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Esittelijä / Föredragande / Referendary

Nimi / Namn / Name: Henri Hämäläinen

Pvm / Datum / Date: 16.01.2023

Ratkaisija / Beslutsfattare / Decision-maker

Nimi / Namn / Name: Simo Nurmi

Pvm / Datum / Date: 16.01.2023

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Risk Preparedness Plan of Finland

In accordance with 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

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ABBREVIATIONS

DSO	Distribution System Operator
ECG	Electricity Coordination Group, set up by a European Commission Decision of 15 November 2012 as a forum in which to exchange information and foster cooperation among Member States, in particular in the area of security of electricity supply
EENS	Expected Energy Not Served
ENTSO-E	European Network for Transmission System Operators for Electricity
LOLE	Loss of Load Expectation
NC ER	Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration
TSO	Transmission System Operator

1 GENERAL INFORMATION

1.1 General

Energiavirasto (The Energy Authority) has been designated from 1 September 2020 as the competent authority in Finland referred in the 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 (the Regulation).

According to the Article 10 of the Regulation the competent authority of each Member State shall establish risk-preparedness plan on the basis of the regional and national electricity crisis scenarios identified pursuant to Articles 6 and 7.

The risk-preparedness plan shall consist of national measures, regional and, where applicable, bilateral measures as provided for in Articles 11 and 12. In accordance with Article 16, all measures that are planned or taken to prevent, prepare for and mitigate electricity crises shall fully comply with the rules governing the internal electricity market and system operation. Those measures shall be clearly defined, transparent, proportionate and non-discriminatory. The risk-preparedness plan shall be developed in accordance with Articles 11 and 12 and with the template set out in the Annex. If necessary, Member States may include additional information in the risk-preparedness plan.

In addition to the national measures referred to in Article 11, the risk-preparedness plan shall include regional and, where applicable, bilateral measures to ensure that electricity crises with a cross-border impact are properly prevented or managed.

The Energy Authority has considered that regional measures could include measures in the Nordic system operation region in which other Member States are Sweden and Denmark. In addition, Energy Authority has considered bilateral measures with Estonia, which is directly connected to Finland.

1.2 Definition of an electricity crisis

Electricity crisis means a situation in which there is a significant electricity shortage leading to circulating load shedding, and the duration of the situation is long enough to cause severe economic costs and to threat security of citizens.

2 SUMMARY OF THE NATIONAL ELECTRICITY CRISIS SCENARIOS

According to the Article 7 of the Regulation the competent authority shall identify the most relevant national electricity crisis scenarios.

The Energy Authority has identified 10 national crisis scenarios in cooperation with Fingrid Oyj (Finnish TSO), National Emergency Supply Agency (NESA) and Ministry of Economic Affairs and Employment of Finland. The Energy Authority has consulted the transmission system operator, distribution system operators (via Power and District Heating Pool) and Finnish Energy, which represents power producers.

The national scenarios are consistent with the regional crisis scenarios identified by ENTSO-E. However, the scenario 10 (political risk) is a national scenario and outside of the ENTSO-E list of scenarios. The probabilities and severities are based on expert group assessment. The evaluation scale is from ENTSO-E's methodology to identify regional crisis scenarios.

The Energy Authority has re-assessed the national crisis scenarios with above mentioned expert group in December 2022. As a result, scenario number 2 has been updated.

More specific description of the scenarios can be found in a document "National Electricity Crisis Scenarios – Finland".

A brief summary of the scenarios is as following:

1) Storm

Storm	
Description of the scenario	A storm that is stronger and wider and lasts longer than expected. The large swaths of damage cause shortages of material, spare parts and personnel.
Likelihood	Possible
EENS	Major
LOLE	Major
Cross-border dependency	Major



2) Extreme weather situation combined with multiple failures and/or long-term generation capacity shortfall

Extreme weather situation combined with multiple failures	
Description of the scenario	<p>The electricity system is already stressed by heat wave or cold spell. Multiple failures start occurring during the extreme weather situation.</p> <p>The situation can also develop if there is a long-term shortfall in available generation capacity due to fuel shortage or long maintenance periods of key power plants during a high load (winter) season. Shortfall in generation cannot be covered with market-based measures (electricity import or DSR).</p>
Likelihood	Possible
EENS	Major
LOLE	Major
Cross-border dependency	Major

3) Pandemic

Pandemic	
Description of the scenario	A rapidly spreading pandemic that could lead to stressed or curtailed operational staff of TSO, DSOs and power plants.
Likelihood	Possible
EENS	Major
LOLE	Major
Cross-border dependency	Major



4) Cyber-attack on business-critical ICT infrastructure of entities which are physically connected to the power grid like TSOs, DSOs, power plants and major (industrial) loads.

