

STATISTICS

ELECTRICAL INCIDENTS IN ALBERTA

January 1 to December 31, 2012

Regulations under the *Safety Codes Act* require that all electrical accidents and power line contacts be reported to the Technical Administrator. Alberta Municipal Affairs has compiled a summary report of incidents reported between January 1, 2012 and December 31, 2012. Organizations in the electrical industry may wish to use this information for promoting public awareness of electrical safety risks.

Incident reporting forms and statistical reports from previous years can be found on the Alberta Municipal Affairs website at:

http://www.municipalaffairs.alberta.ca/cp_electrical_forms_and_reports.cfm

A total of 782 incidents were reported:

- involving overhead power lines
- involving underground power lines
- involving other types of electrical installations or equipment

Of these incidents, injuries to humans and fatalities of humans and livestock were recorded.

This report presents the information in a series of tables, text, and charts:

- (1) **Injury Incidents** – Pages 2 to 4 summarize fatal and non-fatal injury incidents. The table on page 2 outlines the persons, voltages, and equipment involved in the incidents. A brief description of injury incidents is provided on page 3 and 4.
- (2) **Power Line Contacts** – Pages 5 to 7 summarize the power line contacts. The table on page 5 shows the different types of power line contacts and the number of fatal and non-fatal injuries incurred for each type of contact. The tables and charts on pages 6 and 7 compare historical information regarding power line contacts with current statistics.

Since not all incident occurrences are reported, this report is not an accurate accounting of all the incidents that occurred in Alberta. However it does serve as an approximation and sampling of the various types of incidents.

INJURY INCIDENTS REPORTED

January 1 to December 31, 2012

**FATAL (F)
NON-FATAL (N)**

1. PERSONS INVOLVED

A. Performing electrical work

1. Qualified electrical worker
2. Qualified Power System Electrician/Powerline Technician
3. Non-qualified person

F	N
	4
	1

B. Not performing electrical work

1. Adult
2. Child

F	N
1	12
	1

2. VOLTAGES INVOLVED

A. Systems or equipment (not power line contacts)

1. 750 volts or less
2. Over 750 volts

F	N
1	8

B. Contact with power lines (not included in A)

1. 750 volts or less
2. Over 750 volts

F	N
	2
	8

3. SYSTEMS OR EQUIPMENT INVOLVED

A. Interior wiring systems

1. Service/distribution equipment
2. Motor control equipment
3. Light switches, fixtures, etc.
4. Test equipment
5. General wiring/conductors
6. Other

F	N
	1
	2

B. Utility

1. Overhead systems (poles, lines, etc.)
2. Substations and transformers
3. Underground systems
4. Other

F	N
	7
	4

C. Utilization equipment

1. Household appliances
2. Commercial/industrial equipment
3. Portable power tools
4. Extension cords
5. Welding machines/motors
6. Mobile homes and trailers
7. Signs
8. Other

F	N
	1
	1
1	
	1

D. Non-electrical equipment

1. Cranes/booms/pickers
2. Ladders/scaffolds
3. Drilling rig equipment
4. Farm equipment
5. Moving buildings
6. Objects (pipe, antennae, etc.)
7. Excavating equipment
8. Vehicles (high loads, truck boxes, etc.)
9. Other

F	N
	1

SUMMARY OF INJURY INCIDENTS

Information provided in this report is information provided by Industry. Any changes in wording, from the reports received, are done for clarification of the incident.

Fatal Injuries

- (1) A worker was fatally electrocuted while installing plumbing underneath a portable trailer. The exterior cladding and frame of the trailer became electrically energized when a flexible cable was run through a hole without any mechanical protection.
- (2) One cow was electrocuted by a downed overhead power line. Power line came down after being contacted by a load suspended from a helicopter. Pilot was unaware of any mishap.

Non-Fatal Injuries

- (1) While performing crop dusting operations, a pilot snagged the overhead shield wire of a 138 kV power line with the landing gear of his agricultural aircraft. The aircraft crashed in a nearby field. The pilot was transported to hospital.
- (2) While performing an exploratory hydrovac, contact was made to an 8 kV underground cable from the water jet of the hydrovac wand. The contact happened to be directly on a previous splice. Worker received an electric shock. Worker was checked at hospital and released.
- (3) Worker received an electrical shock when they cut into an underground conduit. Worker had twice asked their superior if the conduit contained energized conductors, to which they were told "no".
- (4) Worker received arc flash injuries to their hand and forearm while removing a breaker from a control panel.
- (5) Worker received an electrical shock while pressure washing drilling equipment.
- (6) A housekeeper received an electrical shock when a metallic chain resting atop of a USB charger made contact with the power prongs while being removed for cleaning.
- (7) A child received an electrical shock after they pulled an a/c adapter from a receptacle. The prongs separated from the adaptor and stayed in the receptacle. When unplugging another device, contact was made with the prongs. Adaptor did not appear to have any approval markings.
- (8) An arc flash incident occurred while attempting to reset a 700 amp, 480 volt breaker. The worker received a small second degree burn to their arm, around the top of their hot glove.
- (9) A worker received minor burns to their forearms due to an arc flash caused by a neutral conductor making contact with live vertical buss in a motor control centre. The neutral conductor had slipped out of the worker's hand while trying to manipulate it.
- (10) A worker received an electric shock after making contact with a post hole auger that had drilled into an underground secondary cable.
- (11) While excavating a residential foundation, a worker contacted the electrical service conductors with a pick axe. He complained of numbness in his hand, but refused medical treatment.
- (12) A worker was transported to hospital with unknown injuries after the side boom he was working on made contact with a 138 kV power line.
- (13) An electrician received a burn to his right hand after shorting live conductors while troubleshooting equipment.

