

# Electrical Incidents Can Be Avoided!

## POWER LINE SAFETY TIPS



## JOINT UTILITY SAFETY TEAM (JUST)

July 2010

# JUST's Mandate

In 2006, Alberta's electric utilities and the Alberta Government formed the Joint Utility Safety Team (JUST) to collectively help address the common safety issue of contact with power lines.

JUST's mandate is to positively affect change in attitudes and behaviours toward power line safety to help reduce power line incidents. Through ongoing safety awareness and industry education, JUST is committed to helping breed a long-term "culture of power line safety" in Alberta with everyone working around overhead or underground power lines including oil and gas, construction, forestry and agriculture industries.

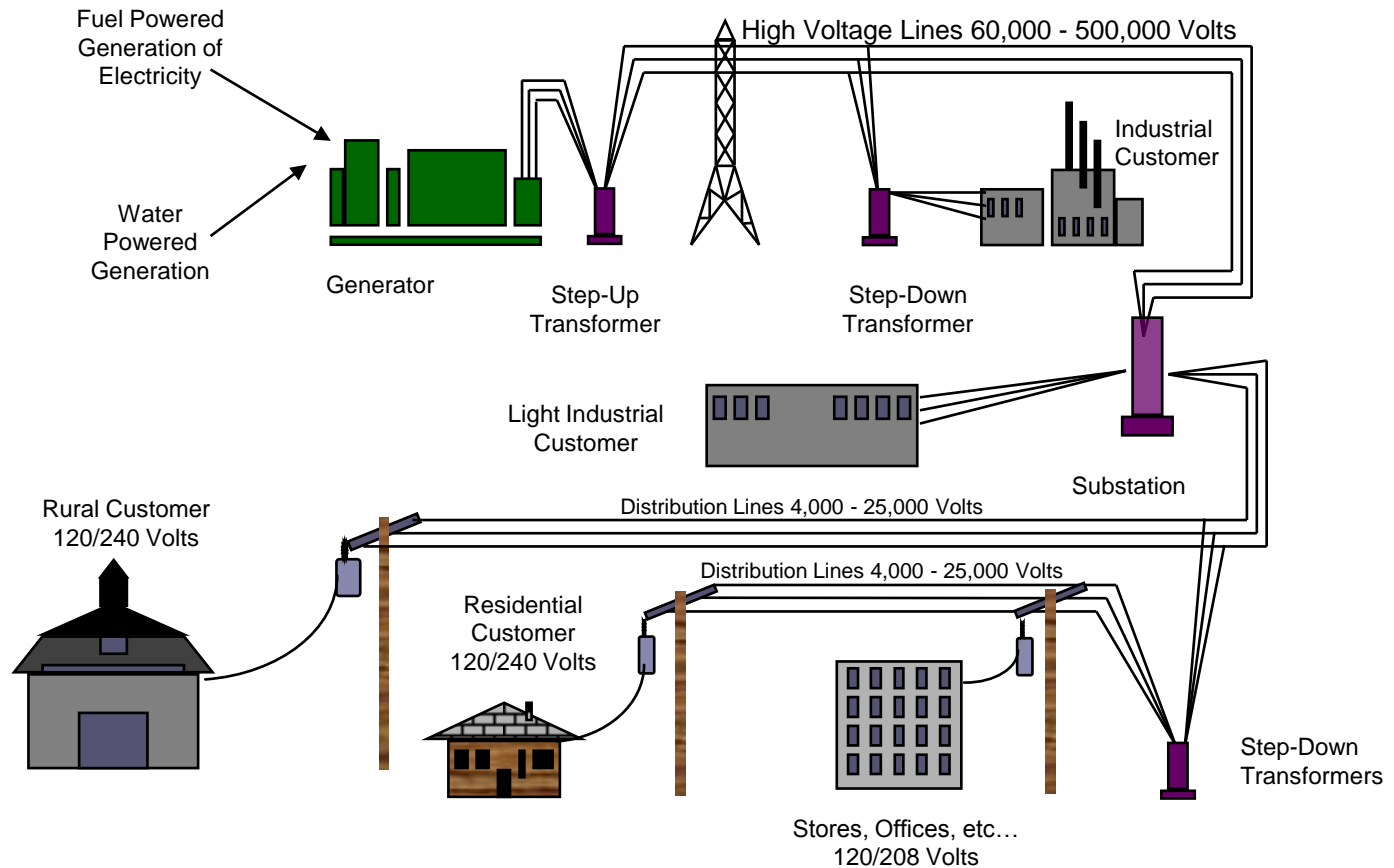
JUST members include AltaLink, ATCO Electric, ENMAX, EPCOR, FortisAlberta and the Government of Alberta.

