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Legal and regulatory framework for electricity storage facilities in Germany

The storage of electrical energy is a key element in building an electricity market that aims to eventually generate power solely from renewable sources. Energy storage facilities perform a buffer function at the interSection between volatile generation and consumption. Their flexibility makes a valuable contribution to the transformation of the energy market.

In addition to the technological challenges posed by electricity storage, the legal and regulatory framework is also crucial to developing new business models in the storage sector. Recent years have seen the adoption of the first EU-level legislative requirements in this respect. German law also contains many provisions that are relevant to the storage of electricity, but these are scattered rather than forming a coherent and consistent overall approach.

This document provides an overview of the key framework conditions that currently apply. The aim is to offer initial guidance on the constantly evolving legal environment for electricity storage in Germany. As an additional competent resource, the experts at CMS can advise and assist clients across all aspects of legal and regulatory issues that arise specifically in relation to the storage of electrical energy.

No standardised terminology for electricity storage facilities

There is no consistent set of regulations within the current German regulatory framework covering all aspects of electricity storage facilities as a form of energy storage. Basically, facilities for storing electrical energy are generally understood to be facilities in which electrical energy is taken from a power grid and stored, having been converted into chemical, thermal or potential energy. The stored energy is then converted back into electrical energy and fed back into the grid. There are a number of technical options for storing electricity, including some recent innovations. Examples include battery storage and pumped storage power stations.

There is no standardised definition of electricity storage in current German energy law. The German Energy Industry Act [EnWG] does provide a definition for the term "Energiespeicheranlage" [energy storage facility] in implementation of the definition in Art. 2 No. 59 of the Electricity Directive (2019/944) [Elt-RL] (Section 3 No. 15d EnWG). This includes both storage facilities that exclusively supply and thus generate electrical energy and facilities that release the stored electrical energy in another energy form, such as power-to-X plants or electrolysers. As such, the term encompasses storage concepts that postpone the final use of electrical energy until a later point in time than its generation or that convert electrical energy into a storable form of energy, store this energy and then convert it back into electrical energy or use it as another energy carrier. The term "energy storage facility" is not used consistently, however. It is mainly used in relation to the unbundling requirements for network operators and for exceptions to these requirements, but also indirectly in relation to the question of whether battery storage systems as distributed generation plants are entitled to avoided network charges pursuant to Section 18 of the Electricity Network Charges Regulation [Verordnung über die Entgelte für den Zugang zu Elektrizitätsversorgungsnetzen – StromNEV] if they are commissioned before 1 January 2023.

In addition to the definition in Section 3 No. 15d EnWG, other quite different terms are used for electricity storage in other regulations. For example, there are terms such as "Anlagen zur Speicherung (von) elektrischer Energie" [Facilities for the storage of electrical energy] (e.g. Section 1(4) no. 3 EnWG), "Stromspeicher" [Electricity storage] (e.g. Section 2 no. 4e Marktstammdatenregisterverordnung [Market Master Data Registry Regulation, MaStRV] and Section 118(6) p. 3 EnWG), "Wasserstoffbasierte Stromspeicherung" [Hydrogen-based electricity storage] (Section 39o(1) p. 1 Renewable Energy Directive [EEG 2023]) or "stationary battery storage" (Section 2 no. 9 of the Electricity Tax Act [StromStG]).

Last but not least, there is a lack of clarity as to how electricity storage facilities fit into the established system of electricity market roles. While it is generally accepted that electricity storage facilities such as battery storage and pumped storage power stations should be regarded as final consumers when they take electricity from the grid, they are considered to be producers when subsequently feeding the electricity back into the grid. This differentiation had an impact on the application of the legal and regulatory requirements, especially under the heading of the "double charging" of electricity storage facilities, which has now been largely rectified.

