff, such as unforeseen changes in status shortly before the time of fulfilment. Therefore, the dynamic tariff component for producers will have to be employed in parallel with the tried and tested tool of redispatching. To provide consistent incentives, the dynamic tariff that producers would have paid/received in the situation without redispatching measures would have to be taken into account in the calculation of compensation for redispatching measures. Otherwise, there could, for example, be advantages for producers not to curtail their feed-in even with a very high tariff in the direction of feed-in but rather to speculate on the curtailment being ordered as redispatching.

Draft

VII. Calculation, passing on and billing

1. Calculation

The proposed dynamic tariff component intended to set incentives for behaviour that relieves congestion in the network should ideally be set so that the network congestion to which it refers is largely resolved by the reactions of network users. At the same time, there should not be significant overreactions as users' flexibility would then be used excessively in favour of the network and taken away from other types of use, in particular from the energy market. Of concern is less an overreaction of individual network users and more a synchronous reaction of a very large number of users resulting in an overall overreaction. These objectives will not be perfectly achievable in practice but should serve to guide the development of a methodology for calculating the dynamic tariff. The key points of this methodology should be:

1. The dynamic tariff component or each individual contribution related to a particular instance of congestion should be applied symmetrically and either positively or negatively, as appropriate. That means that the direction of network use at a particular place and time decides whether network users make a payment or receive one, as they are either contributing to the congestion or helping to relieve it, depending on the direction.
2. The contribution to the tariff component depends on the intensity of the respective congestion predicted in the network operators' congestion forecast. At times when the congested place is not expected to be fully used and therefore no congestion management is necessary, the contribution to the dynamic tariff for this area of congestion is zero. However, if the network is expected to be overloaded and thus congestion management is necessary, the contribution to the dynamic tariff is not zero and is based on the influencing factors given below.
3. One factor is the marginal costs of congestion management, ie the costs of an additional unit of redispatching needed to relieve the congestion.
4. A further factor is the expected scope of reaction from network users to the price signal sent by the dynamic tariff. To start with, it will only be possible to estimate this factor but with the continued application of the dynamic tariff, findings will be gained that should be systematically evaluated and used to improve the estimates in the calculation of the tariff. A sound knowledge of this factor and the framework conditions on which it depends (eg market-side conditions) is essential to attain a response by network users that is relevant but does not overshoot the target.

Draft

5. A third factor influencing the dependence of the dynamic tariff component on location is the relationship between the strain presented by network congestion and the electricity withdrawn or fed in by network users at a certain point (network level and location) in the network. To take account of this factor, the dynamic tariff must be localised to a granularity sufficient for the network congestion in question.
6. As an alternative to the calculation system outlined above, according to which a contribution to the dynamic tariff is only not zero if the targeted congestion is expected to be overloaded soon, a more strongly preventive calculation methodology could also be considered. This would aim to provoke a reaction as soon as the network utilisation exceeds a certain threshold but no measures are yet necessary. This would probably make the dynamic tariff more predictable over time but it would also incentivise the use of more flexibility than strictly necessary.

Given the influences and impacts that have to be taken into account, developing a suitable calculation methodology for contributions to the dynamic network tariff component is very challenging. The Bundesnetzagentur therefore considers that it should not be the job of the individual network operator but rather part of an industry process in coordination with the Bundesnetzagentur and representatives of different stakeholder groups. The methodology should also be continually monitored for its effects even after its initial development and trial and it should be further developed where necessary.

The application of the calculation methodology, on the other hand, follows on directly from the congestion forecast processes of the network operators in whose networks congestion is to be relieved and remains by its very nature the task of these network operators. Each network operator thus still has some leeway for decision-making. However, the tendency should be to reduce this, if only so as not to unnecessarily restrict the freedom of network use and so that unnecessarily high costs are not generated from the remaining need for redispatching in the event that network users do not respond sufficiently. An approach based on best practice would be appropriate.

2. Temporal granularity and deadlines

A limit for the temporal granularity of the dynamic tariff component arises from the 15-minute granularity used in short-term electricity trading. Time periods shorter than 15 minutes would not make sense. Imbalances of generation and consumption within the 15-minute period are balanced out in the balancing energy system, which is not to be affected by the dynamic tariff.

The Bundesnetzagentur also considers that a shorter time period than 15 minutes would not be expedient as the achievable accuracy would be unnecessarily limited. Even if the results of the congestion forecast were only available on an hourly basis, a 15-minute basis for the

Draft

dynamic tariff could contribute to a smoother tariff progression. It may be assumed that reactions to the dynamic tariff by network users will be identified either by energy management systems that can deal with a 15-minute resolution of price signals easily or by people already well aware of the intervals of electricity market prices.

