Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

Risk-Preparedness Plan for the Electricity Sector of the Republic of Austria

Risk-Preparedness Plan in accordance with **Art. 10 Regulation (EU) 2019/941 of the European Parliament and of the Council** of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC

Vienna, 2024

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General information

Name of the competent authority responsible for the preparation of this plan

The competent authority that is responsible for the preparation of this plan is the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, Directorate General VI, Department Crisis Management and Energy Intervention. The plan was prepared in cooperation with E-Control and the control area manager Austrian Power Grid AG (APG).

Member States in the region

In accordance with Art. 2 (16) Regulation (EU) 2019/941 "region" means a group of Member States whose transmission system operators share the same regional coordination centre as referred to in Art. 36 Regulation (EU) 2019/943.

The Republic of Austria is part of the Central Europe System Operation Region, which includes the following Member States[1]:

- French Republic
- Kingdom of the Netherlands
- Grand Duchy of Luxembourg
- Hungary
- Slovak Republic
- Kingdom of Spain
- Republic of Romania
- Republic of Croatia
- Kingdom of Belgium
- Federal Republic of Germany

[1] See Annex I to Decision No. 10/2020 of the European Union Agency for the Cooperation of Energy Regulators (ACER) of 6 April 2020 on the definition of system operation regions.

- Republic of Poland
- Czech Republic
- Portuguese Republic
- Republic of Italy
- Republic of Slovenia

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1 Summary of the electricity crisis scenarios

1.1 Electricity crisis scenarios identified at regional level

In accordance with Art. 6 (1) Regulation (EU) 2019/941 and based on the methodology specified in Art. 5 Regulation (EU) 2019/941 and approved by the Agency for the Cooperation of Energy Regulators (ACER) in decision No. 07/2020, the European Network of Transmission System Operators for Electricity (ENTSO-E) was responsible for identifying the most relevant regional electricity crisis scenarios. The regional electricity crisis scenarios were identified by means of a bottom-up process in which the respective national transmission system operators identified potential crisis scenarios and submitted them to ENTSO-E. ENTSO-E consolidated the proposals of the national transmission system operators and, on this basis, defined the following 31 regional electricity crisis scenarios:

Table 1 Regional electricity crisis scenarios in accordance with Art. 6 (1) Regulation (EU) 2019/941

Number	Regional electricity crisis scenarios
1	Cyber-attack – entities connected to electrical grid
2	Cyber-attack – entities not connected to electrical grid
3	Physical attack – critical assets
4	Physical attack – control centres
5	Threat to key employees
6	Insider attack
7	Solar storm
8	Volcanic eruption
9	Storm
10	Cold spell
11	Precipitation and flooding

Number	Regional electricity crisis scenarios
12	Winter incident
13	Fossil fuel shortage (including natural gas)
14	Nuclear fuel shortage
15	Local technical failure with regional importance
16	Multiple failures caused by extreme weather
17	Loss of ICT systems for real-time operation
18	Simultaneous multiple failures
19	Power system control mechanism complexity
20	Human error
21	Unwanted power flows
22	Serial equipment failure
23	Strike, riots, industrial action
24	Industrial/nuclear accident
25	Unforeseen interaction of energy market rules
26	Unusually big RES forecast errors
27	Pandemic
28	Heatwave
29	Dry period
30	Earthquake
31	Forest fire

1.2 Electricity crisis scenarios identified at national level and preventive and preparatory measures

1.2.1 Principles and process of identification

After identifying the regional electricity crisis scenarios, the competent authority of each Member State, i.e. the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology for the Republic of Austria, was tasked with identifying the most relevant national electricity crisis scenarios in accordance with Art. 7 (1) Regulation (EU) 2019/941 by 7 January 2021. These must be consistent with the regional electricity crisis scenarios identified in accordance with Art. 6 (1) Regulation (EU) 2019/941.

The responsible Department Crisis Management and Energy Intervention in Directorate General VI of the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology assessed the 31 regional electricity crisis scenarios in terms of their national relevance in collaboration with E-Control and the control area manager Austrian Power Grid AG. The scenarios identified as relevant for Austria in this are those that qualified as the most relevant national electricity crisis scenarios according to the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology in accordance with Art. 7 (1) Regulation (EU) 2019/941.

The identification of national scenarios was carried out using a combination of practical experience, knowledge of past disruptions of the same or similar nature, and an assessment based on the national conditions in Austria. A more detailed description of the criticality of each national electricity crisis scenario is provided in Table 2 under the column 'Potential Impacts, Comments.' For characterizing the individual national scenarios, the immediate impact on the operation of the power grid plays the most significant role, since potential disruptions to the transmission system pose the greatest challenge to security of electricity supply and can also have cross-sectoral effects.

In some of the scenarios listed in Table 2, a spectrum of potential impacts is depicted. This arises from the diverse ways in which a single scenario can potentially unfold. Even instances of multiple damages, in a situation of low demand and corresponding spatial confinement, may result in very locally limited effects. However, during periods of high demand and particularly unfavorable circumstances (such as the simultaneous impact of a widespread and severe weather event on multiple transregional transmission lines), this could escalate to widespread outages.

In principle, the operational situation of the network at the time of the triggering event is crucial for almost all of the national scenarios depicted in Table 2. Thus, the same event can lead to different escalation sequences and, consequently, distinct impacts on other sectors. Similarly, the time horizons can vary significantly.

With the exception of impending (predictable) weather or scarcity situations, most risks have very short lead times.

The components in the high-voltage power grid are highly resilient to environmental influences. Only extreme events may pose a threat due to the largely present overhead construction.

The impacts of climate change on renewable electricity generation are addressed in the security of electricity supply strategy currently under development (see Chapter 1.3.5).

The scenarios presented in Table 2 can be distinguished as follows:

- Short lead time with exclusively network-related consequences and short-term impacts (e.g. Scenario No. 18);
- Short lead time with potentially severe damage and longer-term effects (e.g. Scenario No. 3);
- Longer lead time with mostly prolonged consequences (e.g. Scenario No. 13).

Any possible disturbances in close proximity to cross-border lines generally have the greatest potential to impact other member states.

1.2.2 Detailed depiction

The preventive and preparatory measures set forth in Table 2 are being implemented by the transmission system operators in coordination with E-Control and relevant partners in accordance with the valid laws. If any laws are referenced in Table 2, their enforcement falls under the responsibility of the competent national authorities respectively.

Table 2 National electricity crisis scenarios in accordance with Art. 7 (1) Regulation (EU) 2019/941

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
Outages/ asset failure	17	Loss of ICT (information and communications technology) tools or telecommunication infrastructure required for electric power system operation in or near real-time	10	Loss of control capability of the systems, no data acquisition, therefore no early detection of possible overloads, in case of outages no remotely controlled reconnection etc. – therefore high risk to the security of supply.	• Concepts for local (on-site) control; • Alternate means of communication (company radio transmission, satellite phones); • Separate (exclusive) data transmission lines – separate national and international communication networks ("Energy Supply Company intranet", "electronic highway", "ATOM"[3]); • Separate ICT infrastructure from the public telecommunications network for operations with corresponding emergency power supplies for major network operators and power generators.
	18	Simultaneous failure of high and extra-high voltage system elements	10	In case (N-1) safety criterion is heavily exceeded – possibility to result in major disruption up to a widespread power outage.	• Grid restoration concepts coordinated with all relevant partners; emergency concepts with relevant distribution system operators; • Spare parts concepts for lines, towers and other network assets; • Compliance with requirements of the Network Code on Electricity Emergency and Restoration (Commission Regulation [EU] 2017/2196) such as establishment of a system defence plan, use of adequate servicing and maintenance plans.

[2] The assessment of the national electricity crisis scenarios is based on the methodology for identifying regional electricity crisis scenarios developed by ENTSO-E and approved by ACER in decision No. 07/2020 of 6 March 2020.

[3] All TSO operational and market-operations network for non-real-time exchange.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
	22	Serial equipment failure due to a systematic defect of system elements	1.2	Due to extensive inspection and maintenance concepts and the numerous measures taken, this scenario is now very unlikely to occur in Austria.	• Regular inspection and maintenance, internal CIP (continuous improvement process) for evaluation of every single incident (grid analysis team) in place; • Exchange on expert level between system operators within the working groups of Oesterreichs Energie (Association of Austrian Electricity Companies) for relevant system assets; • Serial equipment failure can be identified and communicated in a timely manner due to international cooperation (between the respective CERTs – computer emergency response teams).
Lack of resources	13	Fossil fuel shortage (especially natural gas)	10	Large and usually well filled gas storage facilities in Austria (highest risk at the end of the heating season depending on the filling level of the storage facilities); short-term shortages can be bridged by reducing the "line pack" (gas pressure) in gas pipes; Because of the large gas storage facilities and under the condition of sufficient filling levels actual gas scarcity can only happen if shortage lasts a longer period of time. Due to the current geopolitical situation, it	• The Austrian federal government has taken a series of measures from 2022 to facilitate the sufficient filling of the Austrian gas storage facilities and a reduction of the dependency on gas from the Russian Federation in response to the tense conditions on the gas markets: • Creation of a strategic gas reserve based on section 18a ff Natural Gas Act 2011 (Gaswirtschaftsgesetz 2011 - GWG 2011)[4] amounting to 20 TWh; • Promotion of the diversification of the supply of natural gas in accordance with the Gas Diversification Act 2022 (GDG 2022)[5]; Funds of EUR 100 million per year will be made available between 2022 and 2025 on the basis of the GDG 2022 for the diversification of the supply of natural gas

[4] Federal Act Providing New Rules for the Gas Sector (Gas Act 2011 - GWG 2011), Federal Law Gazette I No. 107/2011, as amended.

[5] Federal Law on the Promotion of the Exit from Russian Natural Gas and the Diversification of Natural Gas Purchases from Other Sources (Gas Diversification Act 2022 - GDG 2022), Federal Law Gazette I No. 95/2022, as amended.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
				cannot be ruled out that gas suppliers in the Russian Federation will continue to only deliver gas quantities lower than stipulated in the existing supply contracts; even a complete supply stop cannot be ruled out.	and for the conversion of plants to alternative operation using other energy sources; • As a relevant development in connection with imports via alternative routes and the diversification of natural gas procurement it is exemplary referred to the fact that one of Austria's largest gas companies was awarded the contract for capacities of around 40 TWh p.a. for the period from October 2023 to September 2026 and around 20 TWh p.a. for the period from October 2026 to September 2028 at the 2023 annual auction. The border transfer points for the natural gas are Oberkappel via Germany and Arnoldstein via Italy. These capacities, in combination with alternative non-Russian gas sources from this gas company, secure a large part of the Austrian gas demand; • Possibility of self-storage for industry and the protection of the stored gas quantities in the case of energy intervention measures under the prerequisites in section 26a EnLG 2012; • Provisions in accordance with section 87 (6) GWG 2011: Implementation of a transparent, non-discriminatory, market-based and public tendering procedure by the balance group coordinator for the provision of gas volumes to ensure security of supply upon instruction of the Federal Minister for Climate Action. The total quantity of gas to be maintained must be specified in the request by the Federal Minister for Climate Action, taking into account the current and forecast storage levels and any imminent or existing impairments or disruptions to security of supply; • Mandatory fuel stocks for power plants in accordance with section 28 (1) of the Oil Stockholding Act 2012

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
					(Erdölbevorratungsgesetz 2012 - EBG 2012)[6]: To secure the electricity supply, operators of fossil-fuel-fired power plants shall maintain fuel stocks in a quantity that allows them, at any time, to continue to supply electrical energy at the maximum capacity for a period of 30 days or to cover their own needs; For operators of generation facilities with a maximum capacity of 50 MW or more that are connected to the public grid and are predominantly operated with natural gas, the new provision of section 70a of the Electricity Sector Act 2010 (ElWOG 2010) will apply from 1 October 2024; Through maintainance of gas these operators must ensure that their generation facilities can be supplied with natural gas for a total period of 45 days from 1 October to 1 March, provided that sufficient storage capacity is available for this purpose. This obligation is reduced to a total period of 30 days if it can be proven to the regulatory authority by means of suitable documentation that the supply quantities on which the fulfillment of this obligation is based originate entirely in countries that are not affected by a valid measure within the meaning of Regulation (EU) No. 833/2014[7], OJ L 229, 31.7.2014, p. 1, as amended by L 59I, 25.2.2023, p. 6; • On October 19, 2023, the National Council passed an amendment to the GWG 2011, which extends the supply standard. The Federal Council passed the resolution on November 8, 2023. Under the new provisions of section 121 (5a) GWG 2011, gas suppliers are obliged from October 1,