EU law includes provisions on electricity storage

The issue of potential double charging of electricity storage facilities in terms of network charges and other levies and surcharges due to their being classified as both final consumers and as producers is addressed in EU law in Article 21 (2) b of the Directive on the promotion of the use of energy from renewable sources 2021 (EU) 2018/2001 [Renewable Energy Directive]. Under this provision, self-consumers are entitled to install and operate electricity storage systems combined with installations generating renewable electricity for self-consumption without liability for any double charges and levies, including network charges, for stored electricity remaining within their premises. These regulations were finally implemented in German law with regard to the EEG levy by abolishing it when the EEG 2023 came into force on 1 January 2023. An exemption of energy storage systems from further surcharges is regulated in the new Energy Financing Act [EnFG] (for more details see below "Avoiding the double charging of electricity storage facilities with surcharges"). In addition, Art. 15 (5) b of the Electricity Directive provides that active customers that own an energy storage facility shall not be subject to any double charges for stored electricity remaining within their premises or when providing flexibility services to system operators. The federal legislator did not implement this requirement.

Furthermore, there are provisions on "citizen energy communities" (Art. 16 [Electricity Directive]), which according to their definition, may also engage in energy storage (Art. 2 No. 11 c [Electricity Directive]). The aim of the Directive's provisions is to support business models for local energy communities. In the course of implementation, these regulations were also included

in EEG 2023. Section 3 no. 15 EEG 2023 contains a definition of the term citizen energy community, which is based on the European requirement. Section 22b EEG 2023 regulates special features for the feed-in tariff for renewable energy generated by a citizen energy community. Similar provisions for renewable energy communities can be found in Art. 22 [Renewable Energy Directive]. So far, there has been no direct implementation of this form of producer community in German law. The German legislator has merely limited itself to introducing the above-mentioned citizen energy community, which is ultimately one possible form of such a renewable energy community.

Newly constructed storage facilities may be exempt from network charges

Section 118 (6), sentence 1 of the Energy Industry Act provides an exemption from network charges in the case of newly constructed facilities for storing electrical energy. The exemption relates to the purchase of the electrical energy to be stored. Facilities are considered newly constructed if they were commissioned within a period of 15 years starting from 4 August 2011. The exemption applies for a 20-year period from the date of commissioning. Commissioning is defined as the first purchase of electrical energy for test operation (Section 118 (6), sentence 6 EnWG). The exemption from network charges requires that the electrical energy for storage in an electricity storage facility is taken from a transmission or distribution system, and that the electrical energy recovered for feed-out is fed back into the same system with a time lag (Section 118 (6), sentence 3 EnWG). There is no approval requirement for this exemption.

Existing pumped storage power stations also exempt from network charges

In addition to new facilities, existing pumped storage power stations are also exempt from network charges (Section 118 (6), sentences 2 and 4 EnWG). Exemption requires proof that electrical pumping or turbine output has been increased by at least 7.5% or the volume of stor able energy has been increased by at least 5% after 4 August 2011. A further requirement is that it must be evident and foreseeable that the facility's maximum load contribution will diverge considerably from the simultaneous maximum annual load of all withdrawals from this grid level or transformer level. The exemption applies for a 10-year period from the date of commissioning the expansion. Approval by the regulatory authority is required for the exemption (Section 118(6) sentence 5 in conjunction with Section 19(2) StromNEV).

Power-to-gas plants are likewise exempt from network charges

With power-to-gas plants, there is a provision that the requirement to feed back into the same grid from which the electrical energy was taken from (see Section 118 (6) sentence 3 EnWG) does not apply to facilities in which hydrogen has been produced by water electrolysis, or in which gas or biogas has been produced through hydrogen from water electrolysis and subsequent methanisation (Section 118 (6), sentence 7). This means that no network charges are payable for the electricity consumed in converting the energy into gas. There is no approval requirement for the exemption.

