Hot Topics

Update Energy Law: Electricity Storage

Part 4 of our client briefing takes a closer look at storage technologies in the electricity sector and recent developments. Storage technologies have become extremely important because they allow, (i) flexible reactions to the imbalance in the power grid caused by an increasing percentage of fluctuating renewable energy generation, and (ii) to promote vehicles powered by fuels from renewable sources (such as renewable electricity or hydrogen).³

Storage facilities exist in form of pumped or battery storages as well as hydrogen, compressed air, heat or gas storages. In Germany, pumped storage plants are the main type of storage used. With an electricity storage capacity of around 6,700 MW, their share in total storage capacity is paramount.⁴ However, the industrial and environmental policy focus is now being placed on the production and use of battery cells, both at European and German level.⁵

1. The European regulatory framework

Already in 2015, the EU Commission stated that storage facilities, as a component of the electricity market, can provide more flexibility. Therefor, electricity needs to be stored in times of an electricity surplus and low prices and released in times of low generation and high prices, thus balancing fluctuations in electricity generation.⁶

In accordance with this, 1.34 billion euros were approved for projects in the fields of e.g. energy storage in the power grid or low-carbon mobility under the umbrella of the Horizon 2020 research programme between 2014 and October 2018. In addition, energy storage is identified⁷ as a priority area in the Green Deal.⁸

Despite this financial support, no comprehensive legislation for electricity storage in form of directives or regulations has been released at European level so far. But at least some provisions on storage facilities were adopted on the basis of the Clean Energy for all Europeans package. Furthermore, in accordance with Art. 2 No. 59 of the Internal Market for Electricity Directive⁹ (for details see below), a definition of energy storage is now available for the first time: ‘energy storage’ means, in the

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¹ See our Client Briefing "Electric Mobility" of 8 September 2020.
² See our Client Briefing "Hydrogen" of 1 September 2020.
³ European Court of Auditors, EU support for energy storage, Issues paper, April 2019, p. 3.
⁴ See for this: https://www.dena.de/themen-projekte/energiesysteme/flexibilitaet-und-speicher/pumpspeicher.
⁵ German Federal Government: Climate Protection Programme 2030 of the Federal Government on the implementation of the Climate Protection Plan 2050, 2020, p. 77.
⁸ European Court of Auditors, EU support for energy storage, Issues paper, April 2019, p. 4.
electricity system, deferring the final use of electricity to a moment later than when it was generated, or the conversion of electrical energy into a form of energy which can be stored, the storing of such energy, and the subsequent reconversion of such energy into electrical energy or use as another energy carrier.

Renewable Energies Directive II (RED II) 10

In 2018, the EU Commission launched the Renewable Energies Directive II (RED II). RED II does not distinguish between the different storage technologies (except for a few exceptions for pumped storage) and obliges EU member states to fulfill a set of pre-requirements for the storage of electricity.

According to RED II, the development of decentralized technologies for renewable energies and for electricity storage should be developed on non-discriminatory terms and without limiting infrastructure investments (Recital No. 65). Member States shall take appropriate measures to introduce simplified and less burdensome authorization procedures for producing and storing energy from renewable sources (Art. 15 para. 1 (d)).

A special focus of RED II also lies on so called renewables self-consumers (Art. 21). On the one hand, the member states must ensure that renewables self-consumers are entitled to generate renewable energy (incl. self-consumption) and to store and sell their excess production of renewable electricity, without being subject to e.g. network charges that are not cost-reflective or to discriminatory, or disproportionate procedures. In addition, renewables self-consumers must have the right to install and operate electricity storage systems combined with installations generating renewable electricity for self-consumption without liability for any double charge. Furthermore, the member states ensure that renewable energy communities (Art. 22) 11 are entitled to produce, consume, store and sell renewable energy. The requirements of the Renewable Energies Directive (RED II) must be implemented in national law by 30 June 2021 at the latest.