Equipment Failure (not included in overall statistical numbers)

- (1) A stress cone failed on a 25 kV transformer termination. No other damage occurred.
- (2) An electrical fault on a 25 kV switchgear caused significant damage to a private substation.
- (3) An electrical fault caused damage to a wind turbine generator.
- (4) A cable to a potential transformer at a private electric generator facility failed, causing damage to the potential transformer cabinet and associated equipment.
- (5) An arc flash incident occurred while a 4160 volt breaker was being racked in.
- (6) Reported failure of a power factor correction capacitor.
- (7) A 4160 volt breaker failed catastrophically at a coal plant, resulting in damage to the switchgear.
- (8) An electrical fire occurred in a 4160 volt motor starter. Upon further investigation, a mouse was found inside the equipment.
- (9) A 5 kV non-load disconnect switch was accidentally operated under load, resulting in an arc flash incident. An investigation is under way as to why the safety device failed, allowing the switch to be operated under load.
- (10) An electrical fault on the line side of a HVAC disconnect switch resulted in the switch failing and an arc fault to occur.
- (11) A 4160 volt capacitor, a component of a variable frequency drive, failed explosively. The explosion and subsequent fire resulted in damage to the adjacent equipment cabinets, cables, and cable trays.

REPORTED ELECTRICAL POWER LINE CONTACTS

January 1 to December 31, 2012

TYPE OF CONTACT OR DAMAGE	# OF LINE CONTACTS	NON-FATAL INJURIES	FATAL INJURIES
Overhead Utility Systems			
Vehicle-mounted equipment (booms, hoists, cranes, etc.)	23	1	
Trucks with raised boxes and vehicles transporting high loads	88		
Excavating or earth moving vehicles	90		
Farm implements	93		
Relocating structures (grain bins)	12		
Vehicles out of control	182	4	
Aircraft, parachutes, kites, etc.	4	1	
Falling, brushing or trimming trees	12		
a) Utility tree trimmers/workers	28		
b) Others			
Drilling and seismic equipment	5		
Other inadvertent contacts	14		
Total	551	6	0
Underground Utility Systems			
Excavating equipment	176	3	
Vehicles hitting transformers, pedestals, etc.	32		
Others	5	1	
Total	213	4	0

ELECTRICAL CONTACTS HISTORICAL SUMMARY

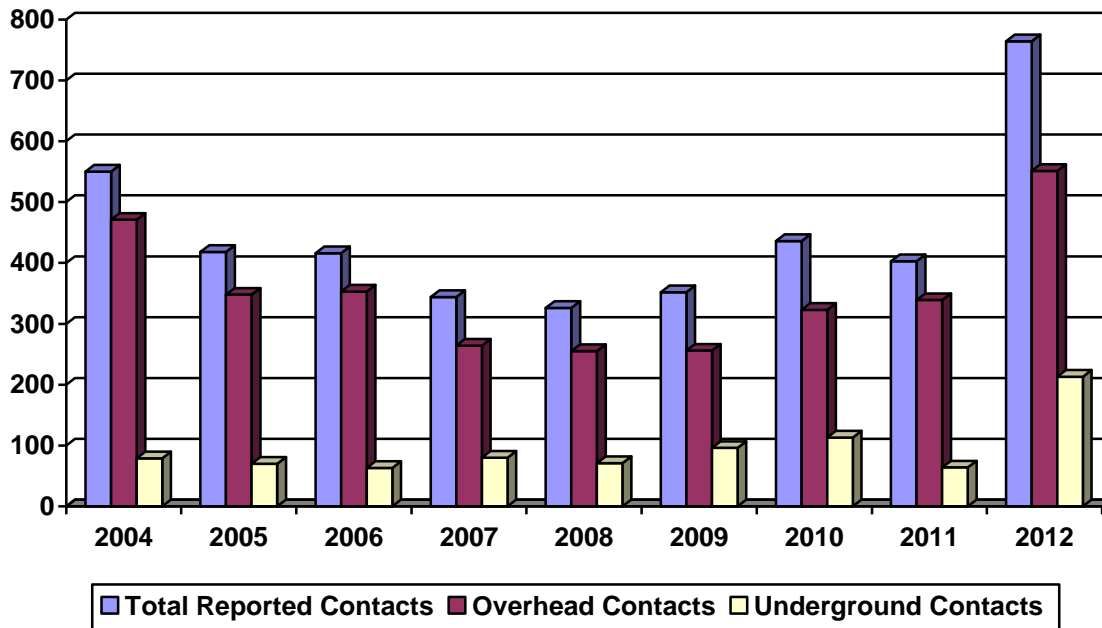
For the Years 2004 to 2012

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Overhead (O/H POWER LINE) contacts	471	348	353	264	255	256	323	339	551
Underground (U/G POWER LINE) contacts	79	70	63	80	71	96	113	64	213
Total Reported Contacts	550	418	416	344	326	352	436	403	764

Fatalities (O/H POWER LINE contacts)	1	1	1	1	1	2	1	2	0
Fatalities (U/G POWER LINE contacts)	0	0	0	0	0	0	0	0	0
Total Reported POWER LINE Fatalities	1	1	1	1	1	2	1	2	0

Injuries (O/H contacts)	6	5	10	11	9	8	14	4	8
Injuries (U/G contacts)	0	1	1	0	0	2	1	1	4
Reported injuries (persons) Non-Fatal ELECTRICAL	6	6	11	11	9	10	15	5	12

Power Line Contacts - Historical Summary 2004 to 2012



Power Line Contacts - Injuries History 2004 to 2012