[6] Federal Act on the Holding of Minimum Stocks of Crude Oil and Oil Products (Oil Stockholding Act 2012 - EBG 2012), Federal Law Gazette I No. 78/2012, as amended.
[7] Council Regulation (EU) No 833/2014 of 31 July 2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
					2024 to guarantee the supply of protected customers for a total period of 45 days from October 1 to March 1, assuming average winter conditions. This obligation is reduced to a period of 30 days in total if it can be proven to the regulatory authority by means of suitable documentation that the gas volumes held in reserve to fulfill this obligation originate entirely in countries that are not affected by a valid measure within the meaning of Regulation (EU) No. 833/2014, OJ L 229, 31.7.2014, p. 1, as amended by L 59I, 25.2.2023, p. 6; • The Federal Government actively supports the participation of Austrian companies in the joint European purchasing platform (AggregateEU), through which non-Russian gas can be purchased and which contributes to reducing Europe's dependence on Russian natural gas. Austrian companies use this platform to diversify their portfolios; • If intervention measures to safeguard natural gas supplies in accordance with section 4 EnLG 2012 become necessary, large gas customers in the energy sector should be excepted from consumption-restriction measures due to their system relevance in accordance with Submission to the Council of Ministers 26a/20; • The possibility of prioritisation of certain critical gas-fired power plants over the gas supply to certain categories of protected customers in accordance with Art. 11 (7) Regulation (EU) 2017/1938 upon the request of the relevant electricity transmission system operator or gas transmission system operator (in the event that the loss of gas supply to these critical gas-fired power plants could either result in severe damage in the functioning of the electricity system or would hamper the production and/or transportation of gas).

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
Human related threats/ malicious acts	1	Cyber-attack on critical ICT (information and communications technology) systems that are physically connected to the electricity supply system (transmission and distribution networks, power plants, major industrial facilities)	10	Various critical infrastructures within Austria and Europe are highly interconnected, also between different sectors – in case of an attack, the entire system can be affected.	• Regular training of staff on IT security; • Redundant connections between different locations; • Separate ICT infrastructure from the public telecommunications network for operations with corresponding emergency power supplies for major network operators and power generators; • Strict firewall and e-mail quarantine concepts; • Two-factor authentication, especially in case of remote access to critical ICT components; • The EU Network Code on Cybersecurity[8] is currently being finalised at EU level; • Security measures from the NIS Ordinance (Annex 1)[9], establishment of the Austrian Energy CERT (computer emergency response team); • Periodic and ad hoc training and further education of staff, regular simulator training of disruption and emergency scenarios; • Periodic training and proficiency and knowledge checks, organisational implementation through the division of competencies (redundancies in knowledge and the organisation).
	24	Severe industrial or nuclear accident with	10	If a critical number of key employees in network operations	• Lockdown of control rooms in emergencies; • Emergency supplies are already in place;

[8] Network code on sector-specific rules for cybersecurity aspects of cross-border electricity flows.

[9] Ordinance by the Federal Minister for the EU, Arts, Culture and Media laying down security measures and detailed provisions for the sectors and for security incidents under the Network and Information Systems Security Act (Network and Information Systems Security Ordinance – NIS Ordinance - NISV), Federal Law Gazette II No. 215/2019, as amended.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
		long-lasting radioactive or toxic pollution that causes unavailability of staff for a longer period (months or years)		(operators, maintenance/repair personnel, operational planning experts, etc.) are not available, the ability to control is threatened, urgent repairs can no longer be carried out, and essential operational processes are severely impaired.	• Protective clothing/equipment is available; • Internal regulations for access to buildings (limitation of spreading), remote work has been made possible (wherever applicable); • Redundancy concepts with system and a certain degree of location redundancy of central control units (control centres).
	3	Physical attack against critical assets and critical infrastructure	6	Usually limited effect, but can lead to chain reactions in extreme cases or if particularly sensitive or crucial elements in the network are affected (consequential failures of critical components) up to widespread power outage.	• Modern property protection concept: In order to adapt property protection to the constantly growing challenges and changing framework conditions, the physical property protection 3.0 (POS 3.0) project was initiated in 2017 by the control area manager APG with the support of the Federal Ministry of the Interior (BMI) and the Federal Ministry of Defense (BMLV). In 2018, following a comprehensive risk analysis for all types of APG locations, a property protection concept adapted to the threat scenarios to be considered was drawn up. The POS 3.0 project focuses primarily on further developments in the area of plant and access security. New fences, hardening of the building's outer shell or state-of-the-art alarm systems and video surveillance are just some of the measures. A core objective is the secure detection of unauthorized external persons entering an APG substation. In addition, supplementary organizational measures are implemented to further extend property protection. These include topics such as visitor access and the handling of mail in the main administration areas; • Ongoing coordination with partners on economically sensible and effective measures through international and national committees; • (N-1) structuring of the transmission system;

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
					"(N-1) criterion" means the rule according to which the elements remaining in operation within a TSO's control area after occurrence of a contingency are capable of accommodating the new operational situation without violating operational security limits.[10]
	4	Physical attack against control centres	4	Effects can initially be limited with a backup control centre; however, personnel can also be threatened and, depending on the attack scenario, the crisis scenario can qualify as critical.	• Backup control centre available; • Modern physical security concept, project physical property protection 3.0 for further optimisation of physical security currently in implementation; • Ongoing coordination with partners on economically sensible and effective measures through international and national committees; • Correspondingly trained personnel; • Personnel and material assistance through the Oesterreichs Energie troubleshooting platform.
	5	Threatening/blackmailing/abduction of key employees	4	The impact could be severe, but the likelihood is rather low.	• Security/alert mechanisms in place.
	6	Insider attack	4	May qualify as critical depending on the position, but a very good working atmosphere and a high level of caring awareness between managers and employees and between colleagues leads to the early	• Criminal background check of certain key personnel; • Training of staff on the subject, national and international exchange of experience on the subject; • Observation of psychosocial factors – dual control principle for critical processes.

[10] See Art. 3 (2) no. 14 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
				detection of the "development of danger from within".	
	2	Cyber-attack on critical ICT (information and communications technology) infrastructure of market participants (not physically connected to the transmission system)	1.2	As long as there is no direct (physical) connection to the network, there is no immediate threat to security of supply. A systematic attack on the ICT systems of market participants can, however, indirectly lead to a critical situation in the power supply (under certain circumstances, the market participants may not be able to or may no longer be able to assess their positions or balance the positions via NEMOS [nominated electricity market operators] and may not be able to process schedule references).	• Periodic training as well as proficiency and knowledge checks; • Organisational implementation through the division of competencies (redundancies in knowledge and the organisation); • Separate ICT infrastructure from the public telecommunications network for operations with corresponding emergency power supplies for major network operators and power generators; • Implementation of security measures for market participants (e.g. protection regarding USB [universal serial bus] interfaces, data exchange, access with maintenance computers).
Natural hazards/ force majeure	9	Storm	10	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines; • Analysis of endangered areas; • Correspondingly trained personnel; • Personnel and material assistance through the Oesterreichs Energie troubleshooting platform.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
	11	Precipitation and flooding	10	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines; • Analysis of endangered areas; • Correspondingly trained personnel; • Personnel and material assistance through the Oesterreichs Energie troubleshooting platform.
	12	Winter incident	10	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines; • Analysis of endangered areas; • Avalanche protection structures; • Correspondingly trained personnel; • Personnel and material assistance through the Oesterreichs Energie troubleshooting platform.
	16	Multiple failures caused by extreme weather	10	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines; • Correspondingly trained personnel; • Personnel and material assistance through the Oesterreichs Energie troubleshooting platform.
	27	Pandemic	10	If a critical number of key employees in network operations (operators, maintenance/repair personnel, operational planning experts, etc.) are not available, the ability to control is threatened, urgent repairs can no longer be carried out. A potential loss of key operating personnel (power plant operators	• Lockdown of control rooms in emergencies; • Emergency supplies are already in place; • Protective clothing/equipment is available; • Internal regulations for access to buildings (limitation of spreading), remote work has been made possible (wherever applicable).

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
				and dispatchers) could also have a critical impact on power plants (impairment of controllability and troubleshooting).	
	28	Heatwave	4	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage. Hydropower plants and thermal power plants (cooling water requirements) can experience severe feed restrictions during extreme cold, heat, or drought; overhauls and extreme heat can result in higher system loads in the summer, which could lead to higher powerline temperatures.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines.
	10	Cold spell	2	Force majeure – can lead to malfunctions ranging from negligible up to severe damage with cascading failures and widespread power outage; hydropower plants and thermal power plants (cooling water requirements) can experience severe feed restrictions during extreme cold, heat, or drought.	• Maintenance of spare parts stocks, especially for the rapid reconstruction of power poles and lines; operational measures for de-icing are possible in some cases; • Stockpiling and concept for the use of devices for heating temperature-sensitive components (to maintain the functionality of electronic components, control systems, etc.); • Energy intervention measures if the prerequisites in accordance with section 4 EnLG 2012 are met; related exercises with relevant partners.
	29	Dry period	2	Risk of supply shortages; currently only a low risk due to	• Contingency plans in place;

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
				(pumped) storage power plants and good import capacities from other countries to date. Hydropower plants and thermal power plants (cooling water requirements) can experience severe feed restrictions during extreme cold, heat, or drought.	• Energy intervention measures if the prerequisites in accordance with section 4 EnLG 2012 are met; extensive and regular energy intervention exercises; • Sufficient stockpiling of critical electronic components and strong physical security at the storage location.
Technical complexity	19	Complexity of power system control mechanisms	10	Inevitable, immanent risk, that cannot be completely ruled out despite extensive measures.	• Multi-site concept for the remote network control system with several fallback levels, backup control room available; even in the event of a total failure, the substations can be controlled locally if necessary; automatic network protection devices.
	25	Unforeseen incident/effect on the electricity market	4	Low risk due to the high sense of responsibility of the market partners in Austria.	• Appropriately dimensioned control reserves and concepts for penalties in the event of deviations, strict regulations ("the electricity market code")[11] in Austria.

[11] The market rules are the body of legal and contractual rules and regulations that participants must observe to ensure that the electricity market operates in an orderly fashion. E-Control is required to draw up the market rules in consultation with the market players and to publish them in an appropriate format. The market rules are divided into general terms and conditions (GTC), the electricity market code (EMC), and technical and organisational rules for system operators and users (TOR), see Market rules - www.e-control.at.

Cluster	No	Short description of risk	Severity rating[2]	Potential impact, comments	Preventive and preparatory measures
	26	Unusually large forecast errors for renewables	4	Can occur in very rare cases (e.g. in the event of large-scale wind turbine rotor blade icing).	• Continuously optimised forecasts of wind power infeed and concepts for the early detection of rotor blade icing, concepts for limiting the forecast error when icing occurs.

Those regional electricity crisis scenarios that were classified as comparatively less relevant in relation to the Republic of Austria and were therefore not identified as national scenarios within the meaning of Art. 7 Regulation (EU) 2019/941 and not included in Table 2 are listed in Table 3 below:

Table 3 Regional electricity crisis scenarios which do not belong to the group of most relevant national scenarios according to Art. 7 (1) Regulation (EU) 2019/941

Subject area	Nr	Short description of risk	Potential impact, comments
Outages/ Asset failure	15	Local technical failure with regional importance	Due to the (n-1) safety criterion, the realization of the scenario only appears relevant in extremely exceptional cases. In addition, the effects would generally be localized and would not usually lead to a major disruption.
	14	Fuel shortage nuclear energy (nuclear fuels)	There are no nuclear power plants in Austria.
	20	Unintentional (unforeseeable) violation of the (n-1) safety criterion due to human error	Despite intensive training, further training, courses on special cases, simulator training, etc., human error cannot be completely ruled out in any area. Based on experience to date, the potential risk is classified as low.

