

Response to 2018 Storm & How to stay safe for the next one



September 19, 2019

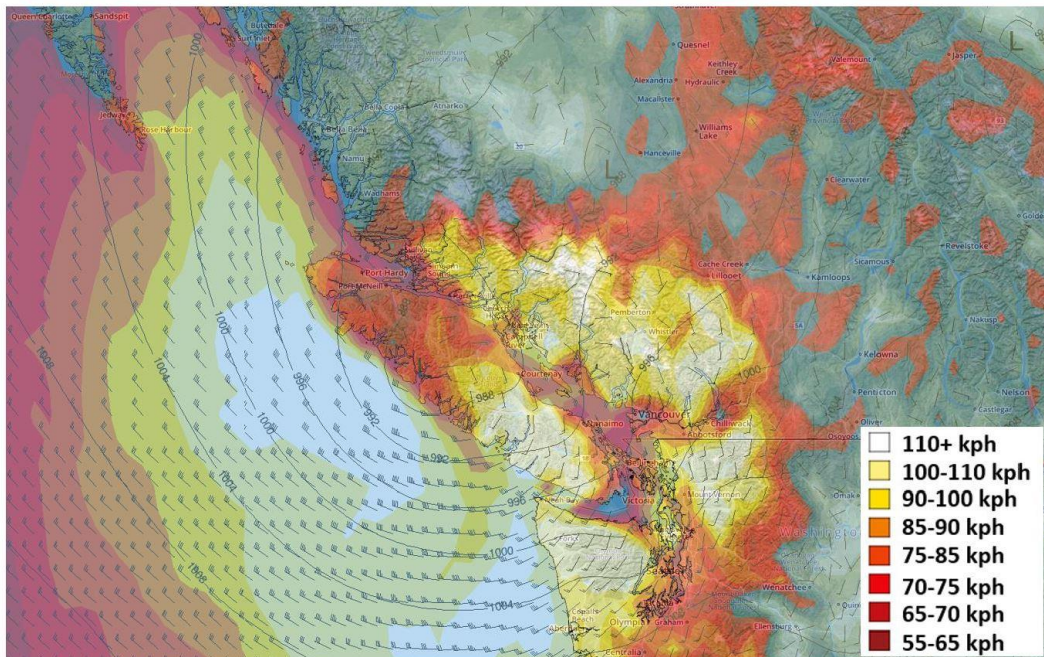
Really, really, really windy ...



South Rd, Gabriola Island

Leading up to the storm

Thursday 16:00 PST – Forecast Wind Gusts and Direction:



Condition Orange - BC Hydro High Wind Warning

Valid 2:00 AM, Thu, Dec 20 to 6:00 PM PST, Thu, Dec 20, 2018

StormGeo has issued a Condition Orange for High Wind Warning for the following locations from 2:00 AM PST, Thu, Dec 20 to 6:00 PM PST, Thu, Dec 20.