For more information on JUST and power line safety, visit [wherestheline.ca](http://wherestheline.ca)



# How Electricity Works

## THE MAJOR STEPS IN GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRICITY



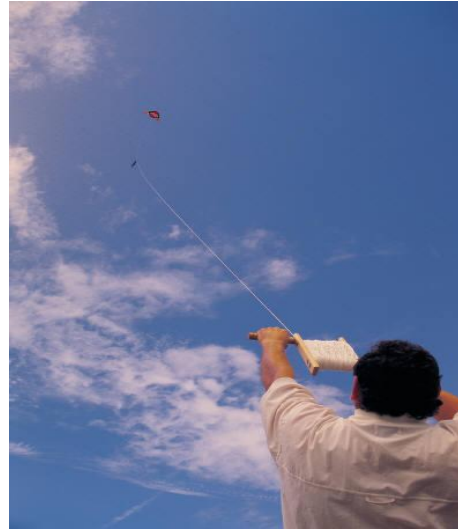
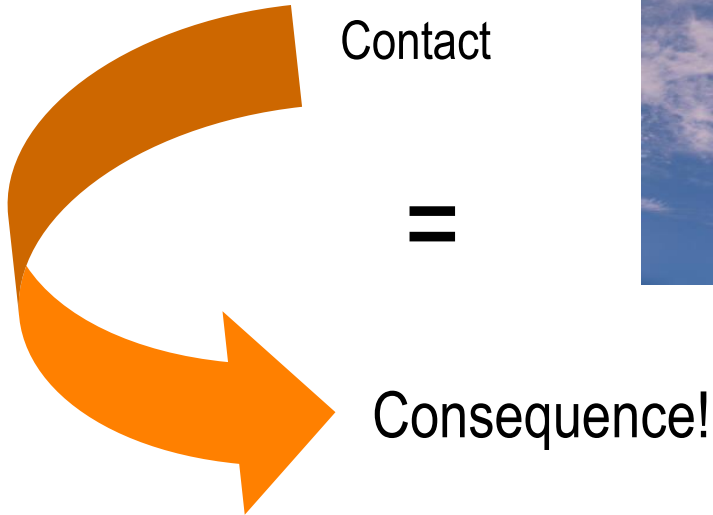
# Electrical Incidents

## # OF POWER LINE INCIDENTS AS REPORTED BY JUST PARTNERS

INCIDENTS	2009	2010
O/H INCIDENTS	607	601
U/G INCIDENTS	183	210
OTHER INCIDENTS	53	9
<b>TOTAL REPORTED INCIDENTS</b>	<b>843</b>	<b>820</b>
FATALITIES – BY INDUSTRY	2009	2010
FARM/AGRICULTURE		4
OIL & GAS	2	
GENERAL PUBLIC	1	1
<b>TOTAL REPORTED FATALITIES</b>	<b>3</b>	<b>5</b>
<b>O/H</b> OVERHEAD <b>U/G</b> UNDERGROUND <b>OTHER</b> MAY BE CAUSED BY DEBRIS, HUMAN ELEMENT OUTAGE, ETC.		

# Every Day, Three Albertans Risk Their Lives by Coming into Contact with a Power Line

**ALWAYS REMEMBER THAT:**



# Plan to Work Safely

## ALWAYS ASK YOURSELF:

- Where's the line?
- What are you doing?
- How are you dealing with the hazards?
- What skills do people have?
- What do you do if something goes wrong?



# Stay “7 Metres Safe”

## SAFE LIMIT OF APPROACH TO POWER LINES IF VOLTAGE IS UNKNOWN

- If you DO NOT know the voltage, you and your equipment must stay a minimum of seven metres away from overhead lines.
- If you need to work closer, you need to call the utility company.
- **ALWAYS** call before you dig. Call Alberta One-Call 1.800.242.3447.