The determination and publication of the dynamic tariff component must occur daily for the next day before the day-ahead auction on the spot market so that market participants can take the network-side price information into account in their decisions in day-ahead trading. This avoids the dynamic tariff subsequently affecting these decisions and thus causing many transactions to be shifted to intraday trading, which would be problematic for the security of the network and system and could trigger gaming processes. Ideally, the dynamic tariff component should even be determined before the balancing capacity auctions that take place in the morning for the next day. This would enable providers of balancing capacity to factor in the opportunity costs of their flexibility in the calculation of their balancing capacity bids including with regard to the dynamic network tariff.

Determining the dynamic tariff component well before the time of the day-ahead trading, on the other hand, would be questionable since there would then likely be relatively large uncertainties in the congestion forecast. Nevertheless, the extent to which network operators may be able to provide non-binding advance information about the expected development of the strain on the network, possibly several days before the fulfilment time, in order to give network users at least a rough estimate of the upcoming situation, should be discussed.

3. Geographical granularity

The geographical granularity of a contribution to the dynamic tariff component related to a particular instance of congestion has to depend on the type and location of this congestion.

1. For large areas of congestion in the transmission system, it is sufficient to divide the country into a manageable number of regions. TSOs recently proposed dividing Germany into the 22 regions of their Week-Ahead Planning Process, for example.
2. For congestion in the high-voltage network, it is generally likely to be necessary to subdivide the areas of affected DSOs further.
3. The network levels 4 to 7 are largely arranged radially so their network structure directly shows which network users contribute to the strain on or removal of an area of congestion and which do not. For example, a contribution to the dynamic tariff relating to a congested high-to-medium voltage transformer station should be applied precisely for those network users whose connection is located in the sub-areas of network levels 4 to 7 connected with the rest of the network via this station.

Draft

Allocating the contributions to the dynamic network tariff from the relevant areas formed using this method will be the task of the network operator concerned. To do so, the network operator must be able to allocate the market locations of network users to the areas formed.

4. Publication

The dynamic network tariff component has to be published in a manner that enables network users (or their energy management systems) to access it reliably and clearly. It must at least be ensured that a target address can be given for each market location via which the information on the tariff progression can be accessed in good time each day. It may also make sense to provide information on the composition of the dynamic tariff from contributions relating to different areas of network congestion. Central and decentralised solutions for the electronic provision of this information are both conceivable. A central solution could probably support the process of cascading the contributions to the dynamic tariff described in the section below, but would not be absolutely necessary for this. The Bundesnetzagentur intends to discuss the pros and cons of these, and possibly other, solutions for the provision of information on the dynamic tariff component with the network operators and affected stakeholders and to explore the extent to which they need to be regulated in the course of the determination.

5. Passing on/cascading

As network congestion can occur at different network levels and different locations and the behavioural changes of network users incentivised by the dynamic network tariff may have knock-on effects at other network levels, a suitable coordination mechanism needs to be established to carry out various tasks.

1. Each network user should be confronted with precisely those contributions to the dynamic tariff component that relate to the areas of network congestion affected by that user's behaviour. The affected areas defined for each instance of congestion of the contributions to the dynamic tariff must be taken into consideration positively or negatively as appropriate.
2. Where network users' behaviour in a particular sub-area affects more than one instance of congestion, the relevant contributions to the dynamic tariff must be added together.
3. Network operators must be able to check the effects on their own networks of the incentives provided by upstream operators. If it turns out that subsequent congestion is to be expected, these network operators must be able in turn to determine contributions to the dynamic tariff that mitigate or completely neutralise the feared consequences.

Draft

A top-down cascading of contributions to the dynamic network tariff currently seems the most promising approach. This would give the incentives created as wide a reach as possible while also giving all network operators affected by any responses the ability to estimate the consequences for their network and, where necessary, to combat them with their own price signals. In concrete terms, this means that first the TSOs and then the DSOs in order of network level would determine and publish their contributions to the dynamic tariff. Details on the possible implementation of this process and in particular the time and information needed must be the subject of further discussion.

A key feature of the approach outlined above is that contributions to the dynamic tariff component will not be included in the vertical cost distribution but passed on unchanged from network level to network level and, where necessary, added to other contributions.

6. Metering and billing

The dynamic network tariff component can in principle only be billed to network users with interval metering or a smart metering system. This tariff component cannot be applied to other network users that are billed on the basis of standard load profiles.

Network operators and suppliers will need to be able to bill based on time series in order to settle the dynamic tariff component, something they, for the most part, cannot yet do. There will certainly be a need to update IT systems, interfaces and processes before the dynamic network tariff can be applied nationwide. Network operators are likely to face more work in this regard than suppliers, as the latter have already been dealing with the settlement of 15-minute variable electricity prices since the introduction of dynamic electricity rates, even though this has not so far been concerned with the network tariffs.

The continuing discussion process should therefore look at the time needed to carry out the changes needed and by when this can be completed, broken down by network level.

Draft