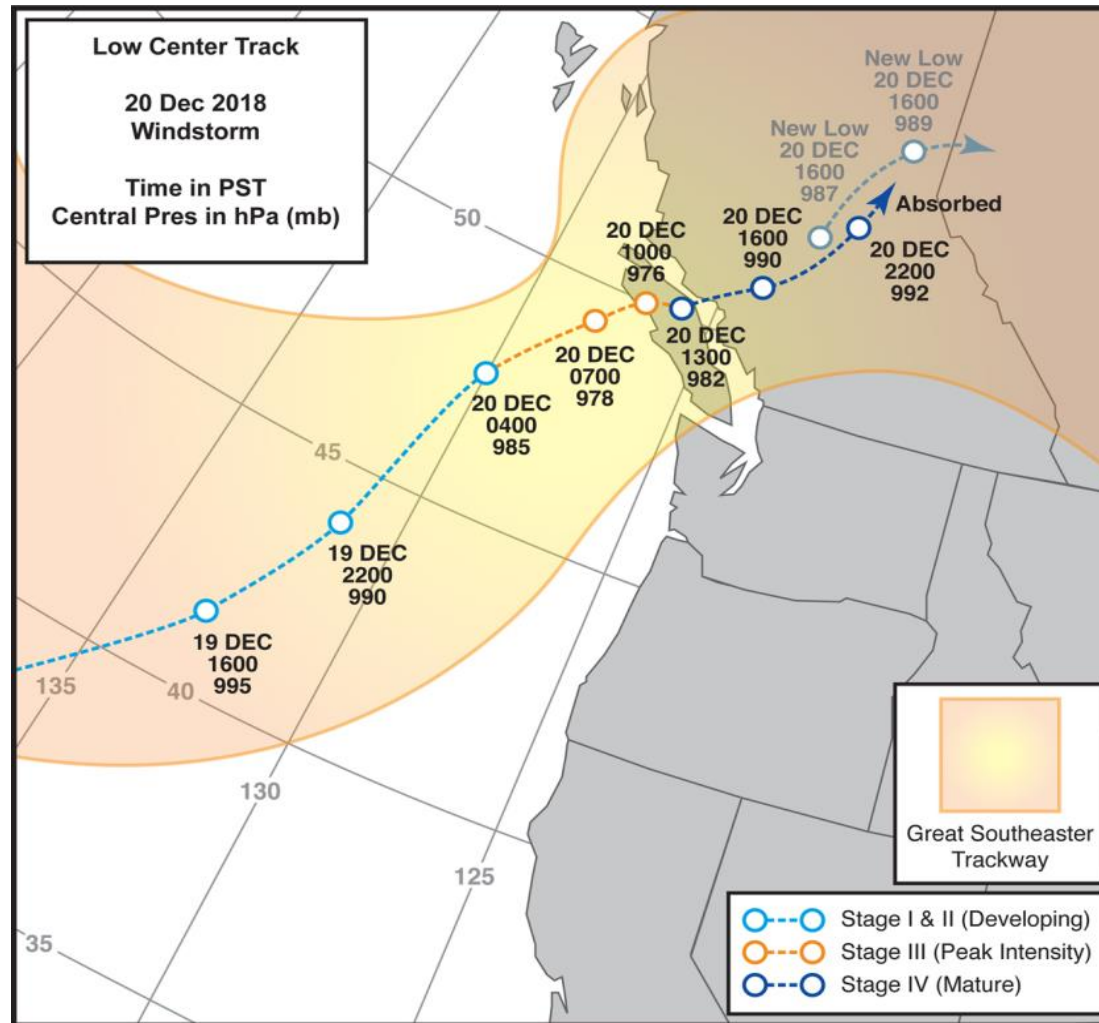
Location	Location
Port Alberni District Office	Campbell River
Uclulet	Duncan
Port Hardy	Port Alberni
	Victoria

Discussion:

An area of low pressure will track across the region tomorrow resulting in a round of strong gusty winds across the area. Look for southerly winds to increase during the early morning hours, peak during the mid-morning through early afternoon and then decrease during the evening. As the low tracks across the area, look for the winds to become northwesterly by the early afternoon. Peak wind gusts near the coast could reach up to around 90-110 kph.

Meteorologist: M. Haworth

Storm track



Summary of wind speeds

Location	Wind speed
Lennard Island Lighthouse	144 km/h
Tofino	111 km/h
Saturna Island	102 km/h
Abbotsford	101 km/h
Tsawwassen	98 km/h
Esquimalt	94 km/h
Victoria Airport	89 km/h
Vancouver Airport	87 km/h
Nanaimo	85 km/h