# Safe Limit of Approach if Voltage Is Known

## DISTANCES FROM OVERHEAD POWER LINES FOR PERSONS AND EQUIPMENT

Operating voltage of overhead power line between conductors	Safe limit of approach distance for person and equipment
0 - 750 Volts insulated or polyethylene covered conductors	300 millimetres
0 - 750 Volts bare, uninsulated	1.0 metres
Above 750 Volts insulated conductors	1.0 metres
0 to 40 kV	3.0 metres
60 kV, 72 kV	3.5 metres
138 kV, 144 kV	4.0 metres
230 kV, 260 kV	5.0 metres
500 kV	7.0 metres



# Working Near Power Lines

- *ALWAYS* know the height of your equipment before starting your work. Anything over 13.6 feet (4.15 metres) is “over height” and requires a permit for transport on public roads and highways from Alberta Infrastructure & Transportation.
- Power lines can hang as low as four metres from the ground. Keep this in mind as clearance heights are reduced when off major highways.
- Remember to *ALWAYS* know the safe limit of approach:

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**25 kV – 3 metres**

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**Secondaries**  
**0 – 750 V – 300 mm**

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- If voltage is unknown  
*ALWAYS* stay “7 metres safe”.



# Safe Distance for Moving Equipment and Buildings Under Power Lines

(If your equipment, buildings, or objects exceed the heights in the chart below, you must contact your electrical service provider before proceeding)

- 3.6 metres for pedestrian areas
- 4.1 metres for driveways
- 4.2 metres for agricultural areas
- 4.3 metres underground pipelines
- 4.8 metres for alleys, commercial premises
- 5.3 metres for roads



# Safe Distance for Moving High Loads

## ALBERTA TRAFFIC ACT

- Anything over 13.6 feet (4.15 metres) is considered “over height” and must have a permit from Alberta Infrastructure & Transportation to travel down any public road or highway and requires notifying utility companies if load is 5.3 metres and greater.



# Electricity Can Kill

## WHAT CAN HAPPEN

Less than one milliamp	No sensation	
One to eight milliamps	Feel sensation of shock, though not painful	
Eight to 15 milliamps	Painful shock, can't let go	
15 to 20 milliamps	Painful shock, loss of muscle control	
20 to 50 milliamps	Severe muscle contractions	
50 to 100 milliamps	Heart failure is possible	} Probably fatal
100 to 200 milliamps	Heart failure is possible	
Over 200 milliamps	Severe burns and heart failure	

# Shock Characteristics

- Electrical victims will often go into shock.
- Signs include cold or clammy skin, weak, shallow breathing, and rapid pulse.

## WHAT TO DO

- Loosen clothing and keep victim horizontal and warm until help arrives.

