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Battery Storage in Switzerland: Permitting, Grid Connection and Use Cases

Storing electricity, using it when needed or feeding it back into the grid: stationary battery energy storage systems (BESS) offer new opportunities for a more flexible electricity supply. Their growing importance in the Swiss market is also reflected in recent legislative developments. On 2 October 2026, the Swiss Parliament adopted an amendment to the Spatial Planning Act aimed at facilitating the installation of such systems outside building zones.

In practice, BESS have two main applications: first, they can help businesses reduce their electricity costs, for example by storing self-generated electricity for later use or limiting grid electricity consumption during periods of high demand (peak shaving). Second, BESS can be used to market flexibility, for example by taking advantage of price fluctuations in the electricity market or providing ancillary services to stabilize the grid. These applications can also be combined, creating new commercial opportunities for energy suppliers as well as industrial and commercial enterprises.

The legal requirements for planning and operating a BESS depend on the specific characteristics of the project. Key considerations include site selection, permits, grid connection, electricity procurement and the business model of the BESS.



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1. Site Selection

Stationary BESS are often housed in containers and require relatively little space. Nevertheless, due to their permanent installation at a fixed location and their impact on the surrounding area, they generally qualify as buildings or installations within the meaning of Article 22 of the Spatial Planning Act[1] and therefore require a building permit. For smaller installations, the need for a building permit must be assessed on a case-by-case basis.

Whether a BESS can be approved at a particular location depends primarily on the applicable zoning regulations. Within building zones, the project must conform to the purpose of the relevant zone and the land must be adequately serviced.[2] Outside building zones, by contrast, buildings and installations may generally only be constructed in exceptional circumstances. Such an exception may be granted only if, inter alia, the installation's intended purpose requires a location outside building zones and no overriding interests preclude its approval.[3] Spatial planning law already provides for special provisions facilitating the construction of certain energy installations, such as solar installations and thermal networks. However, these provisions do not currently extend to standalone BESS.

This is set to change under the recently adopted amendment. On 2 October 2026, Parliament adopted the new Article 24^{sexies} SPA as part of the legislative package aimed at accelerating the expansion and modernization of electricity grids. Under this provision, energy storage systems will also qualify as location-dependent if certain conditions are met: the proposed location must be necessary for the technically and economically optimized injection or withdrawal of electricity into or from the grid, be situated in the immediate vicinity of an existing infrastructure installation and already have road access. In addition, no overriding interests may preclude its approval. The Federal Council will also be authorized to regulate the planning obligations applicable to energy storage systems according to their size and significance.[4] The amendment remains subject to an optional referendum, with the referendum period ending on 21 January 2027. The date of its entry into force has not yet been determined.

Irrespective of this amendment, larger BESS projects may already be subject to planning requirements under current law, particularly where they have a significant impact on spatial planning and the environment.[5]

By contrast, BESS are not expressly listed in the Annex to the Environmental Impact Assessment Ordinance[6] and, in our view, do not fall within the categories of energy generation installations (No. 21) or energy transmission and storage installations (No. 22) specified therein. However, where a BESS is closely connected, both spatially and functionally, to another installation subject to an environmental impact assessment (EIA), it may need to be included in that installation's EIA.[7]

2. Permit Procedure

The applicable permit procedure for a BESS depends primarily on its technical configuration and the type of grid connection.

BESS projects that include electrical installations subject to plan approval require approval under Article 16 of the Electricity Act.[8] Whether this is necessary does not depend on the power rating or storage capacity of the BESS itself, but rather on the voltage level of the grid connection and the installations required for that connection. As a general rule, plan approval is required for installations operating at voltages exceeding 1,000 V AC or 1,500 V DC.[9] This includes installations at medium- and high-vol-

1 SPA; SR 700.

2 See Art. 22(2) SPA.

3 See Art. 24 SPA.

4 See BBl 2026, p. 2726.

5 See Art. 8(2) SPA for structural plans and Art. 14 et seq. SPA for land-use plans.

6 EIAO; SR 814.011.

7 See FOEN, EIA Handbook, Module 2, para. 2.3.2.

8 ElecA; SR 734.0.

9 See Art. 1(1)(c)(1) of the Ordinance on the Planning Approval Procedure for Electrical Installations (PEIO; SR 734.25) in conjunction with Art. 3(13) of the High-Voltage Ordinance (HCIO; SR 734.2).

tage levels. If these installations form a structural, functional and operational unit with the BESS, the plan approval requirement may also extend to the BESS itself.