Source: Environment Canada

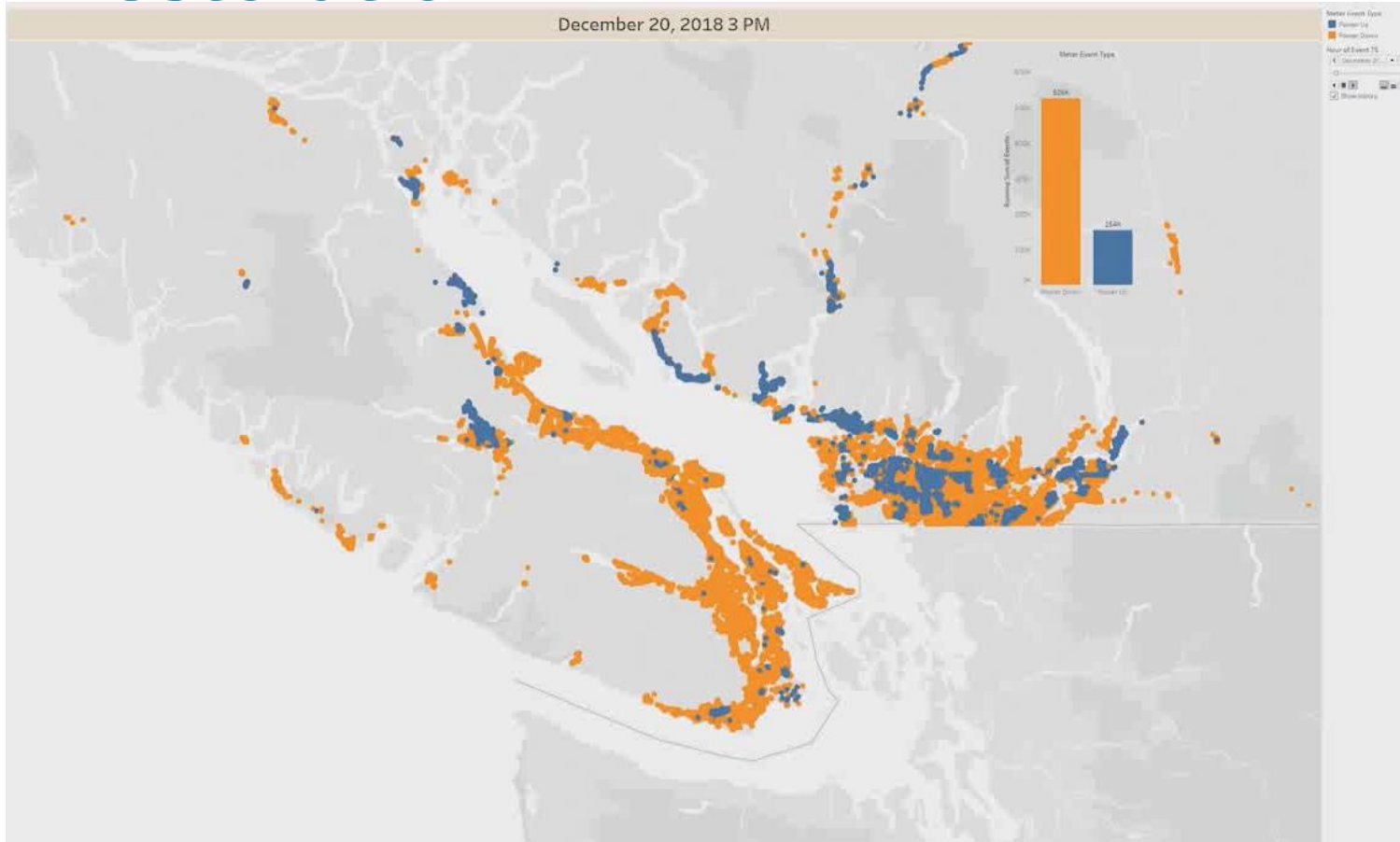
Damage ...