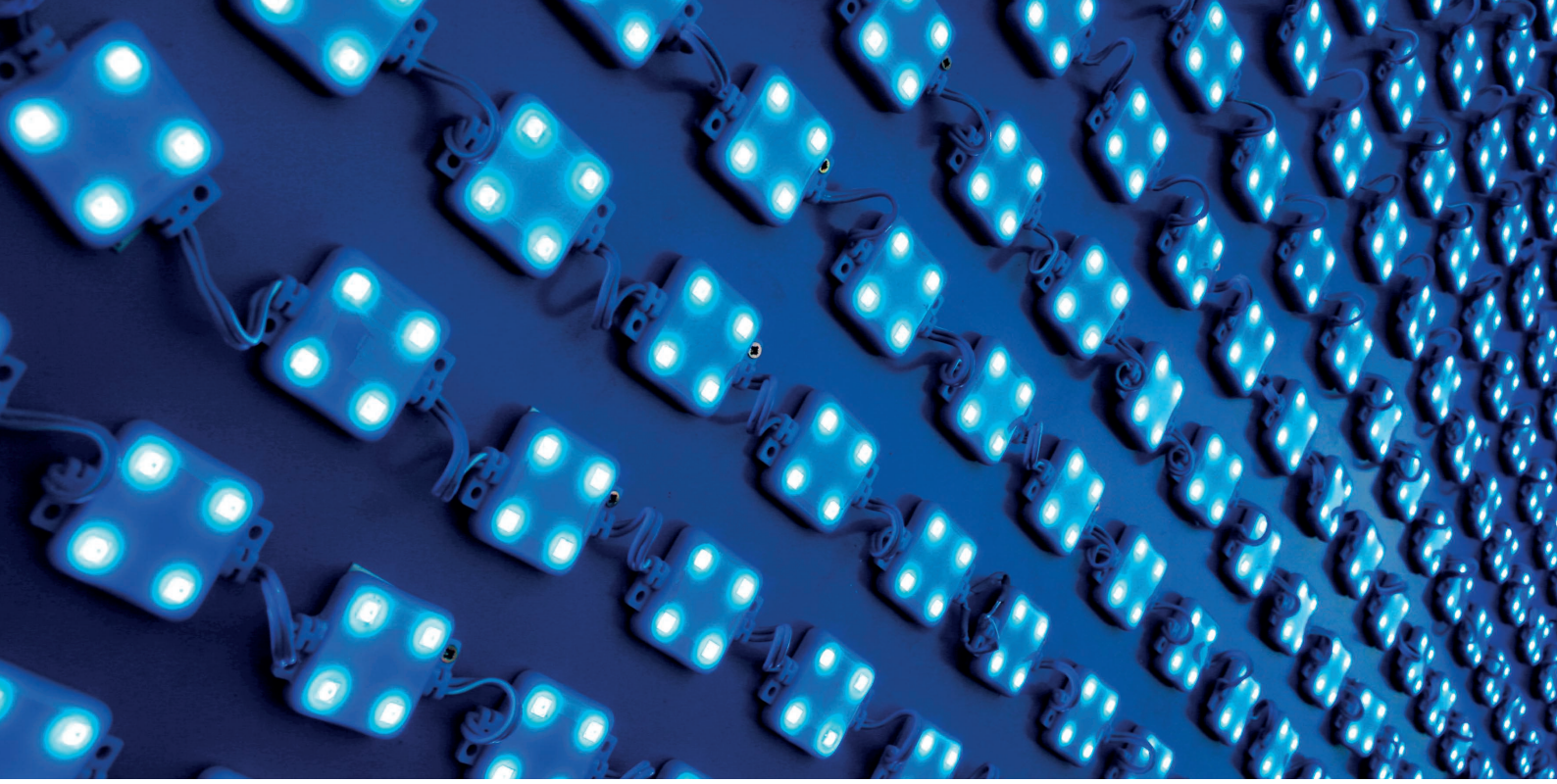
The relevance of the exemption exemption of these plants from feed-in tariffs into the gas grid, as regulated in Section 118 (6) Sentence 8 EnWG, is limited, as no network charge is incurred anyway when gas is fed into the local distribution system and when biogas is fed into a transmission system.

What is the extent of the exemption from network charges?

The exemption also covers the storage losses that occur during conversion and subsequent reconversion of electrical energy.