Subject area	Nr	Short description of risk	Potential impact, comments
	23	Strikes, unrest, industrial action in the energy supply sector	Internally, employees are highly aware of their responsibility for the system. External influence is generally limited, as there is usually a high level of redundancy in the event of problems in individual segments.
Natural hazards/ force majeure	31	Forest fire	Low risk due to the usually localized effects.
	30	Earthquake	Low probability of earthquakes of high intensity in Austria.
	7	Solar Storm	Impact on Austria tends to be low. An early warning process has already been established. Solar storms can be predicted by space agencies several days in advance. The Austrian control area manager and transmission system operator Austrian Power Grid AG is integrated into the early warning system and would be informed of any relevant prominences or coronal mass ejections by the European Space Agency (ESA).
	8	Volcanic eruption	Can be ruled out in Austria due to the lack of active volcanoes.
Technical complexity	21	Unwanted power flows due to differences between physical and market electricity flows according to schedules	Occur regularly in the Austrian transmission grid and can be largely eliminated by operational measures, therefore low risk.

1.2.3 National consultation

In accordance with Art. 7 (2) Regulation (EU) 2019/941, in identifying the national electricity crisis scenarios, the competent authority was required to consult the transmission system operators, the distribution system operators that the competent authority considers to be relevant, the relevant producers or their trade bodies, and the regulatory authority. Accordingly, the following institutions were sent a list of the most relevant national electricity crisis scenarios by letter dated 10 November 2020 with an invitation to submit comments (deadline 25 November 2020, extended to 1 December 2020):

- **The transmission system operators:** Austrian Power Grid AG; Vorarlberger Übertragungsnetz GmbH
- **The distribution system operators that the competent authority considers to be relevant** (those distribution system operators were considered relevant who have a connection to the transmission system): Wiener Netze GmbH; Netz Niederösterreich GmbH; Netz Burgenland GmbH; Netz Oberösterreich GmbH; Linz Netz GmbH; Energienetze Steiermark GmbH; Kärnten Netz GmbH; Salzburg Netz GmbH; TINETZ-Tiroler Netze GmbH; Vorarlberger Energienetze GmbH
- **The relevant producers or their trade bodies:** the following trade bodies were consulted: Oesterreichs Energie - Association of Austrian Electricity Companies; Wirtschaftskammer Österreich (Austrian Economic Chambers); Industriellenvereinigung (Federation of Austrian Industries)
- **Regulatory authority:** E-Control

The following institutions issued a statement on the submitted list of national crisis scenarios:

- Letter by Wiener Netze GmbH dated 19 November 2020: “Wiener Netze GmbH fundamentally agrees with the list and assessment of the national risks as well as its description of impacts and countermeasures, but would like to point out that a central statement through Oesterreichs Energie is being worked on.”
- Letter by Oesterreichs Energie - Association of Austrian Electricity Companies dated 27 November 2020, No. TA/CF – 18/2020, submitted once again on 20 April 2021 in the course of the consultation of the Draft Risk-Preparedness Plan in accordance with Art. 10 (1) Regulation (EU) 2019/941:

- Oesterreichs Energie suggests additions to the measures for risk prevention and management described under “Preventive and preparatory measures“. These suggestions were largely included in the list given under Table 2 by the Department Crisis Management und Energy Intervention.
- The proposal of Oesterreichs Energie to also include the scenarios no. 2, 19, 22, 25, and 26 as national electricity crisis scenarios in the Risk-Preparedness Plan was accepted.
- Oesterreichs Energie also proposed the higher ranking of the crisis scenarios no. 2, 5, 10, 22, 28, and 29. In the context of the national evaluation of the regional electricity crisis scenarios, Austria rated the regional risks the highest on average compared to other EU Member States. Considering the resilience of the Austrian energy system compared to other EU Member States and in the interests of coherence with the national assessment of the regional electricity crisis scenarios, a further increase of the rating would not be proportionate.

1.3 Other preventive and preparatory measures

1.3.1 Energy saving campaign

The Mission11 energy saving campaign is a federal government initiative aimed at saving 11% energy in all households throughout Austria. This saving can be achieved - without much effort or investment - through small changes in behavior. The campaign’s website, *www.mission11.at*, provides a wealth of information and tips on how each and every individual can actively save energy and reduce their own costs. These energy-saving measures not only lead to greater independence from coal, oil and natural gas, but also counteract the climate crisis.

1.3.2 Energy Efficiency Act

According to Recital 1 of Directive (EU) 2018/2002 [12], improving energy efficiency throughout the full energy chain, including energy generation, transmission, distribution

[12] Directive (EU) 2018/2002 of the European Parliament and of the Council of December 11, 2018 amending Directive 2012/27/EU on energy efficiency.

and end-use, is intended, among other things, to improve energy security by reducing dependence on energy imports from outside the Union.

In June 2023, an amendment to the Federal Act on the Improvement of Energy Efficiency in Households, Businesses and the Federal Government as well as Energy Consumption Registration and Monitoring (Bundes-Energieeffizienzgesetz – EEffG), Federal Law Gazette I No. 72/2014, as amended, was passed. The EEffG is intended to help flatten the increase in electricity demand expected over the next few years as far as possible. To this end, the act sets out goals such as improving energy efficiency, reducing energy consumption and effectively implementing Directive (EU) 2018/2002. In 2030, a nationwide final energy consumption of no more than 920 PJ, and in the period from 2021 to 2030, a reduction in nationwide final energy consumption of at least 650 PJ are to be achieved. Of this, at least 250 PJ of consumption reductions are to be achieved through federal subsidies, among other things, and at least 400 PJ through other alternative strategic measures, taking into account savings by the federal government and the Bundesimmobiliengesellschaft m.b.H. For the first time, guideline values for increasing energy efficiency were also prescribed for the provinces. In cooperation with the federal government, the provinces are required to publish documentation of their strategy for implementing the "energy efficiency first" principle in connection with the integrated National Energy and Climate Plan for Austria (NECP) every two years, starting no later than 2024. In addition, energy suppliers will be subject to information obligations towards consumers under certain circumstances. For example, those suppliers of a total of more than 25 GWh per year must offer free and telephone consultations on essential energy efficiency information such as energy consumption, savings, costs and price developments. Energy suppliers of a total of more than 35 GWh per year must also set up a free advice centre. In addition, a coordination office for combating energy poverty will be set up. Moreover, companies must have energy audits carried out at regular intervals by energy auditors qualified to do so. In parallel, other support programs for increasing energy savings are to continue as before.

1.3.3 Expansion of Renewable Energy

The long-term maintenance of the high level of security of supply in Austria should be achieved while at the same time reducing dependence on fossil fuels.
This is to be accomplished, among other things, through legally determined expansion targets for renewable electricity generation.

The goal of the EAG is to cover 100% (national / on balance) of Austria's total electricity consumption from renewable energy sources from 2030 onwards. To achieve this, the current version of the EAG therefore provides for an increase in electricity generation from renewable sources of 27 TWh by 2030, based on electricity generation in 2020. In addition to targets such as increased domestic production of renewable gas and an increase in the use of hydrogen, a key objective of the EAG is to expand electricity generation from photovoltaics by 11 TWh per year, from wind by 10 TWh, from hydropower by 5 TWh and from biomass by 1 TWh. This should lead Austria towards a full balance sheet supply from renewable domestic electricity generation by 2030 and make an important contribution to achieving climate neutrality by 2040.

However, it should be noted here that the target values for the expansion of electricity generation from renewable energy sources, which were determined in the Transition scenario for achieving full domestic supply on balance, once again significantly exceed those of the EAG, which is partly due to differences in the assumed degrees of electrification. By 2030, this scenario shows an expansion path that is 12 TWh higher than that of the EAG. Instead of an increase in PV electricity generation of 11 TWh, it envisages an increase of 19 TWh. In the area of wind power, the targets of 14 TWh are 4 TWh higher than those of the EAG.[13] In addition to the existing capacities, there is sufficient potential available in the future that is required for the respective forms of generation.

1.3.4 IT security of grid operation and generation

The purpose of Directive (EU) 2016/1148 (NIS Directive)[14] is to achieve a high common level of security of network and information systems in the Union. The directive entered into force on August 8, 2016. Directive (EU) 2016/1148 essentially lays down the following measures:

- Strengthening cooperation between Member States in strategic and operational terms;
- Obligation of the Member States to develop a national strategy on the security of network and information systems, which should contain strategic objectives, priorities

[13] Federal Environment Agency (ed.): Energy and greenhouse gas - Transition 2040 scenario, Vienna 2023, p. 63.

[14] Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union.

and measures to achieve a high level of security of network and information systems in the individual Member States;

- Designation of national authorities and computer emergency response teams;
- Obligation of private and public providers important for the common good (operators of essential services and digital service providers) to take appropriate security measures and report significant incidents.

In Austria, Directive (EU) 2016/1148 is implemented by the Network and Information Systems Security Act (NISG)[15]. The Federal Chancellor performs the strategic tasks pursuant to section 4 (1) NISG and the Federal Minister of the Interior performs the central operational tasks pursuant to section 5 (1) NISG. For the security of network and information systems, a Single Point of Contact (SPOC) has been established at the Federal Minister of the Interior, which serves as an operational liaison office to ensure cross-border cooperation with the competent authorities in the other Member States of the European Union as well as the Cooperation Group and the CSIRTs network[16] (section 6. (1) NISG).

The Network and Information System Security Ordinance (NISV) issued on the basis of the NISG contains, among other things, more detailed provisions on the sectors covered by the NISG.

Due to their importance for the maintenance of the public supply of energy within the meaning of section 16 (2) NISG, the following essential services are covered in the energy sector, electricity sub-sector, in accordance with section 4 NISV:

- the operation of a generation facility with a maximum capacity of more than 340 MW,
- the operation of systems for the control of generation facilities with an aggregate maximum capacity of more than 340 MW,
- the operation of a distribution system through which electricity is transported to more than 88,000 metering points or which is located in a provincial capital, and
- the operation of a transmission system by a transmission system operator.

[15] Federal Act to Ensure a High Level of Security of Network and Information Systems (Network and Information Systems Security Act - NISG), Federal Law Gazette I No. 111/2018, as amended.
[16] The "CSIRTs Network" is a body established under Article 12 of the NIS Directive, composed of representatives of the Computer Emergency Response Teams of the Member States of the European Union and the European Computer Emergency Response Team, to contribute to building trust between the Member States of the European Union and to promote rapid and effective operational cooperation.

Furthermore, the national NISV contains a description of suitable security measures that take into account the state of the art. These are to be taken by operators of essential services to ensure network and information system security. These security precautions essentially include measures in the areas of governance and risk management, dealings with service providers, suppliers and third parties, security architecture, system administration, identity and access management, system maintenance and operation, physical security, incident detection, incident handling, business continuity and crisis management.[17]

Directive (EU) 2022/2555 (NIS-2 Directive)[18] is intended to ensure effective action against current and new challenges in the area of cybersecurity. The adoption of the NIS 2 Directive was deemed necessary by Union legislation, as the NIS Directive gave Member States a very wide margin of discretion in the implementation of obligations relating to security and the reporting of security incidents.[19] These obligations have therefore been implemented in very different ways at national level. The NIS 2 Directive aims to eliminate these wide disparities between Member States, in particular by establishing minimum rules for a functioning and coordinated legal framework, providing mechanisms for effective cooperation between competent authorities in each Member State, updating the list of sectors and activities subject to cybersecurity obligations and introducing effective remedies and enforcement measures that are crucial for the effective enforcement of these obligations.[20]

The NIS 2 Directive entered into force on January 16, 2023. Member States have until October 17, 2024 to adopt the necessary provisions to comply with the directive. The NIS 2 Directive will apply from October 18, 2024 and will replace the current NIS Directive from this date.