The Federal Inspectorate for Heavy Current Installations (ESTI) is generally responsible for granting plan approval. If objections or disagreements with federal authorities cannot be resolved, the Swiss Federal Office of Energy (SFOE) is responsible for deciding on the application. Plan approval covers all permits required under federal law and replaces those otherwise required under cantonal law. However, substantive provisions of cantonal law must still be taken into account, provided they do not disproportionately restrict the construction and operation of the installation.[10]

By contrast, BESS connected to the low-voltage grid level generally do not require plan approval.[11] However, they remain subject to the requirements of the Low-Voltage Installation Ordinance.[12] Their construction typically requires a building permit under cantonal law, which is usually issued by the municipal building authorities. Depending on the specific characteristics of the project, additional environmental or safety-related permits and supporting documentation may be required, particularly under federal law. Unlike under the plan approval procedure, the required permits are not necessarily consolidated into a single decision.

3. Further Requirements: Noise Control, Water Protection and Fire Safety

The applicable permit procedure must also take into account environmental and safety requirements. The specific requirements depend primarily on the location, size and technical configuration of the BESS. The following areas are particularly relevant in practice:

Noise Control

BESS may generate noise during operation, for example from cooling and ventilation systems or transformers. New stationary installations must therefore comply with the requirements for preventive noise emission control and the applicable planning limits.[13] Depending on the project, a noise assessment may also be required.

Water Protection

Where a BESS contains liquids that may pose a risk to water resources, such as transformer oil, specific requirements may apply to their containment and drainage.[14] In particularly vulnerable water protection areas, it is also necessary to assess whether any permit or notification requirements apply.[15]

Fire Safety

BESS frequently use lithium-ion batteries, which require specific fire safety precautions. The applicable requirements are set out in cantonal fire safety regulations. Additional guidance and recommended approaches are available for stationary battery storage systems, particularly regarding their installation, separation distances and other structural and technical fire protection measures.[16]

4. Energy Law Aspects: Grid Connection, Grid Usage Charges, Electricity Procurement and Flexibility Services

In addition to permit requirements, the regulatory framework governing electricity supply also plays a key role in the planning and operation of BESS:

Grid Connection

The requirements for connecting a BESS to the grid depend primarily on its intended use. While peak shaving aims to reduce maximum electricity demand at a given site, marketing flexibility may require substantial capacities for both withdrawing electricity from and injecting it into the grid. The intended operating model must therefore be taken into account when determining the required grid connection capacity.

BESS are generally connected to the public electricity grid through the local distribution system operator (DSO). In addition to the technical connection requirements, various notification and inspection obligations must be observed. These include, in particular, submitting a technical connection application (*Technisches Anschlussgesuch*, TAG), an installation notification (*Installationsanzeige*, IA) before installation work begins, and a safety certificate (*Sicherheitsnachweis*, SiNa) upon completion.[17]

For particularly large BESS, a direct connection to Swissgrid's transmission grid may also be an option. This requires a minimum connection capacity of 150 MVA at the 220 kV level or 300 MVA at the 380 kV level. In addition, the technical connection requirements must be met and sufficient grid capacity must be available. Swissgrid's non-binding capacity map, available since June 2026, provides an initial indication of available capacity at individual substations.[18] The considerable lead times must also be taken into account: Swissgrid currently estimates a period of three to ten years between submission of the application and commissioning.[19]

Connection costs should also be assessed at an early stage. If the connection or operation of a BESS results in disproportionate additional costs for the distribution grid, the BESS operator must bear an appropriate share of these costs.[20] However, the Swiss Federal Electricity Commission (ElCom) has not yet established a practice regarding the application of this provision.[21]

10 See Art. 16(2)–(4) ElecA.

11 LVIO; SR 734.27. However, the plan approval requirement for the construction or modification of low-voltage distribution networks in areas protected under federal or cantonal law remains reserved; see Art. 1(2) PEIO.

12 See ESTI, Directive No. 220, p. 6.

13 See Articles 11 and 25 of the Environmental Protection Act (EPA; SR 814.02); Article 7 and Annex 6 of the Noise Protection Ordinance (NAO; SR 814.41).

14 See Article 22 of the Water Protection Act (WPA; SR 814.20).

15 See Art. 19 WPA; Art. 32 of the Water Protection Ordinance (WPO; SR 814.201).

16 See VKF, Fire Safety Information Sheet 2005-15 'Lithium-ion batteries'.

17 See VSE, Plant Regulations CH 2025, sections 2.1–2.6 and 11.2; VSE, Storage Handbook 2025, section 4.1.

18 See Swissgrid, Capacity Map.

19 See Swissgrid, Grid Connection.

20 See Article 16(3) of the Electricity Supply Ordinance (ESO; SR 734.71).

21 See ElCom, Questions and Answers on the Energy Strategy 2050, sections 12.2 and 12.4.

Grid Usage Charges

Electricity drawn from the grid is generally subject to grid usage charges. To avoid levying these charges twice on electricity that is temporarily stored, the Electricity Supply Act[22] sets out specific rules for BESS, distinguishing between storage systems with and without end consumption. The key distinction is whether the electricity withdrawn from the grid is used for on-site consumption or exclusively stored and subsequently fed back into the grid.[23]

Storage systems without end consumption are exempt from grid usage charges.[24] This applies in particular to BESS that withdraw electricity from the grid, store it temporarily and subsequently feed it back into the grid without using it to meet on-site electricity demand.