On the other hand, the exemption from network charges does not cover the statutory surcharges for use of the public network – an issue that was long in dispute. This was decided by the Federal Court of Justice in 2017 with regard to the surcharge under the Combined Heat and Power Act [Kraft-Wärme-Kopplungs-Gesetz – KWKG], the surcharge for individual network charges under Section 19 (2) of the StromNEV, the offshore liability surcharge under Section 17 f of the Energy Industry Act [EnWG] and the surcharge for interruptible loads under Section 18 of the Regulation on Agreements concerning Interruptible Loads [Verordnung über Vereinbarungen über abschaltbare Lasten]. In accordance with the purpose of the statute, Section 118 [EnWG] provides only for exemption from network charges in the strict sense of the term, and not from the above-mentioned surcharges, the Court found.

The Federal Court of Justice holds the view that the exemption from network charges also does not include charges for operating metering points, for metering or for billing. These are separate charges that are in any case distinct from network charges, it ruled. In the opinion of the Federal Network Agency (Bundesnetzagentur), the same applies to construction cost subsidies to be paid to the network operator, as these also do not constitute a network charge.



Electricity storage facilities are entitled to individual network charges

Where exemption from network charges is not possible, electricity storage facilities are entitled to an individual network charge if the conditions laid down in Section 19 (2), sentence 1 [StromNEV] are met. This requires that it must be evident and foreseeable that the storage facility's maximum load contribution will diverge considerably from the simultaneous maximum annual load of all withdrawals from this grid level or transformer level. The individual network charge may not be less than 20% of the published network charge. The Federal Court of Justice has ruled that when calculating an individual network charge, only the price per kilowatt and not the kilowatt-hour rate is to be reduced. In the view of the Court, this follows from the wording of the provision and is also consistent with its purpose. An individual network charge under this provision furthermore requires that electricity is withdrawn for own consumption. In lease models, this makes it important that the party claiming a reduction in the network charge is actually also the operator of the electricity storage facility.

Another option for claiming an individual network charge for electricity storage facilities is laid down in Section 19 (4) [StromNEV]. This provision stipulates that system operators must offer an individual network charge to final consumers who withdraw electricity from the grid solely for storage in an electricity storage facility and feed the recovered electricity back into the grid.

Unlike the individual network charge referred to in Section 19 (2) StromNEV, a kilowatt-hour rate is not charged in this instance. The network charge referred to in Section 19 (4) StromNEV thus consists solely of an annual price per kilowatt. This price is applied to the portion of the withdrawn electricity that is not fed back into the grid, i.e. to storage losses. This is because irrespective of the technology used for storage, electricity storage facilities should only incur network costs to the extent that they permanently withdraw electricity from the electricity system and do not feed it back into the grid.

If the requirements for an individual network charge under both Section 19 (2), sentence 1 and Section 19 (4) StromNEV are met, a two-stage network charge reduction is possible for electricity storage facilities that benefit the network. This involves calculating the appropriately reduced network charge on the basis of the individual network charge in accordance with Section 19 (4) StromNEV. The individual network charge referred to in (4) must thus be further reduced if the storage facilities benefit the network. The charge may not be less than 20% of the annual price per kilowatt determined in accordance with (4).

Electricity storage facilities that have a separate metering point can continue to benefit from a reduced network charge if they enable the operator of the distribution network to which they are connected to control the storage facility as a controllable consumption facility within the meaning of Section 14a (2) EnWG.

Electricity storage facilities may also be entitled to a payment for decentralised feed-in

If an electricity storage facility acts as a decentralised generation plant when feeding power back into the grid, the facility operator can claim a payment for avoided grid usage from the operator of the electricity distribution system into whose system it is feeding power, subject to the conditions laid down in Section 18 (1) [StromNEV]. To satisfy these requirements, the storage facility must have been commissioned before 1 January 2023. In the case of facilities with volatile generation, commissioning must have taken place before 1 January 2018. Avoided energy and avoided load as the basis for the avoided costs of the upstream grid level or transformer level on which the payment is based are calculated in accordance with Section 18 (2) [StromNEV]. The prevailing view is that a network charge exemption in accordance with Section 118 (6) [EnWG] does not preclude an entitlement to avoided network charges by pumped storage power stations or battery storage facilities using decentralised feed-in.

