

# Hazard Resilience Index (HRI)

## Power and Water Outages

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Water Outages

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Please refer to the *Hazard Resilience Index Instructions (HRI)* document for more information on using this document.

#### Power Outages

This section has been separated into two sets of factors; one for those communities connected to the provincial/territorial power grid, and a separate one for communities where most OR all of the community is not connected to the provincial/territorial power grid.

<b>Hazard Resilience Rating</b>	High Resilience <input type="checkbox"/>	Low Resilience <input type="checkbox"/>	Need More Info <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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For communities fully connected to the power-grid:

Yes	No	Need More Info	Not Applicable	FACTORS	This factor is important to my community
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All critical facilities and infrastructure (e.g., Emergency Operations Centre) have back-up generators in place.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All dairy farmers who have essential power needs (e.g., automatic milking machines) have back-up power supplies or plans to milk cows over an extended power outage.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All farmers who have essential power needs (e.g., greenhouses) have back-up power supplies and necessary fuel stocks for generators.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All residents who have essential power needs (e.g., those using medical assistive devices such as respirators, or dialysis machines) have back-up power supplies and necessary fuel stocks for generators.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bushes, trees and branches that are growing too close to power lines are	<input type="checkbox"/>

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				pruned by the power authority on a regular basis.	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community-based power outage exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Construction and excavation workers know to check for overhead and underground wires.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Critical power lines are located underground (where possible).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Most businesses and cargo/port facilities have back-up generators in place and ready to be used (including necessary fuel stocks for generators) and are aware of ventilation and safe operating procedures.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Most residents have back-up generators in place, ready to be used (including necessary fuel stocks for generators) and are aware of ventilation and safe operating procedures (e.g., electrical safety training).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is a warning system in place, using various means of communication including social media tools, to notify community residents of a potential power outage and how to reduce non-essential power usage (e.g., turn-off unnecessary appliances, limit heavy usage to non-peak hours).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is a warning system in place to notify emergency response personnel of potential power outages.	<input type="checkbox"/>

If your community is NOT fully connected to the power-grid:

Yes	No	Need More Info	Not Applicable	FACTORS	This factor is important to my community
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Critical facilities and infrastructure (e.g., Emergency Operations Centre) have ample back-up fuel sources available for extended periods when resupply shipments cannot reach the community.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All dairy farmers who have essential power needs (e.g., automatic milking machines) have back-up fuel supplies or plans to milk cows over an extended shipment suspension.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All farmers who have essential power needs (e.g., greenhouses) maintain ample fuel supplies under appropriate storage conditions (e.g., ventilated storage).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All residents who have essential power needs (e.g., those using medical assistive devices such as respirators, or dialysis machines) maintain ample fuel supplies under appropriate storage conditions (e.g., ventilated storage) and are aware of ventilation and safe operating procedures (e.g., electrical safety training).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fuel storage facilities are maintained and monitored for ventilation and heat exposure.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community-based power outage exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community Emergency Response Plans clearly mark fuel storage facilities and businesses/homes with major fuel supplies stored.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Critical fuel storage facilities are located at a safe distance from waterways and potential ignition sources.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Most businesses have back-up fuel supplies in place for times when resupply may be unavailable.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Most residents have back-up fuel supplies in place for times when	<input type="checkbox"/>

				resupply may be unavailable.	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is a warning system in place, connected to social media, to notify community residents of a potential resupply outage in advance and possible alternative fuel sources/heating options (e.g., community shelters).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is a warning system in place to notify emergency response personnel of potential fuel shortages (e.g., through a Priority Community Fueling Plan) and Emergency Plans effectively consider 'basic need' requirements for all community residents.	<input type="checkbox"/>

### Water Outages

This section has been separated into two sets of factors; one for those communities connected to a community water/wastewater system, and a separate one for communities where most OR all households are not connected to the community water/wastewater system.

<b>Hazard Resilience Rating</b>	High Resilience <input type="checkbox"/>	Low Resilience <input type="checkbox"/>	Need More Info <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Communities with water/wastewater systems supplying ALL householders:

Yes	No	Need More Info	Not Applicable	FACTORS	This factor is important to my community
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Back-up generators are in place at pump stations to ensure equipment continues to operate in an extended power outage.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community-based water outage exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises).	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community Environmental Health Inspectors perform regular safety checks of individual and personal farm and residential wells. Commercial farms are inspected by the appropriate federal, territorial or provincial authority.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inspectors perform regular safety checks of water reservoirs or silos.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inspectors perform regular safety checks of water treatment and distribution systems.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The community has replaced all gray cast iron pipes.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The community has plans in place for water distribution should the community experience a loss of potable water.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The community has policies in place to limit non-essential water usage (e.g., watering lawn) during times of drought.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The community has updated old and worn out pipes and infrastructure to prevent pipeline failure in the future.	<input type="checkbox"/>

Communities where water/wastewater system DOES NOT supply all households:

Yes	No	Need More Info	Not Applicable	FACTORS	This factor is important to my community
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Back-up generators are in place at pump stations (where they exist) to ensure equipment continues to operate in an extended power outage.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community-based water safety messages are shared in schools and the community-at-large to ensure safe drinking water is maintained at all times and to reduce drinking contaminated water.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community Environmental Health Officers maintains pipes and taps to prevent pipeline failure and reduce leakage in the future.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inspectors perform regular safety checks of farm and residential wells.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community Environmental Health Officers perform regular safety checks of water reservoirs and community taps.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The community has plans in place for water distribution (e.g., water trucks) should the community experience a loss of potable water.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If applicable, the community has policies in place to limit non-essential water usage (e.g., watering lawn) during times of drought.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If applicable, the community has updated old and worn out pipes to prevent pipeline failure in the future.	<input type="checkbox"/>

## References

- BC Hydro. (2010). *Pruning near power lines*. Retrieved from <https://www.bchydro.com/safety-outages/stay-safe/safety-outside/trees-power-lines/pruning-removing-trees/pruning-near-power-lines.html>
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- Melchers, R. E. (2002). Safety and risk in structural engineering. *Prog. Structural Engineering Mater*, 4, 193-202.