By contrast, storage systems with end consumption, such as those used to optimize self-consumption or for peak shaving, are not generally exempt from grid usage charges. However, operators may apply for reimbursement of certain components of these charges for electricity withdrawn from the grid, stored and subsequently fed back into the grid. The requirements include, among other things, appropriate documentation of the electricity volumes concerned and a suitable metering arrangement. In certain cases, a smart metering system is also required.[25]

Switching between operating models with and without end consumption is generally possible. However, under ElCom's current practice, this usually requires the submission of a new technical connection application and an adjustment to the metering arrangement. If the operator can switch between these modes at any time without the grid operator's involvement, the storage system is treated as a system with end consumption.[26]

Electricity Procurement and Choice of Supplier

Where a BESS draws electricity from the public grid, its operator qualifies as an end consumer in respect of that electricity under Article 4(1)(b) ESA. Unlike the classification for the purpose of grid usage charges, this classification depends solely on whether electricity is drawn from the grid, regardless of whether it is used for on-site consumption or subsequently fed back into the grid.

The Swiss electricity market is not yet fully liberalized and the right to freely choose an electricity supplier depends on the annual electricity consumption at the relevant consumption site. Access to the liberalized electricity market is generally available where annual consumption at the relevant consumption site reaches 100 MWh. The decisive factor is therefore whether the BESS constitutes a separate consumption site or forms part of an existing one. In the former case, the BESS's electricity consumption is decisive; in the latter, the total consumption at the relevant site must be taken into account. If the 100 MWh threshold is not reached, electricity is generally supplied by the local default supplier.[27]

By contrast, where a BESS is charged exclusively with electricity from a directly connected generation facility, such as a photovoltaic installation, the question of free supplier choice does not arise in relation to that electricity. Where both sources are used, a distinction must be made between electricity drawn from the public grid and electricity supplied directly by the generation facility.[28]

Use of Flexibility

BESS can adjust their electricity withdrawal and injection to respond to price signals in the electricity market or the needs of the electricity grid. This creates additional revenue opportunities, particularly through the provision of ancillary services to Swissgrid or flexibility services to DSOs. BESS primarily used for peak shaving can also provide such services, provided sufficient storage and power capacity are available.

The requirements for marketing flexibility depend on the recipient of the services. To provide ancillary services to Swissgrid, particularly balancing energy, BESS operators must meet the applicable technical and operational requirements and generally complete a prequalification process.[29]

By contrast, the use of flexibility by DSOs is subject to specific statutory provisions introduced into the Electricity Supply Act on 1 January 2026. Under these provisions, the right to use flexibility generally rests with the BESS operator.[30] If a DSO wishes to use this flexibility, it must enter into a non-discriminatory agreement with the operator that also provides for remuneration.[31] In certain exceptional circumstances, however, a DSO may access flexibility without the operator's consent. This applies in particular in cases of an immediate and significant threat to the safe operation of the grid, as well as where certain statutory limits on electricity injection into the grid apply.[32]

5. Conclusion and Recommendations

The legal requirements applicable to BESS depend largely on where and how the storage system is used. Decisions regarding site selection, grid connection and the operating model are particularly important, as changing them at a later stage may involve considerable effort and expense.

Assessing the legal requirements at an early stage can therefore help identify permitting risks, avoid delays and fully exploit the economic potential of BESS.

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22 Electricity Supply Act (ESA; SR 734.7).

23 See VSE, Storage Handbook 2025, section 5.2.1.

24 See Article 14a(1)(b) ESA.

25 See Article 14a(4)(a) ESA; Articles 18d–18f ESO.

26 See ElCom, Questions and Answers on the Energy Strategy 2050, section 12.5.

27 See Article 4(1)(b) and (d), Article 6(2) and (6), and Article 13 ESA; Article 11 ESO.

28 See VSE, Storage Handbook 2025, para. 5.1 et seq.

29 See Swissgrid, Prequalification.

30 See Article 17c(1) ESA.

31 See Article 17c(2) ESA; Articles 19a and 19b ESO.

32 See Article 17c(4) and (5) ESA; Article 19c ESO.