Cyber-attack on business-critical ICT infrastructure of entities which are physically connected to the power grid like TSOs, DSOs, power plants and major (industrial) loads

Description of the scenario	An attack against critical ICT systems of TSOs, DSOs, power plants and major (industrial) loads (e.g. central SCADA, substation SCADA, EMS, load-frequency control system, data storage, scheduling system, power plant's operating systems, office IT).
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Likelihood	Possible
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EENS	Critical
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LOLE	Disastrous
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Cross-border dependency	Major
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5) Cyber-attack on business-critical ICT infrastructure at market participants (not physically linked to the power grid)

Cyber-attack on business-critical ICT infrastructure at market participants (not physically linked to the power grid)

Description of the scenario	An attack against the ICT systems of market participants not directly linked physically to the electrical grid (e.g. market actors, power exchange platforms, market makers).
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Likelihood	Possible
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EENS	Major
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LOLE	Major
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Cross-border dependency	Major
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6) Threat to key employees

Threat to key employees	
Description of the scenario	Critical personnel are forced to perform system destabilizing actions. Those affected could include system operators, IT administrators, persons with access rights to critical systems and installations, Chief Executive Officers, Chief Financial Officers, etc.
Likelihood	Possible
EENS	Major
LOLE	Disastrous
Cross-border dependency	Major

7) Physical attack against control centres

Physical attack against control centres	
Description of the scenario	A physical attack against control rooms and backup control rooms of TSOs, major DSOs or major power plant operation centres.
Likelihood	Possible
EENS	Major
LOLE	Critical
Cross-border dependency	Major



8) Physical attack against critical assets

Physical attack against critical assets	
Description of the scenario	A physical attack against power lines, transformers, substations, power plants or data centres.
Likelihood	Possible
EENS	Major
LOLE	Major
Cross-border dependency	Major

9) Insider attack

Insider attack	
Description of the scenario	Sabotage by employee(s) or subcontractor(s) via physical intervention or misuse of ICT systems. The TSO, DSO or power plant operator are no longer in control. In particular, critical assets are no longer controllable.
Likelihood	Possible
EENS	Major
LOLE	Disastrous
Cross-border dependency	Major



10) Political risk

Political risk	
Description of the scenario	<p>A critical security risk is observed in a power plant somewhere in the world. Because of the potential security risk, a political decision is made to close all the power plants of the same type in Finland, until comprehensive inspections are carried out. Inspections must be carried out immediately, and they cannot be postponed until the next yearly maintenance.</p> <p>Another type of political risk is: An interconnection with 3rd country is lost. In Finland it would mean closure of electricity import capacity from Russia. In particular, the consequences would be critical if this happened suddenly and during a peak load.</p>
Likelihood	Possible
EENS	Major
LOLE	Major
Cross-border dependency	Major

3 ROLES AND RESPONSIBILITIES OF THE COMPETENT AUTHORITY

According to the Finnish national legislation the Energy Authority has been nominated from 1 September 2020 as the competent authority defined in the Regulation (EU) 2019/941 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC.

Roles and responsibilities of the competent authority pursuant to the Regulation (EU) 2019/941 are:

- Issuing an early warning and declaration of an electricity crisis.
- Providing the ECG and the Commission with an ex-post evaluation report within three months after the end of an electricity crisis.
- Organizing electricity crisis simulations in cooperation with transmission system operators and other relevant stakeholders.
- Updating national electricity crisis scenarios every four years.

In Finland, the competent authority acts also as the crisis coordinator

Furthermore, the TSO and the Ministry of Economic Affairs and Employment have roles and responsibilities regarding electricity crises, and they are listed below.

Roles and responsibilities of TSO (Fingrid Oyj) are:

- Operation and restoration of the electricity system in case of an electricity crisis
- Informing stakeholders

Roles and responsibilities of Ministry of Economic Affairs and Employment of Finland:

- Informing the public about electricity crises
- Negotiating agreements regarding risk preparedness and assistance in crisis situation with other Member States.



Below is a summary of tasks of different parties related to the electricity crisis.