1.3.5 Preparation of an electricity security of supply strategy

The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology is working on an electricity security of supply strategy. The electricity security

[17] Vgl. § 11 (1) NISV.
[18] Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 concerning measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972 and repealing Directive (EU) 2016/1148 (NIS 2 Directive).
[19] See recital 4 of the NIS 2 Directive.
[20] See recital 5 of the NIS 2 Directive.

of supply strategy, which is to be drawn up in accordance with section 88a ElWOG 2010, serves to guarantee a secure electricity supply in Austria in the long term. This should also be maintained in the course of achieving the federal energy transition and climate targets, such as full electricity supply from renewable sources on balance by 2030 or climate neutrality by 2040. The strategy identifies fields of action and necessary measures to maintain the high level of security of supply in Austria.

2 Roles and responsibilities of the competent authority

The Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology is the national competent authority in Austria in accordance with Art. 3 (1) of Regulation (EU) 2019/941 and is as such responsible for carrying out the tasks provided for in this Regulation. None of the tasks assigned to the competent authority in accordance with Regulation (EU) 2019/941 were delegated to other bodies.

3 Procedures and measures in the electricity crisis

3.1 National procedures and measures

3.1.1 Preventive and preparatory measures

The preventive and preparatory measures can be seen in sections 1.2.2 and 1.3.

3.1.2 Manual load shedding in accordance with Article 22 of the Network Code on electricity emergency and restoration

3.1.2.1 Distinction from energy intervention measures

Commission Regulations (EU) 2017/1485 [21] and (EU) 2017/2196 [22] constitute a detailed rulebook governing how transmission system operators and other relevant stakeholders should act and cooperate to ensure system security. Those technical rules should ensure that most electricity incidents are dealt with effectively at operational level.[23]

In accordance with Art. 11 (1) Regulation (EU) 2017/2196, every transmission system operator is required to develop a system defence plan. The system defence plan in accordance with Art. 11 (5) lit. b) v) Regulation (EU) 2017/2196 shall include a procedure for manual load shedding. In Austria, Oesterreichs Energie/Defence Plan expert pool drafted the system defence plan for Austria. [24] The manual load shedding procedure described there is applied in the event of acute significant faults and risks to network security, and when there are imminent or present load coverage problems. Faults that go

[21] Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.
[22] Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration.
[23] See recital 5 of Regulation (EU) 2019/941.
[24] ÖSTERREICHS ENERGIE/Defence Plan expert pool: Systemschutzplan Österreich – Technische Maßnahmen zur Vermeidung von Großstörungen und Begrenzung ihrer Auswirkungen, 2021.

beyond simple incidents in the electricity system or that cannot be rectified effectively at operational level can trigger energy intervention measures if the prerequisites in accordance with section 4 EnLG 2012 are met.

3.1.2.2 Manual load shedding procedure

The manual load shedding procedure is described in more detail in Annex 13.3 to the Austrian system defence plan.

Basically, depending on the severity of the emergency and the degree of under-coverage, specifications are made for the scope of the required manual load shedding by the control area manager Austrian Power Grid AG. These specifications are primarily distributed according to technical necessity to the distribution system operators with a direct connection to the transmission system in each province using an outage-proof digital communication medium (Austrian Awareness System). Attention is paid to a sufficient remaining level of reserves for the "automatic under-frequency load shedding" – as a remaining automatic measure of last resort – (i.e. up to around 50% of those loads that are intended for automatic under-frequency load shedding would be used for manual load shedding).

Article 22 (3) Regulation (EU) 2017/2196 specifies that every distribution system operator must disconnect the indicated demand without undue delay after being notified by the control area manager of the requirement to shed load, with indication of the amount of demand to be disconnected. The same applies to all downstream distribution system operators after they have been prompted by the upstream distribution system operator to disconnect demand.[25]

After the notification on required manual load shedding, the control area manager will provide ad hoc information on the cause of the fault to the control centre of the affected transmission system operators and directly connected distribution system operators by e-mail as soon as possible. The situation surrounding the event is depicted by the control area

[25] ÖSTERREICHS ENERGIE/Defence Plan expert pool: Systemschutzplan Österreich – Technische Maßnahmen zur Vermeidung von Großstörungen und Begrenzung ihrer Auswirkungen, 2021, Annex 13.3, item 4.2.1.

manager. Communication to the public is handled in a coordinated manner by all involved parties under the direction of the control area manager.[26]

3.1.3 Procedures to be followed in the cases of an electricity crisis including the corresponding schemes on information flows

The legal basis for national measures in the event of an electricity crisis is formed by the Federal Law on Intervention Measures to Safeguard Energy Supplies (Energy Intervention Powers Act 2012 – EnLG 2012), Federal Law Gazette I No. 41/2013, as amended.

The Energy Intervention Powers Act 2012 differentiates between intervention measures

- for solid/liquid energy products (sections 7 to 12)
- to safeguard electricity supplies (sections 14 to 25a)
- to safeguard natural gas supplies (sections 26 to 35a)

Orders imposing intervention measures regarding energy products, and safeguarding supplies of electrical energy and natural gas shall, without exception, be enacted separately from each other (section 5 [1] EnLG 2012).

The Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology is responsible for the assessment of whether there is an energy intervention case after hearing the Energy Intervention Council.

If there is an energy intervention case, the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology issues an energy intervention measure order in which energy intervention measures are stipulated.

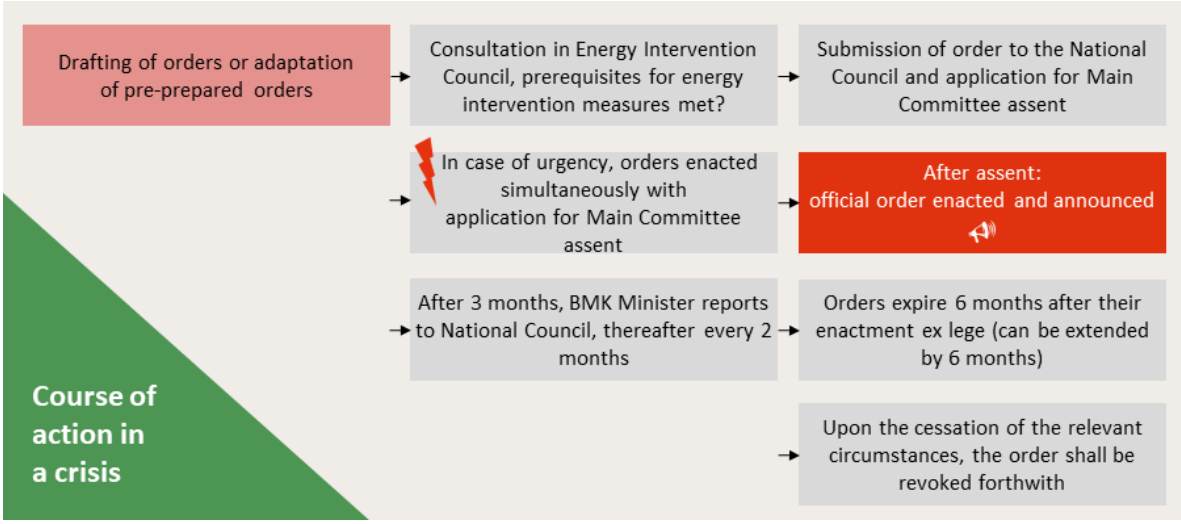
The Energy Intervention Powers Act 2012 sets forth which measures can be stipulated in an energy intervention measure order.

[26] ÖSTERREICHS ENERGIE/Defence Plan expert pool: Systemschutzplan Österreich – Technische Maßnahmen zur Vermeidung von Großstörungen und Begrenzung ihrer Auswirkungen, 2021, Annex 13.3, item 4.2.2.

3.1.3.1 Course of action in the event of an electricity crisis

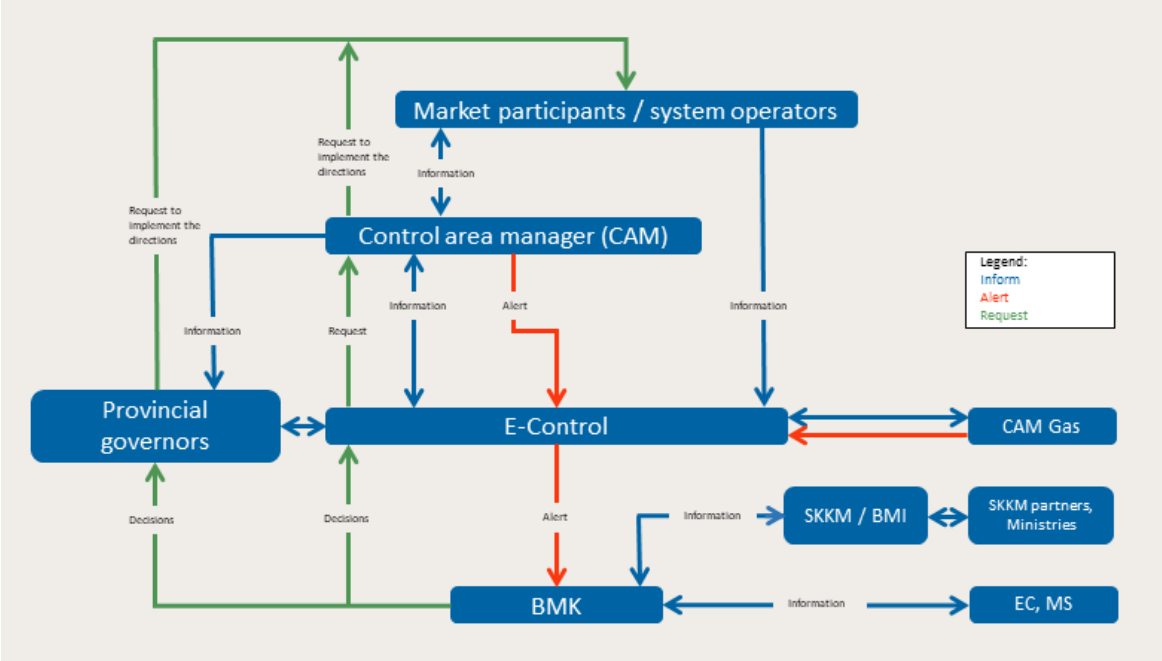
- Consultations are held with experts of the regulator, the provincial governments, the affected power supply companies, and further stakeholders in advance.
- Drafting of an energy intervention measure order, any necessary adaptations to pre-prepared orders.
- Advice to the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology in the Energy Intervention Council. The Council is composed of 3 representatives of the BMK; 1 representative each of the Federal Chancellery (BKA), the Federal Ministry for European and International Affairs (BMEIA), the Federal Ministry of Finance (BMF), the Federal Ministry of the Interior (BMI), the Federal Ministry of Defence (BMLV), the Federal Ministry of Labour and Economy (BMAW), and the Federal Ministry for Agriculture, Forestry, Regions and Water Management (BML); 2 representatives each of the Austrian Federal Economic Chamber, the Austrian Chamber of Agriculture, the Austrian Federal Chamber of Labour, the Austrian Trade Union Federation, and the Federation of Austrian Industries; 1 representative of E-Control; 1 representative of each province; 1 expert each on the petroleum industry, energy wholesaling and retailing, and gas and heating supply; 1 representative of Österreichs E-Wirtschaft; and 1 representative each of the political parties represented in the Main Committee of the National Council. One of the main tasks of the Energy Intervention Council is to discuss whether the prerequisites for the application of energy intervention measures in accordance with section 4 EnLG 2012 are met.
- Submission of the energy intervention measure order to the National Council and application for the Main Committee's assent.
- In case of urgency, orders requiring the assent of the Main Committee of the National Council shall be enacted simultaneously with the application for the Committee's assent.
- After assent, the order is enacted and announced.
- After 3 months, the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology is required to submit a report to the National Council on the functioning of the intervention measures taken and thereafter at intervals of 2 months.
- Energy intervention measure orders expire 6 months after their enactment ex lege.
- Should the end of the crisis situation not be foreseeable after 6 months, an extension of up to 6 months is possible, requiring the assent of the Main Committee of the National Council.
- Upon the cessation of the circumstances giving rise to the orders, the latter shall be revoked forthwith.

