



# SPACE WEATHER

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The term “space weather” refers to the variable conditions on the sun and in space that can influence the performance of the technology we use on Earth.

Space weather can produce electromagnetic fields that induce extreme currents in wires, disrupting power lines and even causing widespread power outages. Severe space weather also produces solar energetic particles, which can damage satellites used for commercial communications, global positioning, intelligence gathering and weather forecasting.

Space weather events can also have effects on Earth's atmosphere, causing changes in the ionosphere that can impact radio communication and GPS signals.

The sun is the main source of space weather.

**Solar flares** are bursts of energy from the sun's surface that can release high levels of radiation and electromagnetic energy.

**Coronal mass ejections** are massive eruptions of plasma and magnetic fields from the sun that can cause geomagnetic storms when they interact with Earth's magnetic field.

**Geomagnetic storms** can cause disruptions to power grids, communications systems and navigation equipment.

## **Space weather-related power outages can cause:**

- Loss of water and wastewater distribution systems.
- Loss of perishable foods and medications.
- Loss of heating/air conditioning and electrical lighting systems.
- Loss of computer systems, telephone systems and communications systems (including disruptions in airline flights, satellite networks and GPS services).
- Loss of public transportation systems.
- Loss of fuel distribution systems and fuel pipelines.
- Loss of all electrical systems that do not have backup power.

## **Prepare NOW**

Build an emergency kit.

Compile a family communications plan.

Learn more about preparing for power outages.

Be aware that most medication that requires refrigeration can be kept in a closed refrigerator for several hours without a problem. Check with your physician or pharmacist if you are unsure about your specific medication.

Keep your car's fuel tank at least half full. Filling stations rely on electricity to power their pumps.

Know where the manual release lever of your electric garage door and gate opener is located and how to operate it.

Keep extra batteries or external chargers to charge your phone, laptop and other small electronics in the event of a power outage. Keep a car phone charger in your car.

## **Survive DURING**

Keep your electricity usage as low as possible, which can help power companies avoid imposing load shedding periods when the power grid is compromised.

Disconnect electrical appliances.

Do not use the telephone unless absolutely necessary. Keep phone lines open for emergency personnel during emergencies.

## **Survive AFTER**

Throw out unsafe food.

Throw away any food that has been exposed to a temperature of 4 °C or higher for two hours or more, or that has an unusual odour, colour or texture. When in doubt, throw it out!

Never taste food or rely on appearance or odour to determine its safety. Some foods may look and smell fine, but if they have been at room temperature too long, bacteria that cause foodborne illnesses can start growing quickly. Some types of bacteria produce toxins that cannot be destroyed by cooking.

You can refreeze food in the freezer if the food is colder than 4 °C and has ice crystals on it.

Measure the food's temperature with a food thermometer if you are not sure that it is cold enough.