Whiskey Creek/ Hilliers

Restoration

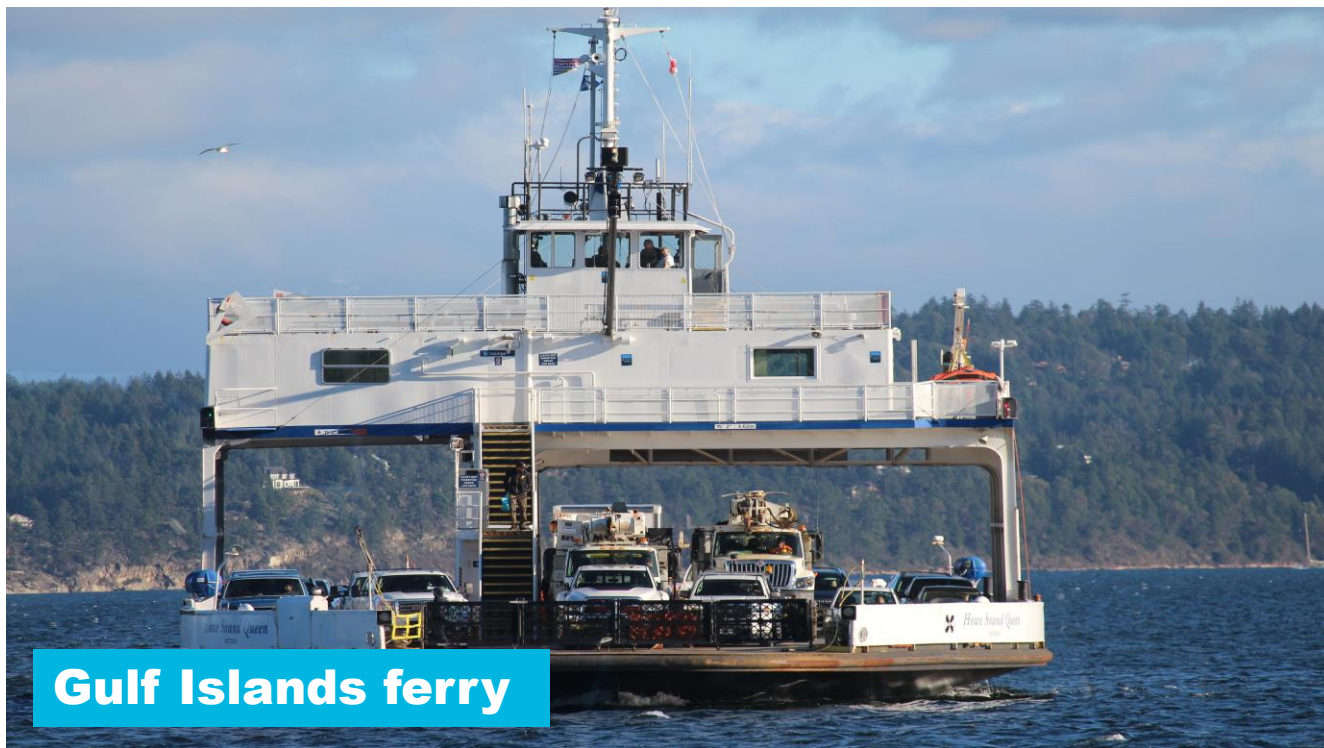
December 20, 2018 3 PM



Restoration



Transportation



Gulf Islands ferry

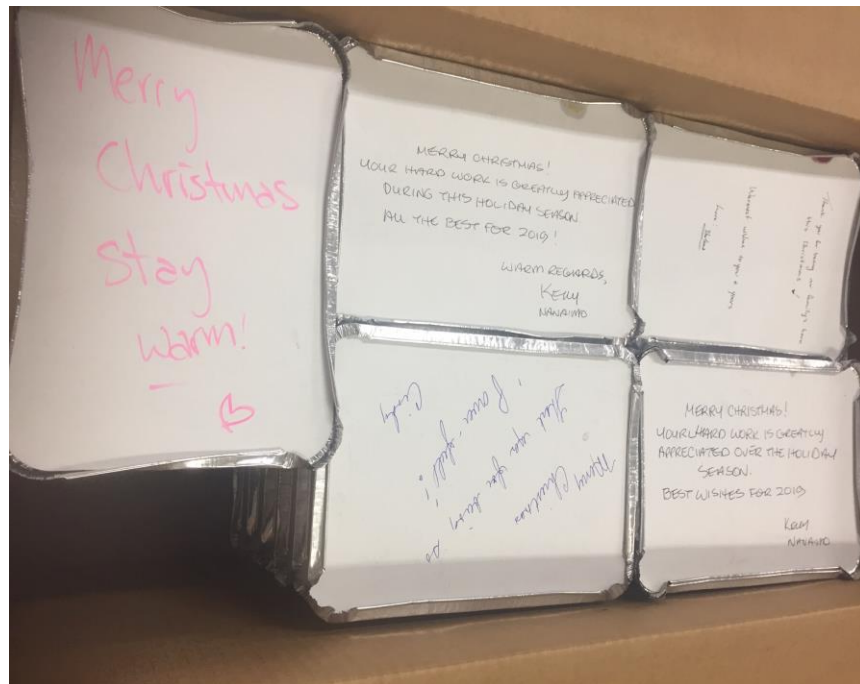
Accommodations



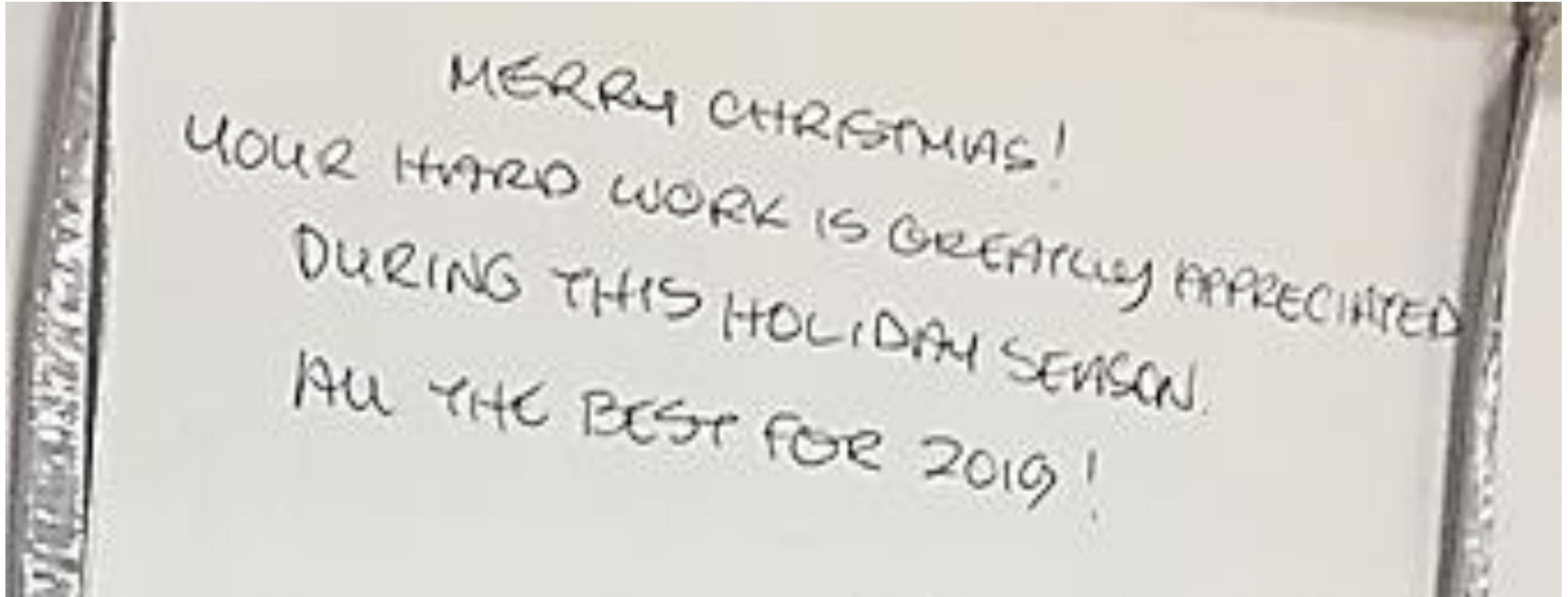
Food



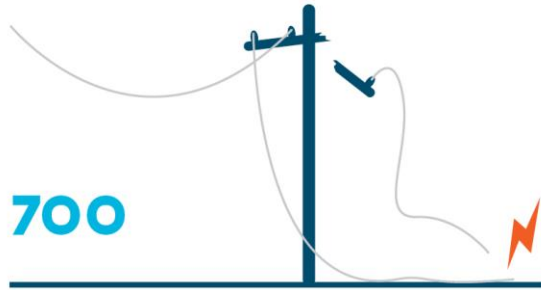
Christmas Day, Nanaimo



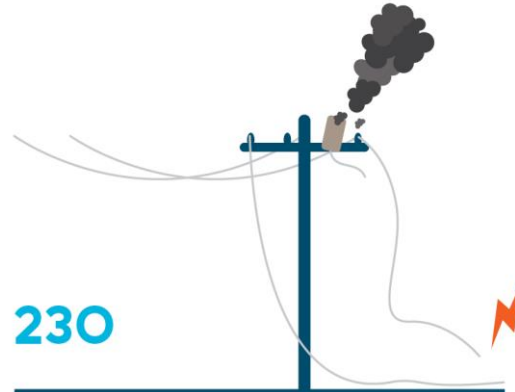
...and warm wishes for our crews



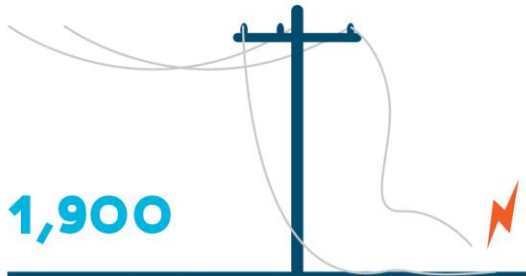
Damage



Cross-arms



Transformers



Spans of wire down



Power poles

Our most severe storm events



Oct 1962



Dec 2006



Aug 2015



Dec 2018

BC Hydro Public Safety

The BC Hydro System