Figure 1 Course of action in a crisis



3.1.3.2 Information flow in the operational implementation of energy intervention measures

Figure 2 Information flow in the operational implementation of energy intervention measures



3.1.4 Measures to mitigate electricity crises

3.1.4.1 Triggers and conditions of energy intervention measures

According to Article 2 (9) of Regulation (EU) 2019/941, the term "electricity crisis" means a present or imminent situation in which there is a significant electricity shortage, as determined by the Member States and described in their risk-preparedness plans, or in which it is impossible to supply electricity to customers.

Section 4 of the Energy Intervention Powers Act 2012 (Energielenkungsgesetz-EnLG 2012) specifies the parameters under which a disruption within the meaning of Article 2 (9) of Regulation (EU) 2019/941 can be assumed and intervention measures can be taken to secure Austria's energy supply.

Accordingly, energy intervention measures are taken in the following cases:

- **To avert imminent or overcome actual disruptions of Austrian energy supplies, insofar as these disruptions**
  - **do not represent seasonal shortages or**
  - **cannot be averted or overcome at all, in a timely manner or at reasonable cost by means of market-based measures (section 4 [1] no. 1 EnLG 2012).**

  An imminent disruption within the meaning of section 4 (1) no. 1 first case EnLG 2012 is to be assumed if a near-term disruption to Austria's energy supply cannot be ruled out with sufficient certainty, which may also be the case if it is feared that a (currently still) disruption-free situation will "turn into" a disruption-prone situation.

  The term "market-based" is described by the technical term "market-based measures" used in the Price Act 1992, the Banking Act, the ORF Act, etc., among others. This refers to state intervention that merely supports and directs the market, but does not interfere with the market mechanism itself.[27]

- **To take emergency measures pursuant to decisions by the governing bodies of international organisations where this is necessary to fulfil obligations under international law (section 4 [1] no. 2 EnLG 2012)**.

[27] Cf. the explanatory notes to the EnLG 2012, ErlRV 1962 XXIV. GP, 5.

On the one hand, these are obligations to be fulfilled by the Republic of Austria on the basis of the Agreement on an International Energy Program (IEP Agreement), Federal Law Gazette No. 317/1976. The IEP Agreement gives the International Energy Agency the option of adopting measures to secure energy supplies in certain crisis situations, which must be implemented by the member states. On the other hand, it also includes obligations arising from the role of the Republic of Austria as a member state of the European Union.[28]

- **To the extent that an obligation to provide solidarity in accordance with Art. 13 Regulation (EU) 2017/1938[29] applies (section 4 [1] no. 3 EnLG 2012).**
  Regulation (EU) 2017/1938 introduced a solidarity mechanism between Member States as an instrument to mitigate the effects of a severe emergency with regard to the supply of gas within the Union.[30] According to Article 13 of Regulation (EU) 2017/1938, Member States shall adopt the necessary measures to implement the provisions of the solidarity mechanism, including agreeing technical, legal and financial arrangements between the Member States concerned and providing solidarity to each other on that basis.

- **To the extent that an obligation to provide assistance in the form of regional or bilateral measures in accordance with Art. 15 Regulation (EU) 2019/941 applies (section 4 [1] no. 4 EnLG 2012).**
  Regulation (EU) 2019/941 introduces an assistance mechanism between Member States as an instrument to prevent or mitigate an electricity crisis within the Union.[31] In accordance with Articles 12 and 15 of Regulation (EU) 2019/941, Member States shall offer each other assistance in the form of regional or bilateral measures where they have the technical ability of doing so.

3.1.4.2 Compliance with the requirements of Article 16 (2) of Regulation (EU) 2019/941

Article 16 (2) of Regulation (EU) 2019/941 stipulates that non-market-based measures shall be activated in an electricity crisis only as a last resort if all options provided by the market

[28] Cf. ErlRV 1962 XXIV. GP, 5.

[29] Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.

[30] Cf. recital 45 of Regulation (EU) 2017/1938.

[31] Cf. recital 30 of Regulation (EU) 2019/941.

have been exhausted or where it is evident that market-based measures alone are not sufficient to prevent a further deterioration of the electricity supply situation.

The Austrian system of energy intervention is in line with Article 16 (2) of Regulation (EU) 2019/941. In particular, section 4 (1) no. 1 EnLG 2012 clarifies the subsidiarity of energy intervention with respect to market-based measures. Section 4 (1) no 1 EnLG 2012 states that a case of energy intervention exists if the disruption to Austria's energy supply cannot be averted or overcome at all, in a timely manner or at reasonable cost by means of market-based measures. In line with this principle, the period of validity of energy intervention measures is also limited. Pursuant to section 5 (3) EnLG 2012, intervention measures may only be taken for a period of six months. In the case of an energy supply disruption which has already come about, an extension of up to six months is possible, subject to the assent of the Main Committee of the National Council. Upon the cessation of the circumstances giving rise to the orders, the latter shall be revoked forthwith.

Finally, pursuant to the principle of proportionality set out in section 4 (4) EnLG 2012, intervention measures may only be taken to such an extent and for a duration necessary to avert or overcome supply disruptions, to fulfil the obligation to provide solidarity in accordance with Art. 13 Regulation (EU) 2017/1938, to fulfil the obligation to provide assistance in the form of regional or bilateral measures in accordance with Art. 15 Regulation (EU) 2019/941 or to fulfil obligations under international law to implement emergency measures pursuant to decisions by the governing bodies of international organisations. Infringements of property rights and the freedom to practise a trade or occupation are only permissible if the objects of energy intervention referred to in section 4 (2) EnLG 2012 cannot otherwise be achieved.

3.1.4.3 Objectives of energy intervention measures

In accordance with section 4 (2) EnLG 2012, the objective of energy intervention measures is:

- in the case of section 4 (1) no. 1, to safeguard the fulfilment of essential energy requirements including those of national defence, the undisturbed production of goods and provision of services, and the supply of the general public and other consumers;
- in the case of section 4 (1) no. 2, to permit the fulfilment of obligations under international law to take emergency measures pursuant to decisions by the governing bodies of international organisations;

- in the case of section 4 (1) no. 3, to permit the fulfilment of obligations under Union law to provide solidarity in accordance with Art. 13 Regulation (EU) 2017/1938;
- in the case of section 4 (1) no. 4, to permit the fulfilment of obligations under Union law to provide assistance in the form of regional or bilateral measures in accordance with Art. 15 Regulation (EU) 2019/941.

3.1.4.4 Overview of energy intervention measures

The intervention measures that can be taken to safeguard electricity supplies are listed exhaustively in the Energy Intervention Powers Act 2012. The pertinent legal regulations can be found in section 14 in conjunction with sections 16 to 22 EnLG 2012:

3.1.4.4.1 Directions to generators, system operators, balance group coordinators, balance group representatives, and electricity wholesalers and retailers regarding the generation, transmission, distribution, wholesaling, and retailing of electrical energy (section 14 [1] no. 1 in conjunction with section 16 EnLG 2012)

On the basis of this provision, such directions can be issued to market participants in an electricity intervention measure order as are necessary to safeguard electricity supplies. The specific content of the directions is to be set out in the order to be issued in the event of an energy intervention case. The statutory authorization gives the issuer of the order leeway to take account of the requirements of the individual case. The formulation of the directions within the meaning of this provision would take place in compliance with the general principles of the EnLG 2012 (e.g. the principle of proportionality stipulated in § 4 [4]).

3.1.4.4.2 Appeals and directions to final consumers regarding the allocation, withdrawal, and use of electrical energy, as well as the exclusion of consumers from the withdrawal of electrical energy (section 14 [1] no. 2) as well as calls to district heating consumers about the use of district heating (section 14 [1] no. 9 in conjunction with section 22 EnLG 2012)

Should it be necessary to safeguard electricity supplies in the event of an energy supply disruption in accordance with section 4 EnLG 2012, the following could be provided for in an electricity intervention measure order based on this provision:

- An appeal to final consumers to use energy in the form of electrical energy and district heating carefully and only consume it to the extent absolutely necessary.
- Depending on the specific situation and the time criticality in the event of an energy intervention case, a call to large consumers to make the necessary preparations to restrict production or their own economic activity may be issued. This measure serves to raise awareness of potentially necessary future consumption restrictions. If, in the event of a further deterioration of the supply situation in the cascade of measures, a restriction of large consumers should actually become necessary, this would be carried out by means of respective intervention measures in accordance with section 14 (1) no. 2 in conjunction with section 17 EnLG 2012 (see Section 3.1.4.4.5).
- Temporary ban on certain uses of electrical energy, particularly in the comfort and leisure sectors.

3.1.4.4.3 Regulations regarding the operation of electricity generating stations and permission to breach emission limits (section 14 [1] no. 4 in conjunction with section 19 EnLG 2012)

- The purpose of this intervention measure is to be able to optimize generation in the event of an imminent or actual disruption in order to ensure the supply of electrical energy.
- In addition, against the background of a tense energy supply situation, deviations may be provided for with regard to possible regulations on emission limit values that prevent an adjustment of the operating mode of generation facilities. Contravening regulations shall not be applied for the duration of the validity of these orders. Due regard shall be paid to avoiding hazardous environmental impacts in accordance with § 19 EnLG 2012.
- In order to be able to issue generation and operating instructions also for green electricity installations in the event of an energy interventions case, the EnLG 2012 stipulates an authorization to regulate the use of energy from renewable sources in accordance with the Green Electricity Act 2012 (Ökostromgesetz 2012), Federal Law Gazette I No. 75/2011, as amended, as well as renewable electricity in accordance with the Renewable Energy Expansion Act (Erneuerbaren-Ausbau-Gesetz), Federal Law Gazette I No. 150/2021, as amended (section 14 [1] no. 6 EnLG 2012). Similarly, an electricity intervention measure order issued by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology may provide for a deviation from other legal provisions with regard to renewable energy, insofar as this is necessary to ensure the supply of electricity (section 14 [1] no. 5 in conjunction with section 20 EnLG 2012).

3.1.4.4.4 Directions to combined heat and power and district heating companies (section 14 [1] no. 8 in conjunction with section 22 EnLG 2012)

The content of possible electricity intervention measure orders based on this provision may be as follows:

- Issuing directions or instructions to generators operating combined heat and power plants with a maximum thermal capacity of at least 50 MW or an annual heat output of at least 300 GW, and district heating companies operating heating stations and district heating power plants with a total maximum thermal output of at least 50 MW or an annual heat output of at least 300 GW,
- to substitute natural gas with other energy sources as far as technically possible.

3.1.4.4.5 Distribution according to the degree of urgency (section 14 [1] no. 2 in conjunction with section 17 EnLG 2012)

Should it be necessary to safeguard electricity supplies, the following could be provided for in an electricity intervention measures order based on this provision:

- Orders pursuant to section 14 (1) no. 2 EnLG 2012 shall provide for the supply of the available electrical energy to final consumers according to the degree of urgency. In particular, such orders may determine that final consumers may, without additional procedures, be temporarily excluded from deliveries or that such deliveries may be limited.
- If necessary, E-Control may be authorized to impose special regulations on final consumers with an average monthly consumption of more than 500,000 kWh in the last twelve months (so-called large consumers).
- If E-Control is authorized to impose special regulations on large consumers in an electricity intervention measure order issued by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology, E-Control shall impose appropriate measures for the temporary exclusion from the electricity supply or the temporary restriction of the electricity supply[32], taking into account the respective restriction level.

[32] This would typically be done by stipulating maximum withdrawal loads to be complied with.

The concrete determination of the restriction levels is conducted in an energy intervention case in the electricity intervention measure order issued by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology. Categories of electricity users pursuant to Article 11 (1) (h) of Regulation (EU) 2019/941 that are entitled to receive special protection against disconnection are not provided for in the EnLG 2012. The allocation of large consumers to the respective restriction level is carried out in a specific energy intervention case in an electricity intervention measures order issued by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology, taking into account the supply situation existing at the time the order is issued and the existing or forecast supply shortage.

3.1.4.4.6 Regulations regarding the supply of electrical energy to and from EU Member States and third countries (section 14 [1] no 3 in conjunction with section 18 EnLG 2012)

- Possible electricity intervention measure orders based on this provision shall take into account the Austrian electricity supply situation as well as the obligations under international and EU law within the meaning of § 4 (2) EnLG 2012.