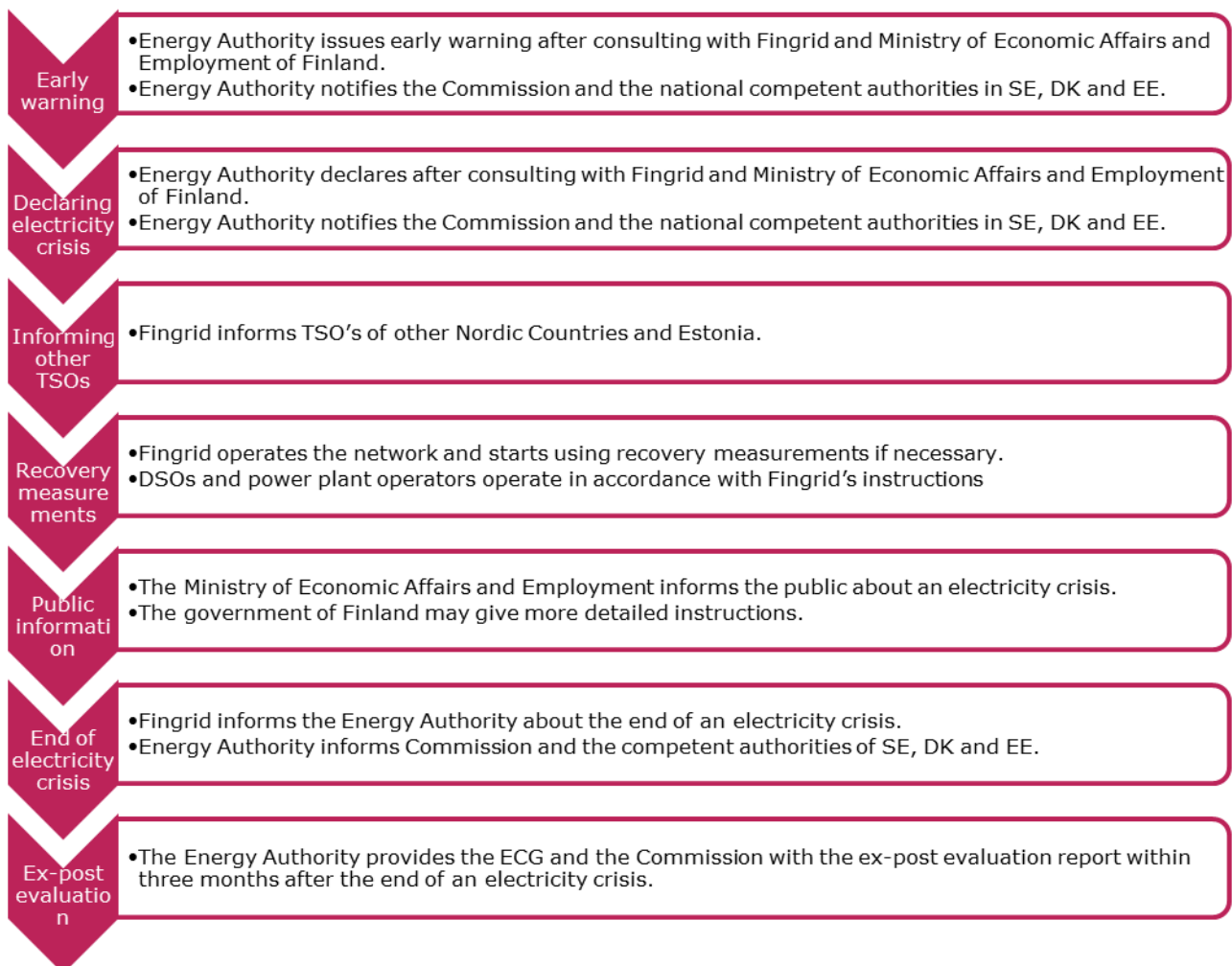
Party	Tasks related to the electricity crisis
Energy Authority (national competent authority)	Issuing an early warning and declaration of an electricity crisis. Providing the ECG and the Commission with an ex post evaluation report within three months after the end of an electricity crisis. Organizing electricity crisis simulations in cooperation with transmission system operators and other relevant stakeholders. Updating national electricity crisis scenarios and the risk preparedness plan at least every four years. Crisis coordinator
Fingrid Oyj	Operation and restoration of the electricity system in case of an electricity crisis Informing stakeholders
Ministry of Economic Affairs and Employment of Finland	Informing the public about electricity crises Negotiating agreements regarding risk preparedness and assistance in crisis situation with other Member States.

4 PROCEDURES AND MEASURES IN THE ELECTRICITY CRISIS

4.1 National procedures and measures

4.1.1 Procedures and measures in the case of an electricity crisis

- The Energy Authority issues an early warning to the Commission and the competent authorities of Sweden, Denmark and Estonia, after consulting Fingrid and Ministry of Economic Affairs and Employment of Finland. The Energy Authority, Ministry of Economic Affairs and Employment of Finland and Fingrid have continuous dialogue on the situation already before the situation might escalate as an electricity crisis.
- The Energy Authority declares an electricity crisis after consulting Fingrid and Ministry of Economic Affairs and Employment of Finland. The Energy Authority informs the Commission and the competent authorities of Sweden, Denmark and Estonia about electricity crisis.
- Fingrid informs TSO's of other Nordic Countries and Estonia about the electricity crisis.
- Fingrid operates the network and starts using recovery measurements if necessary. DSOs and power plant operators operate in accordance with Fingrid's instructions.
- The Ministry of Economic Affairs and Employment informs the public about the electricity crisis. The government of Finland may give more detailed instructions.
- Fingrid informs the Energy Authority about the end of the electricity crisis. The Energy Authority informs Commission and the competent authorities of Sweden, Denmark and Estonia about the end of an electricity crisis.
- The Energy Authority provides the ECG and the Commission with the ex-post evaluation report within three months after the end of the electricity crisis.