Internal Market for Electricity Directive (2019) 12

In 2019, the Internal Electricity Market Directive has supplemented the specifications for electricity storage facilities. It does again not distinguish (with a few exceptions for battery storage) between different storage technologies.

According to Art. 3 para. 1, EU Member States shall ensure that their national law does not unduly hamper, amongst others, energy storage. Energy storage must be considered as an alternative to the construction of new generating capacity by Member States (Art. 8 para. 2 lit. l).

Active customers, who are owners of storage facilities, should receive special support. According to Art. 15 para. 5 lit (a), they must, inter alia, (i) be connected to

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11 See definition in Art. 2 para 16 RED II: “renewable energy community’ means a legal entity: (a) which […] is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity; (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities; (c) the primary purpose of which is to provide environmental, economic or social community.
the grid within a reasonable period of time, (ii) not be subject to any double charges and (iii) not be subject to disproportionate licensing requirements or fees.

**Distribution system operators** and **transmission system operators** (Art. 36 / Art. 54) shall not own, develop, manage or operate energy storage facilities. An exemption applies if the storage facilities represent fully integrated grid components and meet further conditions. Should third parties - as a result of a public consultation of the regulatory authorities at least every five years - be able to own, construct, manage and operate an existing energy storage facility in a cost-efficient manner, the grid operators’ activities are phased out within 18 month. However, in some cases, the aforementioned limitation does not apply to fully integrated grid components and to battery storage facilities.

**Transmission system operators** shall also establish and publish transparent and efficient procedures for the non-discriminatory connection of new generation facilities and energy storage facilities to the transmission system; the right to refuse connection is limited (Art. 42 para. 1 and 2). The objectives of the **regulatory authority** include facilitating the connection of new energy storage facilities to the grid (Art. 58 para 1 lit. (e)), and monitoring investments in storage capacities with a view to supply security (Art. 59 Art. 1 lit. (v)). Requirements of the Internal Electricity Market Directive must be transposed into national law by 31 December 2020 at the latest.

**Internal Market for Electricity Regulation (2019)**

The Internal Electricity Market Regulation aims to establish principles for well-functioning and integrated electricity markets that **ensure energy storage** (Art. 1 lit. b). Safe and sustainable generation, **energy storage** and demand response shall participate on equal footing in the market (Art. 3 lit. (j)). In order to enable energy storage, Member States shall consider adopting measures to eliminate any identified regulatory distortions (Article 20 para. 3 lit. (e)). The market provisions must provide appropriate **incentives for investment** so that, inter alia, energy storage can meet the needs of the market (Art. 3 lit. (g)). Furthermore, the method for assessing the adequacy of resources at European level takes into account appropriate future possibilities for energy storage (Art. 23 para. 5 lit. (d)) and ensures that due account is taken of the national characteristics of energy storage (Art. 23 para. 5 lit. (m)). The regulation also ensures that energy storage in the European electricity market is strengthened through specifications for the control of the power grids. **Transmission** and **distribution system operators** shall cooperate in order to have coordinated access to resources such as energy storage (Art. 57 para. 2). On the **balancing markets**, any discrimination of individual market participants – including electricity storage operators – shall be prevented (Art. 6 para. 1 lit. (a)) and all storage providers shall be granted non-discriminatory market access (Art. 6 para. 1 lit. (c)). **Redispatch** must be open to all generation technologies and all forms of energy storage, including those located in other Member States unless technically not feasible (Art. 13 para. 1 sentence 2). Otherwise, the operator of the energy storage facility may be entitled to financial compensation from the grid operator who requested the dispatch (Art. 13 para. 7). Likewise, **capacity mechanisms** must be open to energy storage (Art. 22 para. 1 lit. (h)). The network charges shall not discriminate either positively or negatively against energy storage and shall not create disincentives for self-generation, self-consumption or for participation in

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demand response (Art. 18 para. 1 sentence 4). The regulation is directly applicable as of 1 January 2020.