**50 mA**

**Fibrillation**

As little as 50 mA can put the heart into fibrillation



# Vehicle Accident

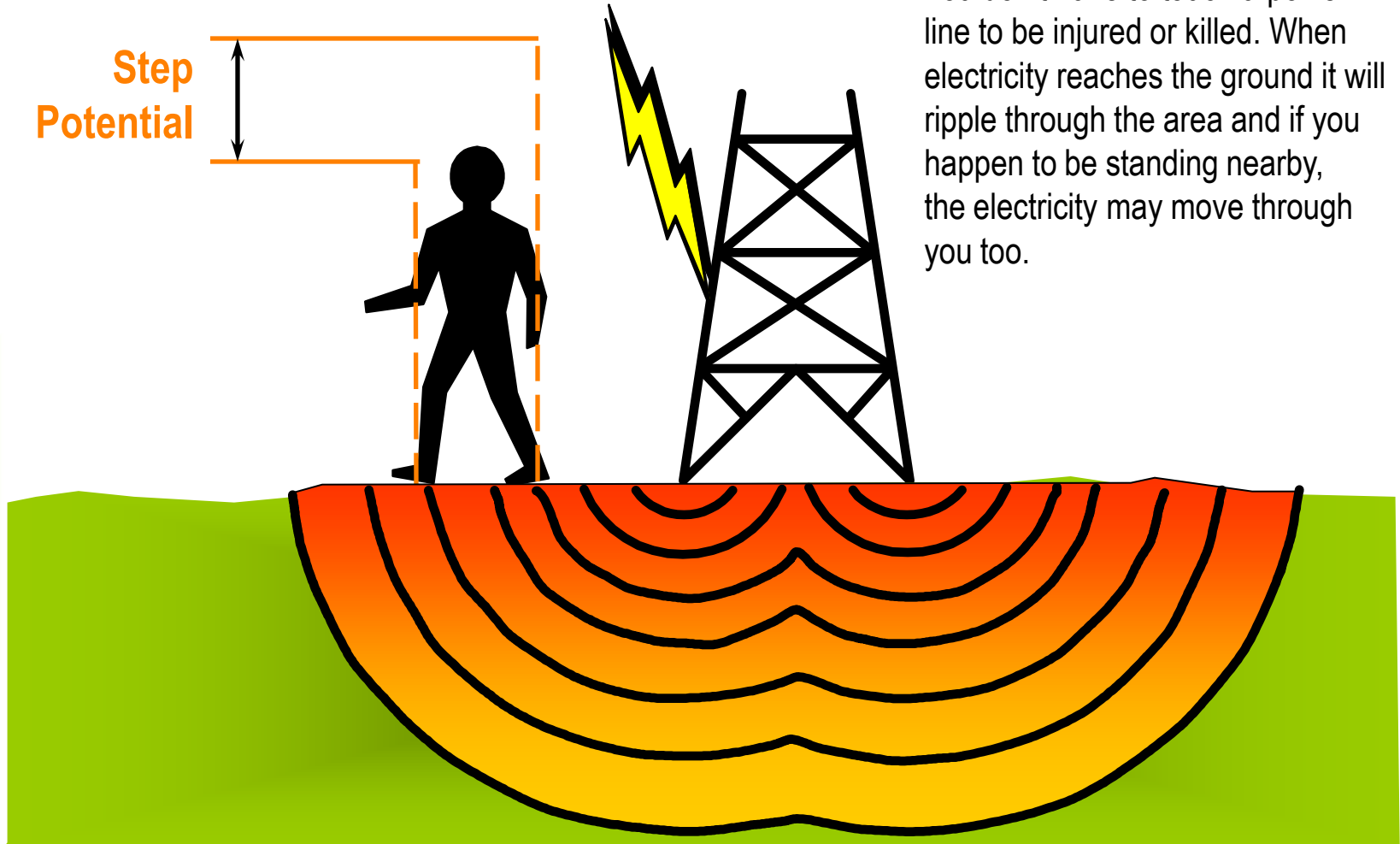
## IF YOUR VEHICLE CONTACTS AN OVERHEAD LINE

- Drive clear of the line, if safe to do so (minimum 10 metres away).
- Call 911
- Do not leave the vehicle unless absolutely necessary.
- Do NOT, under any circumstances, step down and allow part of your body to be in contact with the ground while any other part of your body is touching the machine due to the effects of hazardous “step potential”.



# Step Potential

Step  
Potential



You don't have to touch a power line to be injured or killed. When electricity reaches the ground it will ripple through the area and if you happen to be standing nearby, the electricity may move through you too.