4.1.2 Preventive and preparatory measures

Weatherproof networks (crisis scenarios: storm, extreme weather situation combined with multiple failures)

The Finnish "Electricity Market Act" (588/2013) requires that by 2028¹ power cuts, caused by extreme weather, cannot last more than 6 hours in urban areas and 36 hours in rural areas. Distribution system operators (DSOs) need to fulfil these requirements so that 50 % of customers are in scope of the outage limits in year 2019, 75 % in 2023, and 100 % of customers by the end of the year 2028. Consequently, DSOs are improving networks to be weather-proof.

DSOs are obligated to submit technical key figures of the network annually to the Energy Authority.

¹ According to the amendment to the Electricity Market Act (15.7.2021/730) the requirement will be prolonged until 2036 for some DSOs operating mainly in rural areas.



In addition to obligation to submit technical key figures, distribution system operators are also obligated to submit to Energiavirasto their network development plans to explain by which measures they will meet the targets. The network development plans must include estimate, how the most essential key figures will develop in next 10 years. DSO's also need to explain how much (money) they will invest to different network elements in next 10 years.

DSOs need to explain their strategies, how they are going to meet the requirements of the Electricity Market Act 51§. The development plans must include an economic comparison of different solutions (such as underground cabling, overhead lines, electricity storages etc.).

DSOs must also notify the percentage of the network area already meeting the requirements of the Electricity Market Act.

Government decision on the objectives of Security of Supply (1048/2018) (all crisis scenarios)

The Finnish Government has made its latest decision on the security of supply goals in 2018 (1048/2018). The decision is based on the Act on the Measures Necessary to Secure Security of Supply (1390/1992). The objective is to ensure the continuity of production and infrastructure vital to society under all circumstances in such a way that the living conditions of the population and the critical functions of society are secured also in the event of disruptions and emergencies, including a state of defence.

According to the decision, the basis of the security of energy supply is well functioning energy markets, energy policy that encourages investments and energy efficiency. The security of energy supply shall be based on diverse energy sources and fuels, reliable and decentralized energy production and secure transmission and distribution systems. According to the decision, the State shall have majority ownership and direct control in the electricity transmission and the natural gas transmission system operators.

National contingency plans for electricity supply (all crisis scenarios)

The Finnish Electricity Market Act requires that TSO and DSOs must develop plans to prepare for disturbances under normal conditions (contingency plans) and under emergency conditions defined in "Emergency Powers Act" (2011/1552) (emergency plans).

TSO and DSOs must submit their contingency plans to the Energy Authority. The plans must be updated every three years unless circumstances warrant more frequent updates.

Both TSO's and DSOs' contingency plans includes measures to prevent all crises which are listed in this plan. The plans include responsibilities and measures e.g. for following situations:

- Responsibilities and arrangements for abnormal conditions
- Preparation for extreme weather conditions



- Actions under blackout state
- Preparation for epidemics
- Preparation for major accidents
- Preparation for market failures
- Preparation for electricity shortage
- Risk management of communication networks and information systems
- Regional cooperation in preparedness and serious disturbances, such as co-operation and communication with police, rescue authorities and defence forces.

TSO and DSOs are also obligated to develop emergency plans for state of emergency defined in "Emergency Powers Act (2011/1552)". These plans include e.g. following measures:

- Description of the roles of key personnel
- Ensuring adequacy of staff for state of emergency
- Plans for restrictions of electricity use
- Ensuring permissions needed during state of emergency (e.g. permission for buying and using fuels)

TSO's emergency plan includes description of how the network elements and reserve power plants are secured during the state of emergency and how the cybersecurity and the security of staff is ensured. The plan has also description of how the functioning of electricity markets is ensured if reliable functioning of wholesale marketplace is not ensured.

System defence plan (pursuant to NC ER-regulation) (all crisis scenarios)

Fingrid has developed a system defence plan, defined in the NC ER regulation, in 2018. All measures defined in system defence plan are essential in preparing for electricity crises.

Network operators' obligation to notify the Energy Authority of information security faults (cyber-attack scenarios)

The "Electricity Market Act" (588/2013) 29 a § requires, that network operators must take care of risk management of communication networks and information systems. Network operators must notify the Energy Authority of information security faults, that can lead to widely interrupted electricity distribution in the distribution network.

