

# Electricity Awareness

## Rules for approaching a site with potential electrical hazards:

1. Park at least 10 metres (33 feet) away from fallen power lines and other electrical hazards. Secure the area and keep onlookers back at least 10 meters.
2. Call FortisBC and explain the urgency of the situation.
3. Do not approach the scene until FortisBC has arrived on site and confirms it's safe.
4. Survey the scene and check for hazards, like leaning poles, sagging wires and wire ends (look for both ends). Don't forget to look up.
5. Use a flashlight at night to check surroundings before exiting vehicle.
6. Be aware that objects such as pipes, fences and vehicles can become energized and extend the hazard area.
7. Don't become a casualty yourself when trying to help others—resist the temptation to approach a potential electrocution victim until the power is shut off.
8. Be aware of the dangers of touch potential and step potential.

## Downed power lines

Brought down by storms, falling trees, motor vehicle accidents, mechanical failures and other incidents, downed power lines are fairly common.

- Important: a fallen, energized wire will not always arc or spark. It may look safe when it's not.
- A downed power line that is not energized can become energized at any time. Always assume that any downed wire is energized until FortisBC tells you that it is not.

## Touch potential

Touch potential is the difference in voltage between hands and feet when touching something energized while standing on the ground (the difference in voltage from one extremity to the other causes the electricity to flow through the body).

- Important: electricity always takes all paths to the ground.
- A conductor, like a human or a piece of metal, touching an energized source like a power line, causes electricity to flow to the ground.
- Electrical current is forced to flow through the person to the ground. It takes the path with the least resistance: the one that conducts more current.

## Ground Gradient

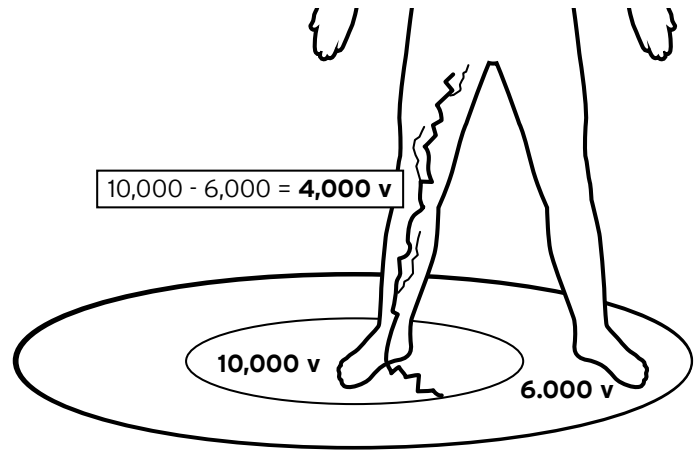
When an energized source of electricity comes in contact with the ground, the electrical current can pass through the ground. Voltage radiates outwards from the point of contact in irregular concentric rings, creating a ripple effect.

- Voltage is strongest at the point where ground contact is made. Voltage becomes weaker as it radiates out from point of contact.
- Each area between these lines of concentric circles has a different electrical potential.
- Anything within a 10 metre radius of the scene may be energized.

## Step Potential:

Step potential is the difference in voltage between two points that are one 'step' apart.

- Due to the ripple effect, it's possible to step across two different voltage gradients while moving toward or away from the electricity source, causing electricity to flow between the feet and through the body.
- For example, one foot could be standing in a voltage zone of 10,000 volts and the other in a voltage zone of 6,000 volts. The remaining 4,000 volts will flow through the body.



## Underground power lines

Common to newer residential developments in densely populated areas, low and medium voltage lines can be buried underground. Transformers are located on the ground instead of a pole, protecting the underground electrical system equipment.

- Remember the guidelines that apply to touch and step potential when responding to an emergency involving underground lines.
- Emergency situations involving underground cables often involve the cables being sheared off and left touching the bottom or sides of vehicles or equipment involved in the incident.

## Evacuating a vehicle

If a wire from a downed power line falls across a vehicle, call FortisBC for assistance and tell the occupants to remain in the vehicle unless they must get out because of immediate safety concerns, like a fire. Instruct the occupants to:

- do a standing jump so they land clear of the vehicle with both feet together
- keep feet together while jumping
- move away from the vehicle while shuffling feet (heels should not pass toes ) or by hopping with both feet together
- shuffle or hop (keeping feet together ) until a minimum of 10 metres away from the scene