Avoidance of double charging of electricity storage facilities with surcharges

In principle, stored electricity was also subject to the EEG levy. When it was fed back into the grid and subsequently consumed by the end consumer, the EEG levy was incurred again. However, in the course of the energy crisis in 2022, the EEG levy was reduced to zero from the middle of the year until 31 December 2022. When EEG 2023 came into force on 1 January 2023, the EEG levy was abolished without replacement. As a result, all previous regulations on self-supply that were related to the EEG levy, including Section 61b (2) EEG 2021, were also abolished. Overall, all regulations that were related to the EEG levy became irrelevant and were deleted.

In addition to the EEG levy, however, there were and are other surcharges that play a role in determining the tariff. Therefore, a new regulation had to be created for the CHP levy and the offshore network levy, which addresses the problem of double charging of electricity storage facilities. This is found in Section 21 of the newly created Energy Financing Act [EnFG].

Section 21 (1) sentence 1 EnFG provides that the entitlement to payment of the levies for grid withdrawal of electricity consumed in a calendar year for the purpose of intermediate storage in an electricity storage facility is reduced to zero to the extent that electricity generated with the electricity storage facility in that calendar year is fed into a grid. If electricity quantities for which different surcharges are payable are consumed within the storage facility, the obligation to pay these surcharges in proportion to the consumption of the different electricity quantities is waived pursuant to Article 21 (1) sentence 2 EnFG. Pursuant to Section 21 (2) EnFG, the entitlement to payment of the surcharges for electricity storage losses is also reduced to zero. In addition, a reduction of the levy to zero is also made in the case of grid withdrawals of electricity for the generation of storage gas, if this storage gas is used to generate electricity and the electricity generated as a result is fed into the grid (Section 21 (5) EnFG). Finally, Section 21 (3) EnFG provides for a corresponding application of Section 21 (1) EnFG to charging points for electric vehicles, insofar as a reverse feeding from the electric vehicle into the electricity grid takes place.

In the event of a claim to the exemptions regarding the levy of the surcharge, Section 52 EnFG provides for various notification obligations on the part of the grid user vis-à-vis the grid operator entitled to levy the surcharge. The reduced entitlement to payment of the surcharges is revived in full or in part under Section 53 EnFG if the grid user does not fulfil its notification obligations or does not fulfil them in good time.

During the introduction and reorganisation of the energy levies within the meaning of Section 2 No. 17 EnFG, a new surcharge mechanism was also established. According to Section 12 Para. 1 EnFG, the two surcharges are now only levied on the grid withdrawal.

Avoidance of double charging of electricity storage facilities in terms of electricity tax

Double charging of electricity storage facilities is also possible with regard to electricity tax, since both consumption during storage and final consumption after being fed back into the system are fundamentally relevant for tax purposes. Accordingly, the Electricity Tax Act [StromStG] provides for an exemption from electricity tax for the portion of electricity consumed in pumped storage power stations by the pumps used to convey the storage media (Section 9 (1) no. 2 [StromStG] in conjunction with Section 12 (1) no. 2 of the Electricity Tax Regulation [StromStV]).

Battery storage is not explicitly mentioned, Section 5 (4) StromStG does, however, stipulate that stationary battery storage facilities that serve to temporarily store electricity and subsequently feed it into a supply network for electricity are deemed to be parts of this supply network. It is thus apparent that battery storage facilities are also exempt from taxation on the stored portion of the electricity used to load the storage facility. The original requirement to submit an application has now been dropped. It is consequently a legal fiction.

The feed-in tariff referred to in EEG 2023 is reduced by the amount of the electricity tax exemption granted (Section 53 c EEG 2023).