The Energy Authority has responsibility to evaluate if the fault concerns other Member States and to inform other Member states if necessary.



National preparedness plan for an influenza pandemic (pandemic scenario)

Ministry of Social Affairs and Health has published in 2012 plan "National Preparedness Plan for an Influenza Pandemic"². The plan includes preparation and mitigation actions for pandemic situation. The plan is currently being updated, and the updated plan will be published in summer 2022.

The energy transmission and distribution networks are among the security of supply critical infrastructures, and energy production is among the critical productions, and the continuity (including staff adequacy) of them must be ensured.

Fingrid's voluntary power system support procedure

Fingrid has implemented a new voluntary power system support procedure for the winter period 2022-2023 to prevent electricity shortages. Fingrid has published an urgent market message:

"Fingrid implements 1.12.2022 a new voluntary power system support procedure for companies and the public sector to prevent electricity shortages. The power system support procedure will be activated when Fingrid's three-step electricity shortage scale reaches "High risk of electricity shortage". There is considered to be a high risk of an electricity shortage when all the up-regulation bids available in the Finnish balancing power market are in use and no more electricity can be imported from neighbouring countries. The maximum capacity in the support procedure is about 350 MW (status 5.12.2022). Actual support in the electricity shortage situation depends for example on the time of the day and operational situation of the participants."

² Available only in Finnish (Kansallinen varautumissuunnitelma influenssapandemiaa varten)

4.1.3 Measures to mitigate electricity crises

System restoration plan (pursuant to NC ER regulation) (all crisis scenarios)

Fingrid has developed a system restoration plan, defined in NC ER regulation, in 2018. The measures described in the system restoration plan will be used when the system is in "emergency state", if the measures in the system defence plan are not enough to restore the system, and in "blackout state". These measures will also be used if any of the crisis scenarios in this plan lead to emergency or blackout state.

Restoration measures are described more detailed in Fingrid's internal guideline "Investigation of serious electricity system disturbances in Fingrid KH40001"³ and in its public version "General guideline of investigation of serious electricity system disturbances KH40000"⁴.

General guideline of investigation of serious electricity system disturbances KH40000 (all crisis scenarios)

The guideline for serious disturbances in the electricity system will be used e.g. in the following situations:

- Blackout state in transmission network, when significant part of 400 kV and 220 kV network has no voltage.
- Island operation, where Finland's network is disconnected from Sweden's network or significant part of the transmission network has divided into smaller parts that have different frequency.
- Over-frequency or under-frequency in the electricity system, where the frequency is over 50,5 Hz or under 49,5 Hz despite activation of reserves.
- Over-voltage or under-voltage disturbances
- Power fluctuation in the electricity system, which is especially strong in the transmission lines between Sweden and Finland and may cause loss of stability.
- A situation, where the electricity system cannot be restored to normal state because of an exceptional reason.

Fingrid is in charge of leading the investigation of the disturbance and restoring the system. Fingrid's Main Grid Control Centre can give instructions to participants connected to network.

³ Available only in Finnish (Sähköjärjestelmän vakavien häiriöiden selvittäminen Fingrid-yhtiössä KH40001)

⁴ Available only in Finnish (Sähköjärjestelmän vakavien häiriöiden selvittäminen yleisohje KH40000)

Balance responsible parties maintain their balance according to Fingrid's instructions, until new instructions are given.

DSOs are in charge of doing necessary investigating measures in their own area. DSOs must set their network to a state where restoration is possible. DSOs must have up to date load shedding plans.

Fingrid reports the serious disturbance to the Energy Authority one workday after the disturbance at the latest.

Restricting electricity use pursuant to the "Emergency Powers Act" (all scenarios)

The electricity crisis might require activation of the "Emergency Powers Act". Activation of the Emergency Powers Act requires that both the Finnish Government and the President of the State of Finland declares together that Finland is under emergency conditions .

The Emergency Powers Act can be introduced if one of the following criteria is met⁵

- 1) an armed attack against Finland, as well as war and the aftermath of war
- 2) a serious violation of the territorial integrity of Finland and a threat of war against the country
- 3) a serious threat to the livelihood of the population or the foundations of the national economy
- 4) a serious catastrophe and the aftermath of a catastrophe
- 5) a serious infectious disease
- 6) such threat or such activity or event against or such combined effect thereof for
 - a. the decision-making capacity of the public,
 - b. border security or public order and security,
 - c. the access to necessary services in social and health care or the emergency services,
 - d. the access to energy, water, food, medicines or other necessary goods,
 - e. the availability of necessary payment and securities services;
 - f. the functioning of society's critical traffic system, or

⁵ This point is a machine translation of Emergency Powers Act (1552/2011) 3§.



