

Large-scale power outage



Threat assessment: A widespread power outage in Estonia is very likely. Compared to the previous assessment, the risk rating has not changed.

In the main grid, the impact of power outages has decreased over the last decade. The main causes have been technical failures or severe weather conditions.

In the distribution grid, the number of outages decreased over the past year. Most outages were caused by severe weather conditions, such as trees falling due to wind or heavy snow. In Elektrilevi's network, which is the largest distribution grid in Estonia, the average outage time per consumption point per year (SAIDI) caused by failures was 142 minutes in 2024, which was much less than the year before (453 minutes in 2023). Although 2024 was the calmest year in terms of storms in recent years, the functioning of Estonia's distribution grid—especially in rural areas—remains heavily affected by weather conditions.

THREATS

The main causes of power outages are:

- ✓ Weather phenomena: storms, freezing rain, floods, extreme cold, or extreme heat.
- ✓ Technical causes: human errors; technical failures of critical equipment, including fires.
- ✓ Cyberattacks: targeting power grid control systems or meters, production facilities, and their cloud-based management systems (e.g., power plants, major wind and solar energy providers).
- ✓ Damage to energy infrastructure: theft, sabotage, vandalism, etc.

External connections are critical for the Baltic states. Incidents in the Baltic Sea, such as the destruction of EstLink 2 at Christmas 2024, show that subsea energy infrastructure is vulnerable and has a major impact on society, including electricity prices.

Future crises may be caused by hybrid threats aimed at destabilizing society. Considering the regional geopolitical situation and the full-scale war in Ukraine, it is important to ensure the resilience of critical energy infrastructure against hybrid threats. This requires, among other things:

- ✓ Strengthening physical protection of critical energy infrastructure, taking into account the risks of the new reality (e.g., drones, deliberate damage, sabotage).
- ✓ Ensuring continuous cybersecurity to mitigate risks related to third-party access to energy facilities (e.g., hacking into cloud servers, control systems).

ACTIONS

- ✓ In 2025, the Baltic states disconnected from the BRELL synchronous grid and joined the Continental European synchronous area. The Baltic energy system is no longer dependent on Russia. Before synchronization, Estonia's electricity system was connected to the synchronous area by six 330 kV high-voltage lines; after synchronization, it is connected by three—these are the links with Latvia. Therefore, Estonia's electricity system must have greater technical capacity to cope with islanding than before.
- ✓ Adequate controllable capacity (e.g., gas and oil shale power plants) in the Baltics, along with cross-border interconnections between member states, help mitigate risks. If the region faces a shortage of generation capacity, for example during an especially long cold period when widespread outages and failures occur simultaneously, electricity consumption may need to be restricted in the worst case. In that situation, electricity would be supplied to consumers on a rotating basis—with outages lasting up to a few hours and announced in advance. Priority would be given to consumers where the risk to human life is highest, such as hospitals and critical nursing homes.

GUIDELINES

To prepare for a long-term power outage, think through which essential daily activities require electricity and what alternatives you have if electricity is not available:

- ✓ Keep battery-powered lights at home.
- ✓ Have a fully charged power bank for charging your phone.
- ✓ Keep a battery-powered, solar-powered, or hand-crank (dynamo) radio at home to receive official

- ✓ information.
- ✓ Ensure you have enough household supplies to manage independently for one week.
- ✓ If you rely on a public water supply system, ask your local government or water company whether and how water supply is ensured in your area during a power outage.
- ✓ Think about where you could go if you rely heavily on electricity without alternatives. In a long-term outage, you can also receive assistance from your local government.
- ✓ If you have a car, make sure you have enough fuel at home so you can use the radio for information or charge your phone in the car if needed.
- ✓ If possible, acquire a generator and sufficient fuel reserves for it.

REPORTING SUSPICIOUS ACTIVITIES

Since hybrid attacks on the power system have a major impact on the functioning of society, it is important to report suspicious activity near power lines or substations **to 112**. Examples include photographing, flying drones, or unusual behaviour.

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