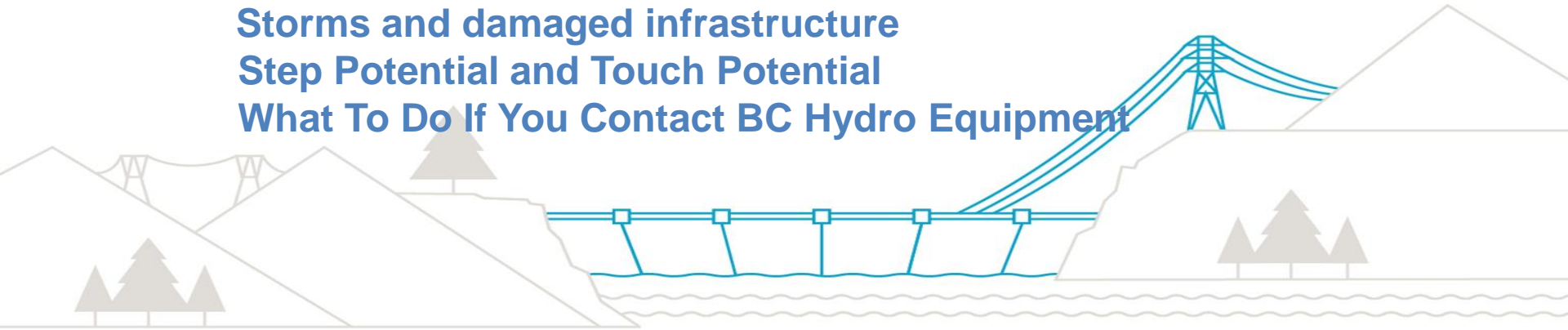
Voltages and Limits of Approach

Hazard Awareness

Storms and damaged infrastructure

Step Potential and Touch Potential

What To Do If You Contact BC Hydro Equipment



Voltages

Distribution



Hazard Awareness

Storms and damaged infrastructure

BC Hydro responds to major storm damage by monitoring weather predictions and mustering crews in strategic locations.

Our response may be challenged by

- Damaged roads and bridges
- Damage to substation equipment, poles, wires, and underground infrastructure
- Prioritization between works crews, first responders, and BC Hydro crews