- g. the function of information and communication technology services or information systems that maintain the functions referred to in subparagraphs a-f

which significantly and on a large scale hinders or paralyzes necessary social functions or which in any other way comparable to the degree of seriousness particularly seriously and significantly endangers society's ability to function or the population's living conditions.

For such situation, the Emergency Powers Act includes provisions to restrict use of electricity. To implement these provisions there is already a national plan for restriction of electricity consumption: "Plan for restrictions of electricity use"⁶ (Voimatalouspooli, 2011). The first step of the restriction is customers' voluntary restriction of electricity use. There is also a plan for quota of electricity use. If a customer exceeds the limit of his/her electricity use (set by DSO), he/she must pay "overuse fee". However, electricity use of electricity users critical to e.g. security of supply or defence is not restricted. The plan includes also "total cut" (=circulating load shedding) as a last resort.

During the regulation of electricity use, if a market price cannot be formed, the authorities may determine fixed price for electricity.

The Energy Authority monitors the restrictions of electricity use and their fair targeting among electricity users.

4.1.4 Framework for manual load shedding

In Finland, each DSO has a plan for manual load shedding in their area, and a part of the plan is to ensure electricity supply to critical electricity users. The "Electricity Market Act" 52§ says that DSOs' network development plans must pay attention to ensuring electricity distribution to facilities or services that are critical for ensuring governance and security of society, livelihood of population or functioning of economy.

On 8 December 2022 Finnish Government issued a decree on critical electricity consumers. Grid operators must update the list of critical electricity consumers in their manual load shedding plans. According to the decree, critical electricity consumers include:

- key facilities of water supply services that have special significance for health or environmental protection,
- control rooms of the main grid owner, electricity distribution network operators and electricity producers necessary for the continuity or restoration of uninterrupted electricity supply,
- power stations, important electricity storages, electricity generation plants and communications networks used by them,

⁶ Power and District Heating Pool. 2011. Available only in Finnish: "Sähkön säännöstelysuunnitelma"



- transmission network facilities required for uninterrupted supply of gas,
- solid fuel heating plants of district heating production in cities and urban settlements and other key heating plants, pumping stations and control rooms,
- class 1 dams under the Dam Safety Act and class 2 dams for which a dam break hazard analysis has been prepared by decision of the dam safety authority,
- key international border crossing points in air traffic pursuant to the decree on airports,
- key control rooms for land, sea, rail and air traffic of the maritime rescue co-ordination centre and bodies providing traffic control and management and air navigation services as well as the main sites of the electric rail network and metro transport services,
- police and rescue departments, National Bureau of Investigation, National Police Board,
- emergency response centres, hospitals and 24-hour health and social services units as well as institutions and housing service units that use life-saving equipment,
- main office of Blood Transfusion Service,
- ports essential for foreign trade and security of supply,
- prisons and detention centres,
- base stations for radio communications by the authorities and data centres related to communications by the authorities, key sites of other public communications networks as well as radio masts used by the Finnish Broadcasting Company for the transmission of radio and television broadcasts,
- central government authorities necessary for the nation's leadership, key facilities of national defence and Finnish Customs, as well as municipal command centres, evacuation centres and substitute facilities for them.

In an electricity shortage situation, Fingrid's plan "Management of electricity shortages and electricity overproduction in the Finnish electricity system KH001" is used. The plan has also a public version for stakeholders: Management of electricity shortages in Finland – A guideline for stakeholders⁷.

According to the latter mentioned plan, during an electricity shortage situation and after other measures (including activating fast disturbance reserve), Fingrid:

⁷ Available only in Finnish: " Suomen sähköpulatilanteiden hallinta – ohje sidosryhmille"

- Coordinates the manual disconnection and restoration with other Nordic TSOs.
- Executes the manual load shedding with the help of DSOs. DSOs restrict their load by Fingrid's request using beforehand-made load shedding plans.
- When the situation gets back to normal, 600 MW of reserve hydro capacity is restored in a synchronous area before reactivating the load.
- Balance responsible parties are in charge of maintaining their own balance, and they must comply with Fingrid's instructions.