3.1.4.4.7 Determination of consumption quotas for the provinces (section 14 [1] no. 7 in conjunction with section 21 EnLG 2012)

- The determination of consumption quotas for the provinces is the last resort within the cascade of energy intervention. The purpose of this measure is to prevent a comprehensive grid collapse and thus a widespread power outage.
- If consumption quotas for the provinces are regulated in an electricity intervention measure order issued by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology, their implementation is the responsibility of the provincial governors.
- With regard to the implementation of the consumption quotas for the provinces, section 21 (5) EnLG 2012 authorizes the provincial governors to exclude or cut off geographically circumscribed areas from electricity withdrawal by order.
- In the orders pursuant to section 21 (5) EnLG 2012, the respective provincial governor determines the switch-off zones which are alternately excluded or cut off from electricity withdrawal.

The provisions of section 14 (1) no. 1 in conjunction with section 16 EnLG 2012 and section 14 (1) no. 3 in conjunction with section 18 EnLG 2012 shall not be applied to power plants that render system services and cover peak loads within control areas if the provision of system services and the coverage of peak loads is not sufficiently ensured in the respective control area through cross-control-area utilisation of these power plants for the purposes of overcoming the crisis.

In accordance with the principle of proportionality set out in section 4 (4) EnLG 2012, intervention measures may only be taken to the extent and for the duration that is absolutely necessary to avert or overcome supply disruptions, to fulfil the obligation to provide solidarity in accordance with Art. 13 Regulation (EU) 2017/1938, to fulfil the obligation to provide assistance in the form of regional or bilateral measures in accordance with Art. 15 Regulation (EU) 2019/941 or to fulfil obligations under international law to implement emergency measures pursuant to decisions by the governing bodies of international organisations. In principle, less invasive energy intervention measures (such as appeals for the sparing use of energy, regulations regarding the operation of electricity generating stations and permission to breach emission limits, prohibitions of use) therefore have priority over more significant interventions (such as exclusion from or restrictions on supply with electrical energy, the determination of consumption quotas for the provinces).

3.1.5 Implementation of energy intervention measures

The preparation and coordination of the intervention measures to be taken in the Austrian control areas in case of need falls under the responsibility of E-Control (section 15 [1] EnLG 2012 in conjunction with section 5 of the E-Control Act [33]). The operational implementation of the measures enacted by order under sections 16 to 20 EnLG 2012, on the basis of the criteria set out in the energy intervention orders, is the responsibility of the control area managers acting in conjunction with the system operators, balance group coordinators, balance group representatives, and electricity wholesalers and retailers, which shall coordinate their activities in the interests of a uniform approach throughout the federal territory. The control area manager in Austria is Austrian Power Grid AG (APG).

The implementation of intervention measures in relation to provincial consumption quotas in accordance with section 14 (1) no. 7 EnLG 2012 and the enactment of regulations in

[33] Federal Act on the Regulatory Authority for Electricity and Natural Gas (E-Control Act - E-ControlG), Federal Law Gazette I No. 110/2010, as amended.

accordance with section 14 (1) no. 6 EnLG 2012 about the procurement of energy from renewable sources in accordance with the Green Electricity Act 2012 and about the use of renewable electricity in accordance with the Renewable Energy Expansion Act in the provinces falls under the responsibility of the provincial governors. A provincial governor may charge the designated control area manager in the respective province, as well as the system operators, balance group coordinators, balance group representatives and electricity wholesalers and retailers operating in such province with implementing the measures (section 21 [2] EnLG 2012).

In the implementation of intervention measures related to the provincial consumption quotas in accordance with section 14 (1) no. 7 EnLG 2012, the provincial governors are bound by the federally uniform distribution regulations provided that the electricity supply situation in the province does not allow for deviation from the federally uniform regulations without running the risk of failing to meet the energy saving target that must be met by the province. If the energy savings target is not met in the province, E-Control can order the necessary measures with binding effect for the province in question (section 21 [3] EnLG 2012).

Regarding the implementation of provincial consumption quotas, section 21 (5) EnLG 2012 stipulates that geographically circumscribed areas may be excluded from electricity withdrawal or cut off by order of provincial governors. This is referred to as an area-wide disconnection.

In accordance with section 21 (5) second sentence EnLG 2012, measures taken based on an order by the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology in accordance with section 17 EnLG 2012 shall be taken into account in the event of area-wide disconnections.

3.1.6 Mechanisms used to inform the public about the electricity crisis

Energy intervention measure orders are announced in the Federal Law Gazette, and those enacted by the provincial governors in the respective provincial law gazette. If announcement in the Federal Law Gazette or the provincial law gazettes is not possible or not possible in a timely manner, the order will be announced in another manner – especially by radio, television, or other acoustic medium or publication in one or more periodic publications that accept advertisements, especially daily newspapers – and also made available on the Internet (section 5 [4] EnLG 2012).

A brochure titled “Krisenvorsorgemanagement” (Crisis-Preparedness Management) has been published by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology to inform the public about the mechanisms of crisis management in the energy system.[34]

3.1.7 Differentiation from matters of disaster relief

The national procedures and measures set forth in this Risk-Preparedness Plan in accordance with Art. 10 Regulation (EU) 2019/941 are based on the Energy Intervention Powers Act 2012.

These are discrete from matters of disaster relief, which largely fall under the responsibility of the provincial governments and are regulated by the laws stipulating disaster relief of the provinces.

The incident-related coordination of domestic measures to cope with interregional or international crises or catastrophes falls under the responsibility of the Federal Chancellery (see part 2 lit. A no. 1 of the Annex to section 2 of the Federal Ministries Act 1986 [BMG], Federal Law Gazette No. 76/1986, most recently amended by the law promulgated in Federal Law Gazette I No. 98/2022).

The coordination in matters of public crisis management and public disaster relief management falls under the responsibility of the Federal Ministry of the Interior (see part 2 lit. G no. 1 of the Annex to section 2 BMG).

[34] Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (Pub.): Krisenvorsorgemanagement Gut vorbereitet: Bestandsaufnahme und Bewältigung möglicher Krisenszenarien im Bereich Energie, Krisenvorsorgemanagement (bmk.gv.at).

3.2 Regional and bilateral procedures and measures

3.2.1 Agreed mechanisms for cooperation within the region and for ensuring appropriate coordination before and during an electricity crisis, including the decision-making procedures for appropriate reaction at regional level

In accordance with Art. 12 Regulation (EU) 2019/941, the Risk-Preparedness Plan shall include not only national measures, but also regional and, if appropriate, bilateral measures to ensure that electricity crises with cross-border impact are properly prevented or managed. Regional measures shall be agreed within the region concerned between Member States that have the technical ability to provide each other assistance in accordance with Article 15 Regulation (EU) 2019/941. For that purpose, the Member States may also form subgroups within a region.

The Republic of Austria shall conclude agreements on regional measures with the neighbouring EU Member States Germany, Italy, Czechia, Slovenia, and Hungary. Due to the absence of direct connection lines with Slovakia, there is no such obligation with Slovakia.

The existing regional cooperation mechanisms are described below. Intergovernmental agreements that are concluded in future will be taken into account in updates to this Risk-Preparedness Plan.

3.2.2 Regional cooperation relating to security of electricity supply under the framework of the Pentalateral Energy Forum and signing of a Memorandum of Understanding on Risk-Preparedness in the Electricity Sector

The Pentalateral Energy Forum (called the PENTA Forum in the following) is the framework for voluntary regional cooperation in Central Western Europe, consisting of Austria, Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland. The forum aims to work towards improved electricity market integration and security of supply. Jointly, PENTA countries cover more than a third of the EU population and more than 40% of EU electricity generation. The initiative aims to allow energy policy to evolve from a purely national focus to a regional approach. It allows for political backing to a process of regional integration towards a European energy market. To this end, the Ministers for Energy of the Pentalateral countries regularly meet in order to discuss energy policy matters and give

guidance on this regional cooperation. The work programme is implemented by the transmission system operators (TSOs), ministries, regulatory authorities, the European Commission and the market players who regularly meet in different support groups. This collaboration is formalized trough the Memorandum of Understanding of the PENTA-Forum, signed on 6 June 2007 in Luxembourg.

Security of supply in the electricity sector has always been one of the most important pillars of collaboration within the PENTA-Forum. Therefore, in light of Regulation (EU) 2019/941, work has been undertaken since 2020 on a coordinated regional framework for cooperation in the PENTA region aimed at the prevention of, preparations for, and managing electricity crises in accordance with Art. 12 and Art. 15 Regulation (EU) 2019/941.

On 1 December 2021, a Memorandum of Understanding on Risk-Preparedness in the Electricity Sector was signed. The memorandum of understanding contains a commitment of the PENTA countries to exchange about aspects of risk-preparedness in the electricity sector and about national crisis management. In addition, electricity crisis scenarios that are relevant for the PENTA region are to be identified, and regular crisis exercises are to be held. The memorandum of understanding also contains the intention of the PENTA countries to offer each other assistance in the event of an electricity crisis by means of regional measures, where they have the necessary technical ability. The memorandum of understanding also contains a non-exhaustive list of regional measures that are to be fleshed out in detail in future. These include the cross-border usage of reserve capacities and flexible loads, the exchange about demand disconnection plans, the surveillance of the short-term security of electricity supply, coordinated information regarding saving appeals to the public, support with electric equipment, knowledge and expertise, and the usage of mobile generators.

3.2.3 Signing of a Memorandum of Understanding on Risk-Preparedness in the Electricity Sector between Austria, Germany, the Czech Republic, Slovakia, Poland, and Hungary

Consultations were held between Austria and Central Eastern European Member States on the basis of the PENTA Memorandum of Understanding on Risk-Preparedness in the Electricity Sector starting at the end of 2021. These efforts led to the signing of a Memorandum of Understanding on Risk-Preparedness in the Electricity Sector by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology of the Republic of Austria, the Ministry of Industry and Trade of the Czech

Republic, the Federal Ministry for Economic Affairs and Climate Action of the Federal Republic of Germany, the Ministry of Innovation and Technology of Hungary, the Ministry of Climate and Environment of the Republic of Poland, and the Ministry of Economy of the Slovak Republic on 27 June 2022.

The contents of the memorandum of understanding correspond largely to the items of the PENTA memorandum of understanding on risk-preparedness in the electricity sector, and include a regular exchange about aspects of risk-preparedness in the electricity sector and national crisis management. The memorandum of understanding also contains the intention of the signatory countries to offer each other assistance in the event of an electricity crisis by means of regional measures, where they have the necessary technical ability. It also contains a non-exhaustive list of regional measures that are to be fleshed out in detail in future. These include the cross-border usage of reserve capacities and flexible loads, the exchange of information about demand disconnection plans, the surveillance of the short-term security of electricity supply, the exchange of information regarding saving appeals to the public, support with electric equipment, knowledge and expertise, and the usage of mobile generators.

3.2.4 Regional measures pursuant to Art. 12 and Art. 15 of Regulation (EU) 2019/941

The following catalog of regional measures has been developed within the PENTA Forum to prevent and mitigate the effects of electricity crises in the PENTA region, as outlined in the Memorandum of Understanding of the Pentalateral Energy Forum on Risk Preparedness in the Electricity Sector signed on December 1, 2021. The description below is based on the PENTA common regional chapter on national Risk Preparedness Plans, which is intended to serve as a tangible and concrete basis for further elaboration and is neither exhaustive nor restrictive. Further work on the legal, technical and financial issues related to these regional measures will be carried out within the PENTA Forum by the experts of the PENTA countries.

3.2.4.1 Surveillance the short-term security of electricity supply

On national level, transmission system operators, distribution system operators, national regulatory authorities and ministries have established specific roles and procedures for security of electricity supply. On a European level, several entities and groups carry responsibilities as well, notably ENTSO-E, regional coordination centers, and the Electricity Coordination Group.