All safety rules still apply, and without attending the site there is no way for BC Hydro to guarantee that the power is off or will remain off

Emergency and storm response

SAFETY IS FIRST PRIORITY

- Life or limb calls
- High voltage transmission lines
- Priority circuits (Hospitals)
- Police/ fire calls
- Major infrastructure (water/ sewer)
- Ferry terminals
- Largest number of customers
- Smaller neighbourhoods

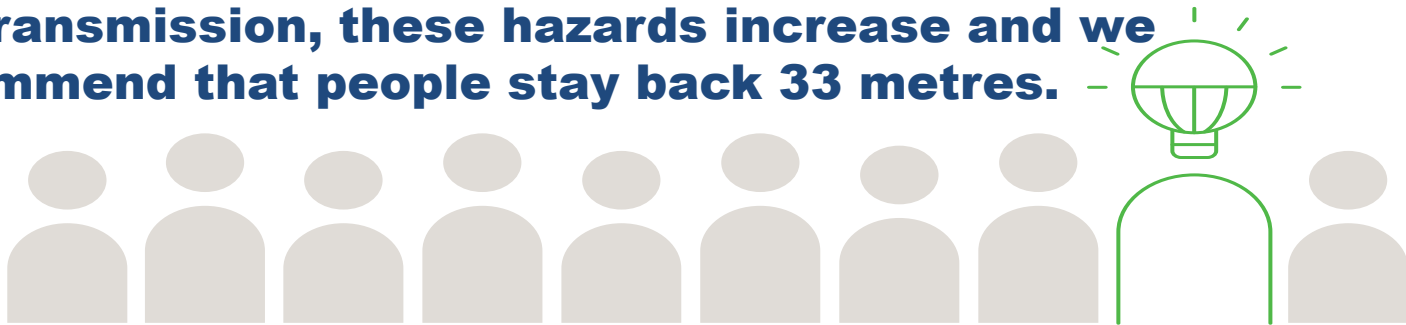
Hazard Awareness

Why do we say 10 metres?

When lines are downed or damaged, we increase our safe distances to 10 metres to take into account:

- The possibility that the line is no longer secured
- The possibility that the line may whip
- The possibility that the ground has become energized (step potential)

For transmission, these hazards increase and we recommend that people stay back 33 metres.



Hazard Awareness

All of these items are good reasons to never approach a downed line:

Is the line currently energized?

Did the relays and all of the protective devices operate correctly?

Is the line subject to induction?

Will the line become re-energized?

This is just as important, the consequences are the same, and there are several ways that this could happen including:

- Portable generation
- Another incident
- Re-energization after repairs
- Reclosing policy

Don't rely on luck – think first and stay safe!!