Fingrid's Main Grid Control Centre is in charge of ensuring the availability of electricity in Finland. The conditions and procedures for electricity shortage situation consist of 3-step protocol. Phases of an electricity shortage are:

- Electricity shortage possible
 - The forecasts indicate that in the near future, Fingrid will be unable to maintain rapid disturbance reserves in an amount that would offset a dimensioning fault and domestic production and imports are not enough to cover electricity consumption. Fingrid will announce this on its website. The Ministry of Economic Affairs and Employment will inform citizens of the possibility of an electricity shortage.
- High risk of electricity shortage:
 - All the electricity production available in Finland is in use, and no more electricity can be obtained from Finland's neighbouring countries. Fingrid will announce this on its website. The Ministry of Economic Affairs and Employment will inform citizens of the possibility of an electricity shortage.
- Electricity shortage:
 - Electricity production and imports are not enough to cover consumption, and Fingrid needs to exercise its right as the party responsible for the system to disconnect electricity consumers. Fingrid will announce this on its website. The Ministry of Economic Affairs and Employment will inform citizens of the possibility of an electricity shortage.

A network operator is allowed to restrict the electricity use according to "terms and conditions for network service", that electricity users must accept. The Energy Authority accepts each network operator's terms and conditions before taking them into use. All DSO's comply with the terms and conditions (VPE 2019) recommended by "Finnish Energy". According to the terms and conditions:

- "11.6.1 The DSO is entitled to temporarily and immediately interrupt the network service (to cut the distribution of electricity), if it is necessary for preventing danger to human life, health or property. "



- *"11.6.2 An essential disturbance in electricity generation, network operations or cross-border electricity transmission or some other reason independent of the DSO (such as a war or other type of crisis situation, industrial action or an exceptional natural circumstance) may cause such a disturbance in the availability of electricity that the supply of electricity may be totally interrupted or it may decrease so that the DSO is forced to interrupt the provision of network service to users or introduce regulation."*
- *"11.6.3 If the DSO is capable of supplying electricity or offering other network services to a limited extent only due to the reasons specified in the two previous sections, the DSO is entitled to divide (regulate) the electricity available between users by taking into account the general and vital needs of society, any provisions that may be issued by the authorities, any valid plans or obligations concerning the management of the electricity shortage, as well as the prevailing circumstances, and to interrupt the provision of other network services, if necessary."*

Also, Fingrid's "Main Grid Service Terms and Conditions 2016" says that Fingrid is allowed to restrict electricity use of transmission grid users in the case of force majeure.

"In the case of force majeure, Fingrid has the right to restrict the Customer's electricity transmission or to interrupt it completely. Cases of force majeure are deemed to cover any events which Fingrid could not have prevented through reasonable caution and which make Fingrid's electricity transmission specified in this Contract impossible or impair it essentially or make it financially or otherwise unreasonable. Cases of force majeure include war, the country's internal unrest, sabotage, explosion, fire, exceptional and unpredictable weather conditions, general interruption in traffic, strike or stoppage of a key employee group, lock-out ordered by an employer organisation, measures by authorities, insufficient production capacity, or other similar reason with as significant and unusual consequences. Force majeure is also considered to cover interruption in power production or such damage in the power production or power transmission system caused by the above causes which could not have been prepared for with principles generally applied to European power systems or legislative or official requirements. Fingrid shall inform the Customer of the occurrence of force majeure as well as of its end without delay."

The "Emergency Powers Act" allows also network operators to temporarily interrupt electricity supply in state of emergency. Electricity supply may be interrupted only if measures to decrease electricity consumption are not enough to enable the functioning of electricity system. However, customers who are important for security of supply, may not be interrupted without compelling reason. The Act requires, that the length of the electricity interrupt must be kept as short as possible in each area, and interruptions must be fair between electricity users. The Energy Authority monitors the reasons and fairness of supply interruptions.

4.1.5 Mechanisms used to inform the public about the electricity crisis

The Ministry of Economic Affairs and Employment informs the public about an electricity crisis. Informing mechanism is described in guidelines "Viestintä sähköpulan uhatessa" and "Viestintä kantaverkon suurhäiriötilassa".

Main principles of informing according to the upper mentioned guidelines are:

- The Ministry has the main responsibility of the informing the public. Energiavirasto provides the Ministry with supporting information. Fingrid's responsibility is to maintain the grid stability and inform the public and authorities about the electricity shortage steps. Furthermore, DSOs inform their own customers.
- The communication aims to calm the situation and highlight that the situation is under the control of authorities and TSO.

It is important that all parties provide the same information

4.2 Regional and bilateral measures

Any new regional or bilateral agreements on measures to prevent or on assisting in electricity crises have not been made since the Regulation (EU) 941/2019 has come into force.

The Nordic co-operation on civil security and emergency management is based on so called Haga-declarations (2009 and 2013).

The Finnish legislation (418/2017) defines the rules for decision-making for provision and reception of significant international assistance.

Nordic TSOs work in a close cooperation, and they are obligated to assist each other in case of an exceptional situation. Also, pursuant to Emergency and Restoration NC, assistance must be provided (if possible) if a TSO in emergency state request it.

The Energy Authority considers that no further assistance mechanisms are needed. In an electricity crisis situation, the existing assistance mechanisms will be used.