Complementary to the above, the Pentalateral Energy Forum adds value by bringing together experts from transmission system operators, national regulatory authorities and ministries in a well-established, flexible and trusted regional framework. Timely exchanges of information on the evolution of situation are of great importance for joint coordination. More specifically, in case of an imminent or actual electricity crisis situation, i.e. after an early warning or a declaration of crisis were issued in accordance with Art. 14 of Regulation (EU) 2019/941, a standing group can be set up on short notice to, amongst others share the latest information and exchange on (planned) interventions both at an operational and policy level and the impact of the (crisis) situation on the other countries. The standing group can convene on several levels, such as on an expert, crisis coordinator or ministerial level. This tool has proven to be very useful in the past in dealing with stress situations.

3.2.4.2 Coordinated information regarding saving appeals to the public

Saving appeals can be an important instrument in preventing an imminent crisis.

While communication strategies need to consider local and national specificities, they also benefit from consistency and coordination across borders.

On a Penta level, detailed information could be shared and discussed concerning saving measures in order to avoid possible inconsistencies which could trigger unwanted cross-border spill-overs and identify best practices.

3.2.4.3 Cross-border usage of reserve capacities and flexible loads

In contrast to wholesale and balancing markets, reserve capacities and flexible loads are being organized on a national level. National frameworks for those assets currently neither foresee nor allow for cross-border sharing or only allow this under specific conditions. A regional measure could therefore aim to evaluate the sharing of these assets for mutual support in an imminent or actual electricity crisis, and enhance synergies of the crisis prevention and management measures and thus their economic efficiency and overall system reliability. The implementation of such a measure requires the evaluation of the following issues:

- Examination of national frameworks,
- Coordinated procedural rules for activating the assets for a regional deployment,

- Analysis and mitigation of possible negative interference with wholesale and balancing markets,
- Taking into account the location of the assets, availability of sufficient transmission capacity, and estimated impact on system operation,
- Estimated duration of activating the assets,
- Estimation of costs and benefits, followed by an agreement on allocation principle.

3.2.4.4 Exchange about demand disconnection plans

According to Art. 4 (5) of Regulation (EU) 2017/2196, each transmission system operator is required to prepare a system defence plan that includes, among other things, rules on demand disconnection. From a regional point of view, it is important to understand the content and corresponding procedures for critical supply situations and to coordinate them where necessary. A first step would consist in presenting the respective plans to each other, involving transmission system operators, national regulatory authorities and ministries. This could help to avoid possible inconsistencies, enhance coordination taking national circumstances into account, and identify best practices.

3.2.4.5 Support with electric equipment, knowledge and expertise

In case of an electricity crisis, a significant amount of dedicated equipment and workforce is needed that may not be available on a national level. Therefore, similar and complementary to the existing possibilities of international support for civil protection (such as firefighting planes, tracking dogs, etc.), a pool of equipment and experts could be formed and sent to support the most critical places during an electricity crisis. Once implemented, the Commission Implementing Decision (EU) 2022/1198[35] could provide a suitable framework for this, including amongst others the following main components:

- Power generators of various sizes,
- Adequate connectivity, synchronization, monitoring and power transfer systems to enable connecting the capacity to the affected facilities as well as paralleling control of units,

[35] Commission Implementing Decision (EU) 2022/1198 of 16 June 2022 amending Implementing Decision (EU) 2019/570 as regards rescEU emergency energy supply capacities.

- Adequate number of spare parts and other consumables for the functioning of the capacity, such as batteries, energy harvesting equipment, connectivity and synchronizing equipment, etc,
- Adequate procedures to transport, handle, assemble, install, operate and maintain the capacity,
- Lighting equipment, including lighting protection systems,
- Adequate storage facilities,
- Appropriately trained personnel and assets to handle, assemble, install, operate and maintain the energy supply capacity.[36]

3.2.5 Communication and coordination at Union and regional level in the event of an electricity crisis

Article 14 (1) and (2) of Regulation (EU) 2019/941 regulates information obligations in connection with the early warning and declaration of an electricity crisis.

Where a seasonal adequacy assessment or other qualified source provides concrete, serious and reliable information that an electricity crisis may occur in a Member State, the competent authority of that Member State shall, without undue delay, issue an early warning to the Commission, the competent authorities of the Member States within the same region and, where they are not in the same region, the competent authorities of the directly connected Member States (Article 14 [1] of Regulation [EU] 2019/941).

When confronted with an electricity crisis, the competent authority shall inform the competent authorities of the Member States within the same region and, where they are not in the same region, the competent authorities of directly connected Member States, as well as the Commission, without undue delay (Article 14 [2] of Regulation [EU] 2019/941). Under Austrian law, this would be the case if the parameters of section 4 (1) no. 1 EnLG 2012 are met. The competent authority within the meaning of Regulation (EU) 2019/941 with regard to the Republic of Austria is the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology.

Regulations regarding the intergovernmental exchange of information at regional level are contained in the Memoranda of Understanding described in sections 3.2.2 and 3.2.3. Both

[36] See Implementing Decision (EU) 2022/1198, Annex, Section 13.

agreements provide for experts from the participating countries to meet regularly to discuss the supply situation at national and regional level and the functioning of national and regional crisis management mechanisms.

Furthermore, both MoUs include detailed regulations on mutual intergovernmental communication in the event of an electricity crisis. Accordingly, it is foreseen that the competent authority of each affected country informs the competent authorities of the other MoU countries of an imminent crisis or when confronted with a crisis. This information includes the measures taken and planned at national level as well as possible regional measures identified. To this end, the MoUs each express the intention of the signatory countries to exchange a confidential common contact list with names and contact details of all entities involved in the prevention and management of electricity crises, including at least the competent authority, the crisis coordinator and the national regulatory authority (if involved in crisis situations) and the transmission system operators of each country, which will be updated regularly unless circumstances warrant more frequent updates.

4 Plans for the development of the future grid

4.1 Integrated Network Infrastructure Plan (NIP)

In accordance with sections 94 to 96 of the Renewable Energy Expansion Act (EAG), an Integrated Austrian Network Infrastructure Plan (Integrierter österreichischer Netzinfrastrukturplan- NIP) will be drawn up. The aim of the NIP is to consider the requirements for the future electricity and gas infrastructure in an integrated manner and thus to coordinate the expansion of renewable energy generation with the necessary expansion of the energy infrastructure. In the electricity sector, the NIP examines the future infrastructure requirements at the transmission level and in the gas sector at transmission level and grid levels 1 and 2.

The NIP is based on a series of scientific studies and takes into account existing planning instruments (Ten-Year Network Development Plan at European level and plans of the transmission system operators, the market and distribution area manager and the transmission system operators for gas in the national context).

4.2 Network development plan

Pursuant to section 37 (1) of the Electricity Act 2010 (ElWOG 2010), the transmission system operators are required to submit a ten-year network development plan (NEP) for the transmission network to the regulatory authority for approval every two years after consulting all relevant market participants. This is based on the current situation and the supply and demand forecasts. The NEP contains efficient measures to ensure the adequacy of the system and to achieve a high degree of availability of line capacity (security of supply of the infrastructure).

The purpose of network development planning is in particular to

- indicate to market participants the main transmission infrastructure that needs to be built or extended over the next ten years;

- list all the investments already decided and identify new investments which have to be executed in the next three years; and
- provide for a time frame for all investment projects.

When elaborating the NEP, reasonable assumptions are made about the evolution of generation, supply, consumption and electricity exchange with other countries, taking into account the investment plans for regional networks.

The regulatory authority conducts open and transparent consultations on the submitted plans before approving the NEP. The regulatory authority publishes the results of the consultations and refers in particular to any investment needs. The regulatory authority shall check whether the ten-year network development plan covers all the investment needs identified in the course of the consultations and whether there is consistency with the Ten-Year Network Development Plan of ENTSO-E in accordance with Art. 30 (1) (b) of Regulation (EU) 2019/943.[37]

The current NEP dates from 2021 and will be revised in 2023 in line with the statutory two-year cycle. The NEP 2023 was subjected to a consultation by the control area manager APG in August 2023. Once the final NIP is available, APG will evaluate whether the network development plan will need to be adjusted (amended or expanded) due to the measures that will be provided for the transmission grid in the NIP (section 94 [3] last sentence EAG).[38]

4.3 Ten-Year-Network Development Plan (TYNDP)

In order to drive forward the energy policy objectives of creating an efficient grid infrastructure to ensure a high level of supply security, the integration of renewable energies and the further development of an integrated electricity market across Europe, grid expansion planning is coordinated at European level as part of the activities of ENTSO-E and ENTSO-G.[39] The results of this European transmission grid planning are bundled in ENTSO-E's Ten Year Network Development Plan (TYNDP), which was first published in June

[37] Network development plans - E-Control.
[38] Grid Development Plan 2023 for the transmission grid of Austrian Power Grid AG (APG), planning status September 2023, consultation version, p 10.
[39] European Network of Transmission System Operators for Gas.

2010.[40] The TYNDP 2022 is the seventh and most recent edition. With regard to Austria, 15 transmission grid projects and one storage project are anchored in the TYNDP.[41]

4.4 Projects of Common Interest - Austrian project candidates in the electricity sector

An important instrument at EU level for optimizing the European energy infrastructure is the preparation of the list of PCIs (Projects of Common Interest) and PMIs (Projects of Mutual Interest) by the European Commission as part of the PCI process in accordance with Regulation (EU) 2022/869[42] ("TEN-E Regulation"). The BMK is actively involved in this process and is in close contact with European partners (in particular the European Commission, Member States, transmission system operators, regulatory authorities and stakeholders).

There are currently five projects from the electricity sector and one project from the smart electricity grid sector on the fifth PCI list for Austria, which is still based on the original Regulation (EU) 347/2013[43].

Electricity:

- Capacity increase of hydro-pumped electricity storage in Kaunertal, Tyrol (AT)
- Interconnection between St. Peter (AT) and Isar (DE)
- Internal line between St. Peter and Tauern (AT)
- Internal line between Westtyrol and Zell-Ziller (AT)
- Internal line within Austria between Lienz and Obersielach

Smart electricity grids:

[40] European Network Development Plan - Austria needs electricity (apg.at).
[41] European Projects | ENTSO-E TYNDP (entsoe.eu).
[42] Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013.
[43] Regulation (EU) No 347/2013 of the European Parliament and of the Council of April 17, 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009.

- Green Switch AT-HR-SI

4.5 Other measures in connection with grid expansion

To speed up the expansion of the existing transmission grid, there are plans to shorten and simplify official procedures. The amendment to the Environmental Impact Assessment Act 2000 (UVP-G 2000) achieved an initial success in spring 2023. Measures were implemented to increase procedural efficiency, in particular options for better structuring the procedures. The BMK is currently reviewing further procedural simplifications for generation plants not subject to environmental impact assessment with associated grid infrastructure. The establishment of a uniformly responsible approval body is also being considered.[44]

[44] Submission to the Council of Ministers 43a/16 Renewable Energies Expansion Acceleration Act ("EABG") of 11.01.2023.

5 Crisis coordination centre

5.1 Designation

Department Crisis Management and Energy Intervention of Directorate General VI of the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology.

5.2 Contact details

Address: Stubenring 1, A-1010 Vienna
E-mail: stabst-krima-el@bmk.gv.at

6 Emergency tests

6.1 National emergency tests

Section 15 (11) EnLG 2012 specifies that E-Control is authorised to order exercises based on the assumption of crisis scenarios every two years.

The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), Section VI - Climate and Energy, also carried out numerous exercises and workshops in the energy sector.

In addition, exercises are conducted in the context of National Crisis and Disaster Management (SKKM) – the coordination of which falls under the responsibility of the Federal Ministry of the Interior –, which may also occasionally pertain the energy sector, depending on the scenario and object of the exercise.