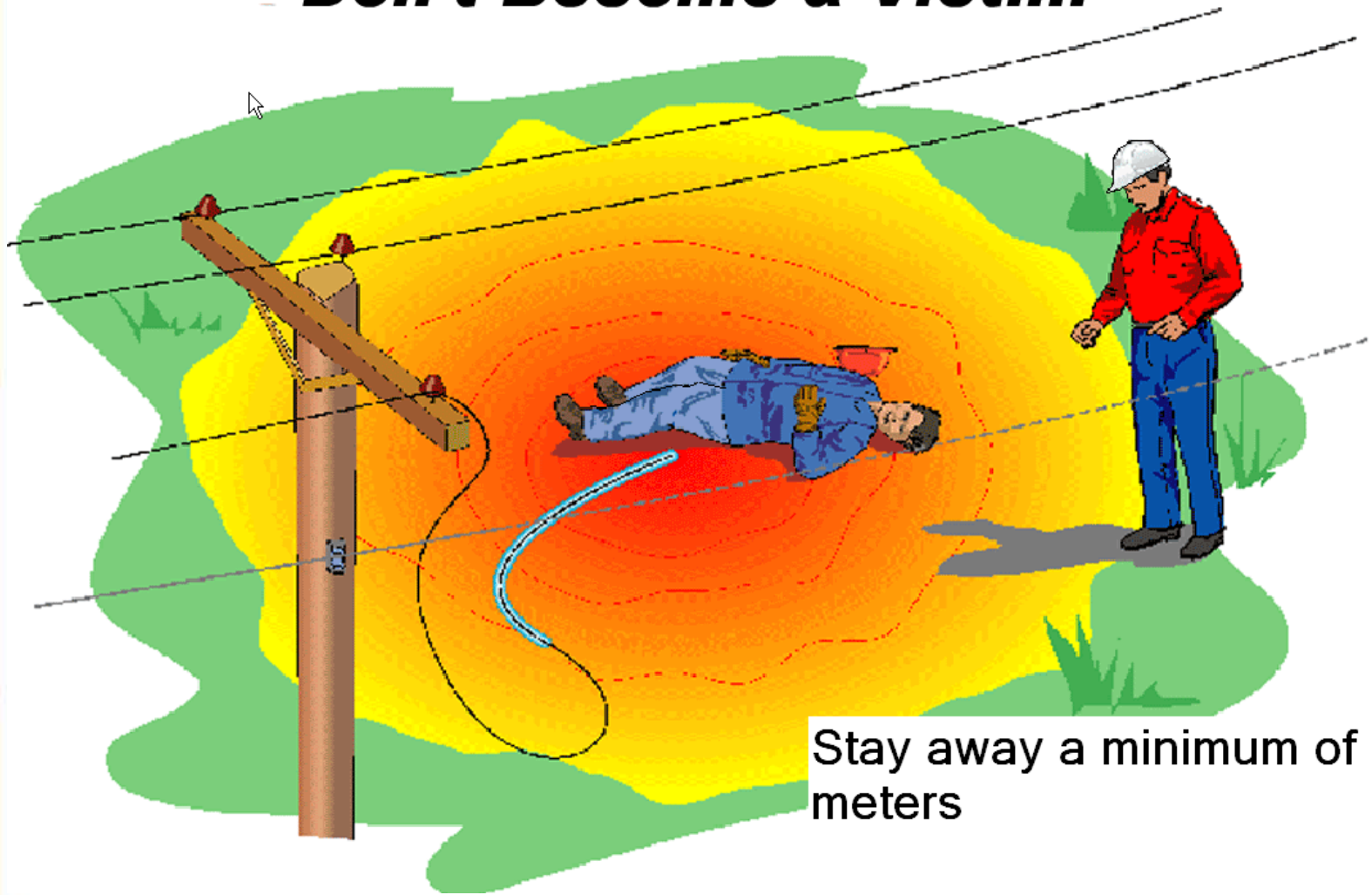
# Vehicle Accident

## IF YOU MUST GET OUT BECAUSE OF FIRE

- Jump clear with both feet together.
- Do NOT touch your vehicle and the ground at the same time.
- Hop or shuffle, with both feet together, from the vehicle for at least 10 metres.
- Call 911.



# ***Don't Become a Victim***



Stay away a minimum of 10 meters

# Working Near Underground Power Lines / Excavation

## PROCEDURES NEAR UNDERGROUND POWER LINES

- **ALWAYS** call before you dig. Notify Alberta One-Call 1.800.242.3447 several days in advance before commencing any work.
- Follow instructions from the utility company.
- No mechanical excavation within one metre of power lines without permission from the utility company.



# What Will You Do to Keep Yourself Safe Around Power Lines?

## THREE IMPORTANT PROMISES I WILL TAKE AWAY FOR MYSELF TODAY

- Stay at least 7 metres away from power lines.
- Get to know the height of my equipment.
- *ALWAYS* make a safe work plan for myself that includes the location of overhead and underground power lines.

Always ask yourself  
**WHERE'S THE  
LINE?**

**STAY "7 METRES SAFE"**  
always ask yourself **WHERE'S THE LINE?**  
POWER LINE SAFETY