The Energy Authority has up-to-date contact information of the competent authorities of neighbouring countries. The list of the emergency contacts is a separate document. The communication mechanism is described in chapter 4.1.1 of this document.

4.2.1 Regional measures

Nordic transmission system operators have agreed in the System Operation Agreement (Nordic SOA, 2019) that each TSO has a responsibility to ensure system security in their own subsystem. Each TSO must inform other TSO's as soon as possible about operational events and issues that might have an influence on other TSOs or the Nordic power system.

Pursuant to NC ER Article 14, each TSO shall provide through interconnectors any possible assistance to the requesting TSO in emergency state, provided this does not cause its transmission system or the interconnected transmission systems to enter into emergency or blackout state.

In the case of resynchronizing island operation areas, the weaker system is adjusted so that the resynchronizing is possible.

4.2.2 Bilateral measures between Finland and Estonia

Finland and Estonia are interconnected with two HVDC-interconnectors, Estlink 1 and Estlink 2. Total transmission capacity of these two interconnectors is around 1000 MW.

Pursuant to Emergency and Restoration NC Article 14, assistance must be provided if a TSO in emergency state request it. The assistance may consist in carrying out the actions listed in Article 14(2), taking into account the technical characteristics and capability of HVDC system.

Finnish and Estonian TSOs, Fingrid and Elering, have signed an agreement on maintenance and operation of Estlink interconnectors⁸. In the annex "System Services" there are measures e.g. for emergency power and voltage and frequency control. The measures have been developed both for normal and emergency conditions. The interconnectors also have the ability to conduct a black start for Estonian needs. In addition, the interconnectors contain different automatically activated emergency power control (EPC) mechanisms.

⁸ Information concerning the content of the agreement between Fingrid and Elering is based on information provided by Fingrid. The Energy Authority has not been able to verify this information from the actual agreement.

5 CRISIS COORDINATOR

The crisis coordinator in Finland is the Energy Authority. The role of the crisis coordinator is sharing information and coordinating the information flow.

The Energy Authority will rely on the situational picture of the power system made by Fingrid. It is critical to ensure proper and timely informational flow between Fingrid and authorities. The Ministry of Economic Affairs and Employment must be well aware of the situation in order to make right decisions.

The crisis coordinator is also a contact point and shares information with crisis coordinators and competent authorities in neighbouring countries (in Sweden, Denmark and Estonia) and the Commission.

6 STAKEHOLDER CONSULTATIONS

6.1 National stakeholder consultation

Stakeholder consultation on the draft risk preparedness plan was organised in period of 12 – 26 March 2021. The Energy Authority asked for opinion on the draft from following organisations:

- Electricity and District Heating Pool (including electricity and district heating producers and all DSOs)
- Finnish Energy and Local Power (representing power producers)
- Omakotiliitto and the Finnish Real Estate Federation (representing non-industrial electricity users)
- Finnish Forest Industries, The Chemical Industry Federation of Finland and Technology Industries of Finland (representing industrial electricity users)
- ELFi and Confederation of Finnish industries (representing both industrial and non-industrial electricity users)
- Fingrid Oyj (Finnish TSO)
- National Emergency Supply Agency
- Ministry of Economic Affairs and Employment of Finland

The Energy Authority received five opinions from stakeholders. A few comments were given on national electricity crisis scenarios, which however were not the main scope of this consultation. The general opinion was, that the draft risk preparedness plan is comprehensive and well drafted. The consultation did not lead to amending the draft.

6.2 Other Member States consultation

The Energy Authority have discussed with Estonia, Sweden and Denmark about the risk preparedness plans and oral comments have been given.

The Energy Authority also received a written opinion from Sweden. The opinion stated that the structures of Finnish and Swedish plans are similar, and that the role of crisis coordinator is similar in both countries. The Swedish opinion also stated that co-operation and discussion in the future between Finland and Sweden is needed to comply with the provisions of the risk preparedness regulation.

7 EMERGENCY TESTS

The Energy Authority, together with other competent authorities in the Nordic region, conducted an electricity crisis exercise on 5th October 2022. The main focus of the exercise was communication among the competent authorities. Each competent authority then communicated with national organisations if necessary.

The exercise started when Sweden sent an early warning. The Energy Authority replied to Sweden's message and contacted Fingrid, the Ministry of Economic Affairs and Employment and the National Emergency Supply Agency. A few days later the competent authorities discussed the exercise and shared their best practices.

The competent authorities of the Nordic region will carry out similar exercises at least every 2 years. In particular, the simulations will test cooperation and information sharing mechanisms.

The Energy Authority has also started discussions with the competent authority of Estonia about organizing electricity crisis simulations.