



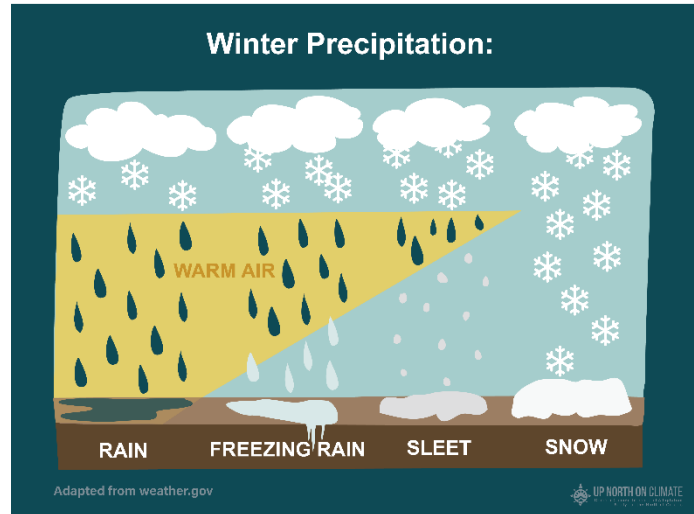
Preparing for Winter Power Outages

Climate change will impact energy infrastructure and we can expect winter conditions to create a number of challenges, especially in the north.

How will a changing winter impact energy infrastructure?

Climate change is projected to bring warmer winter temperatures and more winter precipitation to all regions in Ontario. The temperature impacts the types of precipitation that we experience, and warmer conditions could mean areas see more rain, freezing rain, and ice storms in winter. Warmer air also leads to more heavy, wet snow which can weigh down power lines, transmission poles, and trees.

Ice accumulation can also add a lot of weight to power lines and equipment, causing damage. In windy conditions, icy lines can move so much that they snap wires and wooden poles or even cause steel transmission structures to crumble.



Air temperature influences if precipitation falls as rain, freezing rain, sleet, or snow. Image modified from https://www.weather.gov/rnk/Measure_Icing

What do winter power outages mean for people and communities?

The impact of a power outage on people and communities depends on how long the outage lasts and how much the community's heat relies on electricity. A short power outage might only be an inconvenience. But when power outages drag on in winter, houses will become cold and people will need to seek out warm spaces and worry about freezing pipes. Power outages in cold temperatures are considered an emergency by many communities.

How can our community prepare?

Community Emergency Planning

Winter power outages can be a great risk for northern communities. Communities can benefit from having an emergency plan in place. Plans can include:

- Well defined conditions to call an emergency
- List of roles and responsibilities for community leaders during an emergency
- Written response plans and how to implement them
- Methods for alerting the community
- Plan to support the most vulnerable community members





Community Warming Centres

Making community warming centres available during long power outages can help protect community members in cold conditions. The city of Yellowknife uses the chart shown on the right as a guideline for deciding when to open emergency warming centres. Outdoor temperature and the duration of the power outage are used to determine the need.

A warming center should be in a large building that has its own backup power generator in case of a community-wide power outage.

Risk Assessment Matrix	Duration of the full power outage				
	0-2 hours	3-4 hours	4-5 hours	5-7 hours	8+ hours
+10°C or more	Green	Green	Green	Green	Green
0°C	Green	Green	Green	Green	Green
-10°C	Green	Green	Green	Yellow	Yellow
-20°C	Green	Green	Yellow	Yellow	Yellow
-30°C	Green	Yellow	Yellow	Red	Red
-40°C	Green	Yellow	Yellow	Red	Red

No warming centre needed
 Warming centre "MAY" be needed (situational)
 Warming centre **will** open

Decision chart for opening warming centres in Yellowknife, NWT, in response to a winter power outage. Yellowknife's Emergency Measures Plan (available online)

Maintenance of Power Infrastructure

Power transmission infrastructure (like hydro poles, transmission towers, etc.) that is well maintained may be less likely to be damaged by weather events. Communities may consider having their power grid assessed and advocating for necessary maintenance. This can include the replacement of damaged or aging structure and/or clearing trees that could damage infrastructure if they fall.

Solar power microgrids can help with energy independence



Image from <https://scitechdaily.com/no-more-blackouts-new-framework-guarantees-the-stability-of-microgrids/>

Communities may also want to consider creating their own electricity with a local microgrid. Microgrids can be done with renewable energy, like wind, solar or nuclear, which can reduce dependence on diesel generators. They also allow communities to be more independent.

How can people prepare?

Emergency Supplies

Households can be prepared for winter power outages by keeping supplies such as canned food, candles, flashlights and batteries. A crank or battery powered radio can be handy, so you get news and alerts. Communities can help households by providing information on how to get prepared and by supplying provisions that may be hard to get because of cost or availability.



Example emergency supply kit. Image from <https://prrd.bc.ca/services/emergency-services/get-prepared/>

Prepare your Home

Other heat sources, like woodstoves, can heat your home when the electricity is out but be sure that chimneys and stoves are working and maintained regularly. Never use fuel stoves, BBQs, or any other outdoor appliance inside your house because exhaust fumes, like carbon monoxide, can build up and make you sick or even cause death. Gas/diesel generators can provide short term electricity, but they too should be kept outdoors and away from windows and vents that could draw exhaust inside the house. If you don't have a way to keep your house warm, take steps to prevent water pipes from freezing; if you are on a well, drain your pipes; if you are on community water, leave taps on a little.