**Strategic Energy Technology Plan (SET Plan)**

The SET Plan provides a basis for coordinated energy research and innovation to accelerate the adaptation of the European energy system and bring new low-carbon technologies to the market. It includes ten priority actions, four of which are relevant to energy storage: Measure 4 provides for the development and operation of crisis-resistant, reliable and efficient energy systems that can integrate fluctuating renewable energy sources; Measure 6 regulates the continuation of efforts to reduce energy intensity and to improve the competitiveness of EU industry, for example by developing thermal energy storage technologies; Measure 7 establishes provisions on batteries for e-mobility and stationary energy storage and Measure 8 deals with bioenergy and renewable fuels for sustainable transport. The SET-Plan will be implemented by the European Industrial Initiatives and the European Energy Research Alliance (EERA). The European Industrial Initiatives are large-scale technology development projects between science, research and industry. The EERA is an association of 15 leading energy research institutions in the EU and launched the SUPEERA project to implement the SET Plan. Further, a project named "Battery 2030+" was set-up in the field of battery storage technology, aiming to conduct joint research to develop ultra-high performing, sustainable and safe battery technologies.

**EU Battery Alliance**

The EU Battery Alliance was launched in October 2017 by the EU, EU Member States and the industry to create a competitive, innovative and sustainable value chain for battery cell manufacturing in Europe. The Strategic Action Plan for Batteries published in 2018 sets out how to facilitate access to raw materials for batteries, support large-scale battery cell production, accelerate research and innovation in this field, build a highly skilled workforce and ensure coherence with the EU regulatory framework. The annex includes 37 key actions and aims at increasing and better integrate the use of existing regulatory and financial instruments.

**2. Adaptation of the European regulatory framework**

In May 2020, the EU Commission’s Communication "Europe’s moment" announced that a new Strategic Investment Facility will invest in technologies that are key to the energy system transformation, such as technology and storage capacities for renewable energy and batteries. Furthermore, the work of the EU Battery Alliance is to be accelerated. However, no concrete, detailed program has been published to date.

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15 See also: https://nachhaltigwirtschaften.at/de/e2050/ueber-energie-2050/set-plan.php.

16 SUPEERA – Support of the coordination of national research and innovation programmes in areas of activities of the European Energy Research Alliance (EERA).

17 See also: https://battery2030.eu/
3. The national regulatory framework

Storage technology will play a key role in Germany’s energy future. Since there was no European regulatory framework for storage technologies in place until 2018/2019, the market is governed by national regulations only.

a. Implementation of European provisions

Deadlines for the implementation are set on 31 December 2020 for the Internal Market for Electricity Directive and on 30 June 2021 for the Renewable Energies Directive. By then, the German legislator will have to explore to which extent existing regulations already comply with the provisions of the aforementioned Directives. In particular with regard to the unbundling of storage and grid operation (both distribution and transmission systems) in accordance with Art. 36 and 54 of the Internal Market for Electricity Directive, amendments to existing national provisions are likely. However, the first draft of the Renewable Energies Act 2021 (EEG 2021) does not provide for implementation measures in the context of battery storage technologies.

b. Further regulations

In Germany, regulation on electricity storage can be found in various legal acts, e.g. in the Energy Industry Act (Energiewirtschaftsgesetz – EnWG), Renewable Energies Act (Erneuerbare-Energien-Gesetz – EEG 2017), Electricity Tax Act (Stromsteuergesetz – StromStG) and in the Charging Station Ordinance (Ladesäulenverordnung – LSV). As a result, instead of a consistent regulatory framework only a patchwork of individual specifications exists. This leads, amongst others, to divergent definitions, e.g. in Art. 1 para. 4 no. 3 EnWG for "installations for the storage of electrical energy", in Art. 61l para. 1 sentence 1 EEG for "electricity storage", in Art. 2 no. 6 StromStG for "stationary battery storage" or in Art. 2 no. 5 of the LSV for "energy storage" in e-mobility.