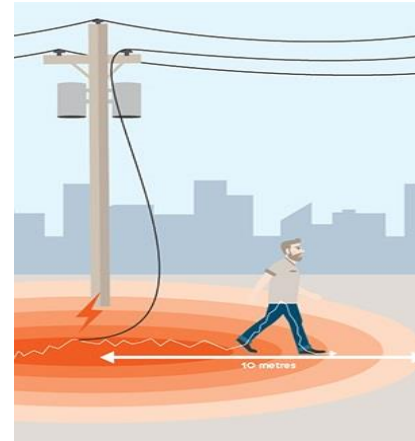
Hazard Awareness

Touch Potential

- Electricity is always looking for a path to ground and touch potential occurs when you touch something and place yourself in that path.
- If you touch a downed wire, or anything that is in contact with that wire, you become part of that path to ground.
- If you touch a wire with your hand, current may flow up your arm, through your torso and out through your feet as it travels to ground.
- Don't do it. Stay back 10m, warn others to do the same, and call 911.

Step Potential

- As the voltage goes from 25000 volts to zero volts, each step along the path could result in thousands of volts pushing current up one leg and down the other!



**STAY WHERE
YOU ARE!**

**IF YOU
ABSOLUTELY
MUST GO,
KEEP YOUR
FEET
TOGETHER
AND SHUFFLE!**

Hazard Awareness

If your vehicle or equipment has contacted powerlines:

- If you are 100% certain that you can do so safely, drive 10M clear of the lines
- If uncertain, or the equipment cannot be driven, remain inside, **call 911 and wait for help**. Warn others not to approach
- If the equipment cannot be driven AND you must exit due to fire:
 - jump clear and do not make contact with the equipment and the ground at the same time (**to avoid touch potential**).
 - shuffle 10M clear of the lines (**to avoid step potential**)



Hazard Awareness

What can you do?

- **Be prepared**
 - Have an emergency kit and ensure that you have enough food and medicine to last
- **Recognize the hazard associated with a downed line**
 - Stay clear of downed lines and anything that is in contact with them
 - Remember that a downed line is hazardous even when it is not currently energized
 - Never approach a downed line unless a BC Hydro worker has told you that it is safe.
- **Warn others to stay clear**
 - Don't let your neighbours put themselves at risk
- **Call 911**
 - Ensure appropriate emergency response



Hazard Awareness

Summary



- Call 911
- Always assume that the power is on, or will be turned back on, until an authorized BC Hydro rep has told you that it is safe
- A line may be disconnected from its normal source but there may be backfeed from a generator or induction from a nearby line
- When crews go to work on these lines they always apply special procedures to ensure that the line stays at ground potential.
- **BC Hydro crews would never touch an ungrounded line - neither should you.**

Planned power outage:

Tahsis, Zeballos, Kyuquot, Fair Harbour and surrounding areas

We need to switch off power in your area for about 8 hours while we perform maintenance on electrical infrastructure. To keep our crews and the public safer power must be switched off while we complete this work.

Where: Tahsis, Zeballos, Kyuquot, Fair Harbour and surrounding areas

When: Sunday, September 22, 2019

Time: 8 a.m. to 4 p.m.

To protect your equipment from damage during the outage, please turn off all lights, electric heaters, major appliances and unplug all electronics. We'll restore power as soon as we can.

Visit [bchydro.com/outages](https://www.bchydro.com/outages) or call 1 800 BCHYDRO (1 800 224 9376) for more information.



BCH19-876

Traffic advisory

Head Bay Road

We'll be replacing a transmission structure on Head Bay Road, approximately 11 kilometres west of Gold River, near Bull Lake Summit. The work involves large equipment, that may result in intermittent closures of up to two hours on Head Bay Road. Please plan ahead for delays.

When: Saturday, September 21, 2019,
1 p.m. to 2 p.m.

Sunday, September 22, 2019, intermittent
closures between 8 a.m. and 4 p.m.

We'll work to minimize impact and delays to motorists. Please follow the direction of traffic control.

Thank you for your patience while we complete this important work.



BCH19-912