Most recently, the following national exercises were conducted with reference to the electricity sector:

- HELIOS/SKKM exercise in May 2019: The exercise was based on an electricity shortage and involved around 100 representatives of the federal ministries, provinces, first responder organisations, and critical infrastructure assets.
- Energie.21/SKKM exercise in December 2021: The exercise was based on an extreme cold spell in Europe resulting in elevated electricity consumption and limitations on electricity generation. The exercise participants were composed of the relevant federal ministries BMK, BMI, BMLV, and BMAW and the provincial governments. The control area manager APG and E-Control were also represented.
- Gas shortage exercise in December 2022: The exercise focused on the scenario of a gas shortage, but also addressed the importance of gas for a secure electricity supply. In addition to the BMK as the organizer, representatives of other ministries, E-Control and APG, stakeholders from the energy sector and the provinces took part in the exercise.
- Various workshops and exercises with different provinces in May 2022, November 2022, June 2023 and September 2023.
- Cross-sector energy intervention exercise for gas and electricity in November 2023. In November 2023, the BMK practised the processes in the event of a fictitious shortage

of gas and electricity with E-Control, APG, Austrian Gas Grid Management AG - AGGM - (market and distribution area manager for gas) and other players from the energy sector. In total, 20 key organizations from the energy sector and administration actively participated in the exercise and 18 observing organizations, with a total of 116 exercise participants.

The findings from the exercise activities will be incorporated into the optimization of processes for a possible emergency.

6.2 Regional emergency tests

The memoranda of understanding on risk-preparedness in the electricity sector depicted in 3.2.2 and 3.2.3 contain the intention of the signatory countries to prepare and conduct regional crisis exercises to test, evaluate, and improve the effectiveness of the procedures set forth in the respective memorandum of understanding. On the basis of the PENTA MoU, the PENTA countries agreed on a calendar for holding regional exercises:

- An electricity shortage exercise was conducted in Paris on 24 May 2022. The scenario was a multi-day cold spell in Western Europe including drought and a lack of wind. The focus was placed on mutual communication and the exchange of the existing crisis management systems in the respective PENTA countries.
- PENTEX 2023 from October 24 to 26, 2023: Representatives of the PENTA countries took part in a two-day exercise to practise implementing the necessary measures in the event of a large-scale regional electricity crisis. The exercise, called PENTEX 2023, took place in The Hague. The aim of the exercise was to identify the measures to be taken at national level with regard to the specific exercise scenario, to consider these in an international context and to optimize communication and cooperation between all parties involved. The exercise was based on a scenario in which a cyber attack threatens the security of the electricity supply throughout Europe. Temperature and weather conditions similar to those in October last year were assumed as a realistic starting situation.

7 Stakeholder consultation

The present Risk-Preparedness Plan was submitted to the following stakeholders from 16 to 23 November 2022 in accordance with Art. 10 (1) Regulation (EU) 2019/941:

a) Major electricity and natural gas companies including the major generators or their trade bodies:

   Oesterreichs Energie - Association of Austrian Electricity Companies; Wirtschaftskammer Österreich (Austrian Federal Economic Chamber); Industriellenvereinigung (Federation of Austrian Industries); Fachverband der Gas- und Wärmeversorgungsunternehmungen (Association of Gas and District Heating Supply Companies)

b) Relevant organisations that represent the interests of non-commercial electricity customers:

   Bundesarbeiterkammer (Federal Chamber of Labour); Österreichischer Gewerkschaftsbund (Austrian Trade Union Federation)

c) Relevant organisations that represent the interests of commercial electricity customers:

   Wirtschaftskammer Österreich (Austrian Federal Economic Chamber); Industriellenvereinigung (Federation of Austrian Industries); Landwirtschaftskammer Österreich (Austrian Chamber of Agriculture)

d) Regulatory authority:

   E-Control

e) Transmission system operators:

   Austrian Power Grid AG; Vorarlberger Übertragungsnetz GmbH

f) Relevant distribution system operators
(The operators with a direct connection to the transmission system were defined as relevant):

Wiener Netze GmbH; Netz Niederösterreich GmbH; Netz Burgenland GmbH; Netz Oberösterreich GmbH; Linz Netz GmbH; Energienetze Steiermark GmbH; Kärnten Netz GmbH; Salzburg Netz GmbH; TINETZ-Tiroler Netze GmbH; Vorarlberger Energienetze GmbH

Beyond the circle of stakeholders in accordance with Art. 10 (1) Regulation (EU) 2019/941, the Risk-Preparedness Plan was also submitted to the following federal ministries and institutions for consultation:

Federal Chancellery (BKA); Federal Ministry of Finance (BMF); Federal Ministry of the Interior (BMI); Federal Ministry of Labour and Economy (BMAW); Federal Ministry of Agriculture, Forestry, Regions and Water Management (BML); Federal Ministry for Social Affairs, Health, Care and Consumer Protection (BMSGPK); Verbindungsstelle der Bundesländer (Liaison Office of the Provinces); Städtebund (Austrian Association of Cities and Towns); Gemeindebund (Austrian Association of Municipalities)

The following stakeholders submitted comments on the risk provision plan:

- Federal Ministry of the Interior, statement dated 23.11.2022, no. 2022-0.825.703,
- City of Vienna, statement dated 23.11.2022, no. MD-OS-1349006-2022,
- Province of Carinthia, statement dated 30.11.2022,
- Wiener Netze GmbH, statement dated 22.11.2022,
- Oesterreichs Energie - Association of Austrian Electricity Companies, statement dated 23.11.2022,
- Austrian Chamber of Agriculture of 23.11.2022,
- illwerke vkw AG, statement dated 22.11.2022.

Table 4 Consultation of national stakeholders - comments received

Main content of the opinions	Assessment by the competent authority responsible for the preparation of the plan
Request for additions to the flow of information in Figure 2, clarification in Figure 1 and a note in Chapter 6.1 that the BMI is responsible for coordinating the SKKM.	These proposals were taken into account in the final version of the risk preparedness plan.
Request that a supply obligation for energy-supplying companies be considered and that incentives for secure power plant output or statutory safeguards against the consequences of outdated power plants or lines as well as an obligation to create replacement capacities in the event of power plant closures could also make an important contribution to minimizing the risks to the electricity supply. Request to supplement the risk preparedness plan with comprehensive information obligations for the control area manager.	The cases in which the Energy Intervention Council and the Main Committee of the National Council have to be involved are listed in the EnLG 2012 and also detailed in the risk preparedness plan. According to section 5 and section 36 EnLG 2012, this includes consulting the Energy Intervention Council and obtaining the approval of the National Council's Main Committee in connection with the issuing of orders on energy intervention measures, as well as the obligation of the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology to report to the National Council within three months of the adoption of intervention measures, and at two-monthly intervals thereafter. No further information or reporting obligations of the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology or the control area manager are provided for by law in accordance with the EnLG 2012. Information on the current supply situation is publicly available on the BMK's energie.gv.at[45] website and as part of the Powermonitor[46] and market transparency database of APG.[47]

[45] Österreichs Infoportal zur Energiesituation | energie.gv.at; This website of the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) serves to improve public access to information in the energy sector.

[46] APG power monitor - Austria needs electricity.

[47] markttransparenz.apg.at/en/markt/Markttransparenz/erzeugung/Erzeugung-pro-Typ.

Main content of the opinions	Assessment by the competent authority responsible for the preparation of the plan
Assessment of the national scenarios for electricity crises no. 3, 6, 10, 27 and 28 (Table 2 of the risk preparedness plan).	With regard to the description of the possible effects in scenario 3, the proposed reference to "particularly sensitive or crucial elements in the network" was added to the risk preparedness plan. The reference to the potentially higher powerline temperatures in the course of extreme heat in connection with overhauls was also taken into account in scenario 28.
Proposal that intervention measures should be communicated publicly via broadcasting and (digital) media in parallel with the announcement of the energy intervention measure orders in the Federal and/or Provincial Law Gazette.	Pursuant to section 5 (4) of the Energy Intervention Powers Act 2012, orders must be announced by other means - in particular by radio or other acoustic means - if it is not possible to announce them in the Federal Law Gazette or in the provincial gazettes, or not in a timely manner. The provision of section 5 (4) EnLG 2012 is also described in the risk preparedness plan. A general obligation to use other forms of publication is not regulated in the EnLG 2012.
Proposal for an addition to the preventive and preparatory measures for scenarios 1, 2 and 17 in Table 2.	This proposal was taken into account in the final version of the risk preparedness plan.
Request to supplement the plan with an allocation of roles of the players and their involvement in the event of risk, including a clarification of the tasks of the control area manager.	The risk preparedness plan shows the roles of the BMK, E-Control, the control area manager and other market participants in accordance with the Energy Intervention Powers Act 2012. A more precise definition of the roles within the framework of the legal requirements of the Energy Intervention Powers Act 2012 is set out in the Energy Intervention Measure Order in the event of an energy intervention case, depending on the requirements of the individual situation.

Main content of the opinions	Assessment by the competent authority responsible for the preparation of the plan
Request to check the accuracy of the presentation of the information flow in Figure 2, according to which it should be examined whether misapprehensions can arise from the parallel path shown "Provincial governors to the market participants/system operators" and "Control area managers to the market participants/system operators" and how these can be excluded if this reporting chain is maintained.	A flow of information from the provincial governors to the market participants/system operators can be derived from the EnLG 2012 ("Section 21 (2): "A provincial governor may charge the designated control area manager in the respective province, as well as the system operators, balance group coordinators, balance group representatives and electricity wholesalers and retailers operating in such province with implementing the measures"; this legal definition is also contained in the risk preparedness plan). A flow of information from the control area manager to market participants/system operators can also be found in the EnLG 2012 ("Section 15 (1): The operational implementation of the measures enacted by order under sections 16-20, on the basis of the criteria set out in the intervention orders, shall be the responsibility of the control area managers, acting in conjunction with the system operators, balance group coordinators, balance group representatives and electricity wholesalers and retailers, which shall coordinate their activities in the interests of a uniform approach throughout federal territory"). This legal definition is also contained in the risk preparedness plan.
Suggestion to make legal adjustments to the Energy Intervention Powers Act 2012 and request for a concrete description of the relationship between intervention measures (in particular the determination of consumption quotas for the provinces and restrictions of large consumers as well as directions to generators operating combined heat and power plants and district heating companies).	Any future legal adjustments are not the subject of the risk preparedness plan. Nor can a cascade of measures applicable to each individual case be specified in the risk preparedness plan, as this must be adapted to the specific circumstances of each individual case and therefore regulated in the energy intervention measure orders themselves.
Request to assign a body invited to participate in the consultation to a different category in the depiction of stakeholders to be consulted in Chapter 7.	This request was granted.

Abbreviations

ACER	European Union Agency for the Cooperation of Energy Regulators
Art.	article
AT	Austria
BKA	Federal Chancellery
BMAW	Federal Ministry of Labour and Economy
BMF	Federal Ministry of Finance
BMI	Federal Ministry of the Interior
BMK	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
BML	Federal Ministry of Agriculture, Forestry, Regions and Water Management
BMLV	Federal Ministry of Defence
BMSGPK	Federal Ministry for Social Affairs, Health, Care and Consumer Protection
i.e.	that is
EBG 2012	Federal Law on the Maintenance of Minimum Stocks of Petroleum and Petroleum Products (Oil Stockholding Act 2012), Federal Law Gazette I No. 78/2012, as amended
E-Control	Energie-Control Austria für die Regulierung der Elektrizitäts- und Erdgaswirtschaft (government regulator for electricity and natural gas markets in Austria)
EC	European Commission
EnLG 2012	Federal Law on Intervention Measures to safeguard Energy Supplies (Energy Intervention Powers Act 2012), Federal Law Gazette I No. 41/2013, as amended
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-G	The European Network of Transmission System Operators for Gas
EU	European Union
ff	and the following
GDG 2022	Federal Law on the Promotion of the Exit from Russian Natural Gas and the Diversification of Natural Gas Purchases from Other Sources (Gas Diversification Act 2022), Federal Law Gazette I No. 95/2022, as amended
LP	legislative period
GWG 2011	Federal Act Providing New Rules for the Gas Sector (Gas Act 2011 - GWG 2011), Federal Law Gazette I No. 107/2011, as amended

MS	Member State(s)
PENTA Forum	Pentalateral Energy Forum
MoU	Memorandum of Understanding
RES	renewable energy sources
CAM	control area manager
SKKM	National Crisis and Disaster Management
TSO	transmission system operator
etc.	et cetera
p.a	per annum

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