With respect to storage facilities, the EnWG specifies that the storage of electrical energy should be done in the most environmentally friendly, grid-compatible, efficient and flexible manner possible to the extent necessary to ensure the security and reliability of the electricity supply system (Article 1 para. 4 No. 3). According to Art. 1a para. 3 sentence 2 EnWG, competition between, inter alia, generation plants, facilities for storing electrical energy and loads is intended to reduce the costs of energy supply and ensure supply security.

In order to achieve these objectives, facilities for the storage of electrical energy are entitled to be connected to the grid pursuant to Art. 17 para. 1 sentence 1 EnWG and to have access to the grid pursuant to Art. 20 para. 1 sentence 1 EnWG. Commissioning (and decommissioning) is to be registered in the Market Master Data Register (Art. 5 para. 1 and 2 of the Market Master Data Register Ordinance (Markstammdatenregisterverordnung – MaStRV)) if a connection to the power grid is intended (or is in place).

A number of EnWG provisions deal with exemptions from network charges for storage losses. Within the framework of the transitional provisions of Art. 118 para.

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18 See e.g. BMWI: Integrated National Energy Climate Plan, 2020, p. 59.
19 These are the losses that occur during the conversion of electricity and subsequent reconversion into electricity. Not covered by the exemption are statutory surcharges such as the KWKG surcharge, the offshore liability surcharge, etc., and remuneration, for example for the operation of metering points (see BGH decision of 20 June 2017 - EnVR 24/16).
6 EnWG, exceptions exist for plants for the storage of electrical energy and pumped storage power plants, provided that they comply with certain requirements for commissioning or increasing the storage volume. Power-to-gas plants are exempt from network charges when converting energy into gas.

If an exemption cannot be claimed, **individual network charges** may be possible:

- Art. 19 para. 22 sentence 1 Power Grid Charges Ordinance (Stromnetzentgelterordnung – StromNEV) applies if its requirements – inter alia use for own consumption – are met. In this case, the individual grid charge must be at least 20% of the published grid charge and the service price (but not the commodity price\(^{20}\)) must be reduced; or

- Art. 19 para. 4 sentence 1 StromNEV applies, if end customers draw electricity from the grid to store it in an electricity storage facility and to feed back the recovered electricity to the grid. In this case, the annual output price is reduced by the storage losses, but capped at a lower limit of 20%.

In addition, electricity storage facilities may be entitled to a **fee for avoided grid usage** in accordance with Art. 18 para. 2 StromNEV. Therefore, they (i) have to be classified as decentralized generation facilities when feeding electricity back to the grid and (ii) must have been put into operation before certain cut-off dates. This regulation is however controversial because of the inconsistent handling by the network operators. Two proceedings are currently pending with the Federal Network Agency\(^{21}\) and the abolition of the regulation is being discussed.

Furthermore, Art. 61l para. 11 sentence 1 EEG uses the balancing procedure (Saldierungsverfahren) to ensure that the entitlement to EEG surcharges is reduced in the balancing period. No EEG surcharge is to be paid for storage losses (Art. 61l para. 11 sentence 3 EEG). A further exemption from double charging is included for the electricity tax in Art. 9 para. 1 no. 2 StromStG in connection with Art. 12 para. 1 no. 2 Electricity Tax Ordinance (Stromsteuerverordnung – StromStV) for pumped storage power plants and via Art. 5 para. 4 StromStG for battery storage. The exemption applies automatically based on a legal fiction, an application is no longer needed.

The (also temporary or partial) decommissioning of an electricity storage facility with a capacity of 10 MW or more is only permitted if the transmission system operator and the Federal Network Agency (Bundesnetzagentur – BNetzA) have been notified at least twelve months in advance (Art. 13 para. 1 sentence 1 EnWG). Instead of the planned decommissioning, the transmission system operator may force the operator to keep the facility ready for operation. In return, a remuneration has to be paid (Art. 13c para. 1 EnWG).