Entitlement to grid connection and access

Facilities for the storage of electrical energy are entitled to be connected to the grid by operators of energy supply grids (Section 17 (1), sentence 1 [EnWG]). Grid operators are obliged to establish and publish minimum technical requirements for the design and operation of electricity storage facilities (Section 19 (1) [EnWG]). Electricity storage facilities are also entitled to access energy supply grids (Section 20 (1) [EnWG]).

Embedding in EnWG objectives

Electricity storage facilities are central to achieving the purpose and objectives of the EnWG. For example, the EnWG aims to ensure that facilities for storing electrical energy are used in the most environmentally friendly, grid-compatible, efficient and flexible way possible, to the extent necessary to guarantee the security and reliability of the electricity supply system (Section 1 (4) no. 3 [EnWG]). The Act also emphasises the principle of competition between efficient and flexible generation plants, facilities for storing electrical energy, and loads.

This is intended to reduce the cost of energy supply, enable transformation to an environmentally friendly, reliable and affordable energy supply system and ensure security of supply (Section 1a (3), sentence 2 [EnWG]).

Electricity storage facilities are subject to rights and obligations under the EnWG

Specific obligations exist for electricity storage facilities with regard to adjusting their active or reactive power feed-in or active power withdrawal at the request of transmission system operators (Section 13 a [EnWG]).

In addition, operators of facilities for the storage of electrical energy with a rated output of 10 MW or more are obliged to notify the transmission system operator and the Federal Network Agency in advance of any temporary or permanent shutdown of their facility. Shutdown is permissible if the transmission system operator does not expect this to jeopardise or disrupt the security or reliability of the electricity supply system (Section 13 b [EnWG]). More detail on these requirements can be found Sections 8–10 of the Grid Reserve Regulation [Netzreserveverordnung – NetzResV]. If the system operator requires the facility's operational availability to be maintained or restored for adjustments to feed-in, the facility operator may demand appropriate remuneration (Section 13 c [EnWG]). In this respect, electricity storage facilities are treated like generation plants.

Electricity storage facility operators must provide electricity supply system operators on request with all information necessary to operate, maintain and develop electricity supply grids in a secure and reliable way.This includes in particular master data, planning data and real-time data (Section 12 (4) [EnWG]).

Market-related measures and emergency measures taken by transmission system operators to eliminate risk or disruption to the electricity supply system also apply to electricity storage facilities (Section 13 [EnWG]).

Under certain circumstances, transmission system operators can also oblige storage operators to maintain the black-start capability of the plants in return for an appropriate fee (Section 12h (9) EnWG). Black start capability refers to the ability to start generating electricity without an external power supply from the electricity grid.

Electricity storage facilities may also participate in invitations to tender for the provision of technical network equipment (Section 12 (3) EnWG).

Further energy law implications for electricity storage facilities

Operators of electricity storage facilities are required to register their entry into service in the Market Master Data Register ((No Suggestions)) if they are connected, directly or indirectly, to a power grid, or are expected to be connected (Section 5 of the Market Master Data Register Regulation [MaStRV]). The registration requirement also applies to temporary or permanent shutdown.

Electricity storage facilities can participate in the operating reserve market within the scope of the pre-qualification requirements specified by transmission system operators. To do so, participants must prove that they are technically capable of providing the operating reserve they are offering in accordance with the pre-qualification requirements. In this context, the Federal Network Agency decided in 2019 in favour of the shorter minimum activation time in the dispute as to whether battery storage facilities must be able to provide a minimum activation time of 30 or 15 minutes.

Unbundling requirements for energy storage facilities

For a long time, unbundling regulations for electricity storage facilities were lacking in German law. With the entry into force of the Electricity Market Directive in 2019, corresponding European requirements for electricity storage by network operators were introduced, which had to be implemented in national law by 31 December 2020.

These European unbundling requirements were incorporated into the EnWG, primarily in Section 7 et seq. EnWG. with the principle that the grid and energy storage facilities must be unbundled. Within this regulatory complex, the term energy storage facility, as defined in Section 3 No. 15d, is used.