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\(^{20}\) Commodity price = cost of electricity generation + use of power grids + taxes, charges and surcharges; service price = cost of electricity in addition to the energy price.

\(^{21}\) Cases no. BK8-20-10465-M1 and BK8-20-10465-M2.
4. Adaptation of the national regulatory framework

The post-COVID-19 stimulus packages do not include immediate actions or measures with regard to electricity storage.

However, the end to the double burden for pumped-storage power plants (meaning (i) the payment of grid charges for the use of electricity in pumped operation as a so-called final customer and (ii) the payment of grid charges by the electricity consumer) is widely debated.

5. Conclusion and outlook

The Climate Protection Programme 2030\textsuperscript{22} names the medium to long-term expansion of storage facilities as a sectoral measure. However, the task is assigned to the participants in the market. In addition, storage facilities are to be freed from surcharges if this results in a double burden. Examples are the surcharge for disconnectable loads and the surcharge according to Art. 19 StromNEV.

Additionally, there are various support programmes:

- **Battery cell production** is to be promoted by the BMWi allocating up to 1 billion euros for investment in this technology by 2022.\textsuperscript{23}

- The development of technological and economic solutions in the field of **Power-to-X** (in particular the marketability of green hydrogen) is being promoted within the framework of the four "Kopernikus projects for the energy turnaround".\textsuperscript{24}

- The roof concept "**Battery Research Factory**" combines from 2020 onwards all previous funding measures and programmes for battery research under one roof and builds on existing competencies of established locations throughout Germany.\textsuperscript{25}

Electricity storage systems will play a key role in achieving climate protection goals and the associated further expansion of renewable energy systems. The trend towards ESG-compliant investments will also drive the further expansion of storage capacities. Storage projects offer interesting investment opportunities, especially due to innovative marketing concepts. For example, the coupling of systems for the generation of renewable energies and battery storage is currently a popular concept to generate extra income on the primary control market and by receiving charges for avoided network use through peak shaving.

\textsuperscript{22} German Federal Government: Climate Protection Programme 2030 of the Federal Government on the implementation of the Climate Protection Plan 2050, 2020, p. 33 seq.

\textsuperscript{23} German Federal Government: Climate Protection Programme 2030 of the Federal Government on the implementation of the Climate Protection Plan 2050, 2020, p. 102.

\textsuperscript{24} German Federal Government: Climate Protection Programme 2030 of the Federal Government on the implementation of the Climate Protection Plan 2050, 2020, p. 122.

\textsuperscript{25} German Federal Government: Climate Protection Programme 2030 of the Federal Government on the implementation of the Climate Protection Plan 2050, 2020, p. 154.
For further information, please contact:

Dr. Claire Dietz-Polte, LL.M.
claire.dietz-polte
@bakermckenzie.com

Holger Engelkamp, B.Sc., LL.M.
holger.engelkamp
@bakermckenzie.com

Vivien Vacha
Vivien.vacha
@bakermckenzie.com

Baker & McKenzie - Partnerschaft von Rechtsanwälten und Steuerberatern mbB

Berlin
Friedrichstraße 88/Unter den Linden
10117 Berlin
Tel.: +49 30 2 20 02 81 0
Fax: +49 30 2 20 02 81 199

Düsseldorf
Neuer Zollhof 2
40221 Düsseldorf
Tel.: +49 211 3 11 16 0
Fax: +49 211 3 11 16 199

Frankfurt am Main
Bethmannstraße 50-54
60311 Frankfurt am Main
Tel.: +49 69 2 99 08 0
Fax: +49 69 2 99 08 108

München
Theatinerstraße 23
80333 München
Tel.: +49 89 5 52 38 0
Fax: +49 89 5 52 38 199

www.bakermckenzie.com

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