According to Section 7 (1) sentence 2 EnWG and Sections 8 (2) sentence 4, 10b (3) sentence 3 EnWG, distribution system operators and transmission system operators are in principle not allowed to own energy storage facilities. However, there are two exceptions motivated by European law:

On the one hand, network operators may own energy storage facilities if these plants qualify as fully integrated network components (Section 11b (1) No. 2 EnWG). According to the definition given in section 3 no. 38b EnWG, these are network components that are integrated into the transmission or distribution network and serve exclusively to maintain secure and reliable network operation and not to provide balancing energy or congestion management. Such a characteristic must be negated in the case of electrolysers, as these are connected to both the electricity and the hydrogen or gas grid and therefore cannot be "fully" integrated grid components.

The second exception, according to which network operators may own energy storage facilities, applies in the case of an unsuccessful market test (Section 11b (1) no. 1 in conjunction with (2) EnWG). This exception must be approved by the regulatory authority. To qualify, the network operator must prove that the energy storage facility is necessary to fulfil its obligation to operate its energy supply network safely and reliably in accordance with Section 11(1) of the EnWG. Furthermore, the storage facility may not be used by the network operator to buy or sell power or work in whole or in part on the electricity markets. Finally, it is necessary that the network operator has carried out the tender procedure regulated in Section 11a EnWG and has been unable to award the contract to a third party, or that this third party is unable to provide the service offered with the energy storage facility or is unable to do so in a timely manner following the award of the contract. The regulatory authority shall determine in regular consultations whether third parties are in a position to own and operate the energy storage facility. If it determines this to be the case, the network operator is obliged to issue a call for tenders and, after winning the tender, to transfer the operation and ownership of the facility to the third party.

In summary, this regulatory system indicates that the legislator would like to transfer electricity storage as far as possible to competitively structured markets and remove it from the network operators.

Electricity storage facilities are subject to the regulations on critical infrastructures

The Ordinance on the Designation of Critical Infrastructures under the BSI Act [KritisV] defines electricity storage facilities as a subcategory of generation plants (Annex 1 Part 1 No. 2.1 KritisV) as critical infrastructures if the following conditions are met: The electricity storage facility

- has an installed net nominal capacity of 104 MW or more;
- has an installed net nominal capacity of 36 MW or more if the facility has been prequalified for the provision of primary control reserve pursuant to Section 2 No. 8 of the Electricity Grid Access Ordinance;
- is under contract as a black start facility in accordance with section 3(2) of the decision of the Federal Network Agency of 20 May 2020, (Ref. BK6-18-249).

If the electricity storage facility is to be considered critical infrastructure according to these regulations, the operator is subject to the obligations according to Sections 8a to 8c of the Federal Office for Information Security Act [BSIG]. According to this, the operator must identify its facility as a critical infrastructure and register with the BSI. The operator is subject to comprehensive reporting obligations with regard to IT malfunctions and attacks.Furthermore, it must take appropriate organisational and technical measures to ensure adequate information security for his storage facility. Finally, every two years it must prove the adequacy and effectiveness of the information security measures it has implemented by means of checks or audits.

The classification of electricity storage facilities as critical infrastructure is also important for investment control under the Foreign Trade and Payments Ordinance [AWV]. According to Section 55a (1) No. 1 AWV, there is a notification obligation if a person from outside the EU/EFTA directly or indirectly acquires a critical infrastructure operator. The acquisition of a direct or indirect shareholding of 10% of the voting rights or (in the case of a smaller shareholding) of control is sufficient for this. The notification requirement is linked to a prohibition on implementation of the transaction (Section 15 (4) of the Foreign Trade and Payments Act [AWG]), which only ceases to apply once the acquisition has been approved by the Federal Ministry of Economics and Technology [BMWK] or the review period has expired.

Dr Rolf Hempel

Partner
Lawyer | Head of the Antitrust, Competition & Trade
CMS Germany
E rolf.hempel@cms-hs.com

Dr Friedrich von Burchard

Partner
Lawyer | CMS Germany
E friedrich.vonburchard@cms-hs.com

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