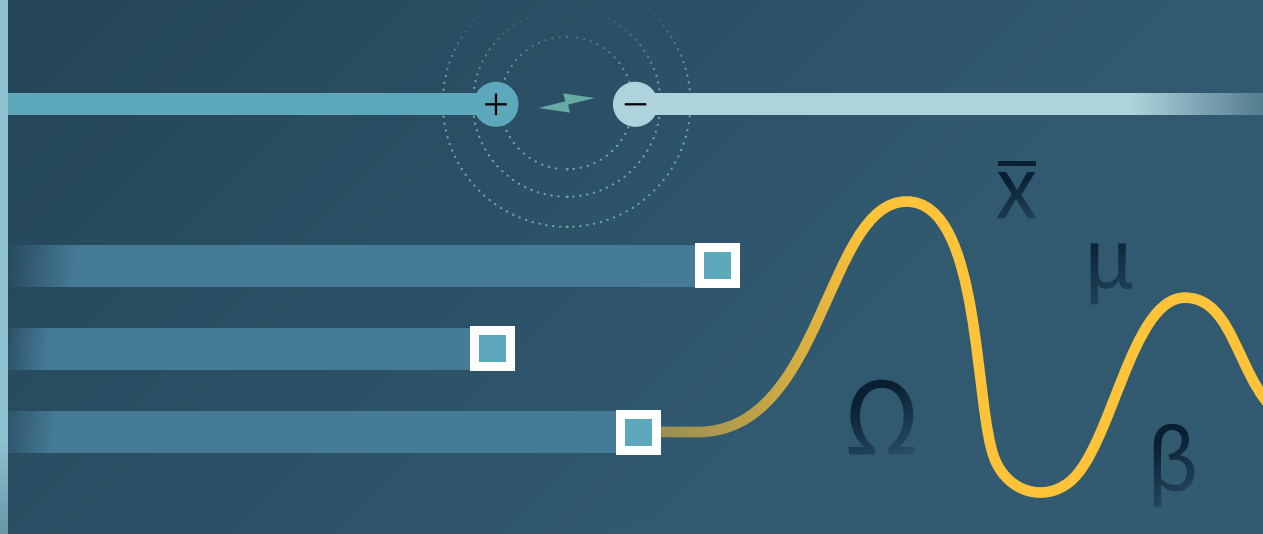
Electrical Safety Authority

OESR

2021

Ontario Electrical Safety Report



Contents

Executive Summary 3

1.0 Purpose of This Report 7
1.1 Role of the Electrical Safety Authority 8
1.2 Case Studies 8

2.0 Electrical-related Fatalities and Injuries 9
2.1 Electrocutions and Electrical Burn Fatalities 9
2.2 Occupational Electrical-related Fatalities and Electrical Injuries 16
2.3 Non-occupational Electrical-related Fatalities and Injuries 29
2.4 Electrical Injury and Emergency Department Visits in Ontario, 2011–2020 32
2.5 Case Study: Electrical Contractor 38

3.0 Utility-related Equipment 42
3.1 Case Study: Powerline Safety 49

4.0 Overview of Fires in Ontario 53
4.1 Fires Resulting in Fatalities 59
4.2 Fire Incidents with Electricity as the Fuel of the Ignition Source of the Fire 65
4.3 Cooking Fires with Electricity as the Fuel of the Ignition Source of the Fire 68
4.4 Electrical Distribution Equipment Fires with Electricity as the Fuel of the Ignition Source of the Fire 72
4.5 Case Study: Fire from Electrical Distribution Equipment 76

5.0 Product Safety 78
5.1 Case Study: Lichtenberg Generator Flash Notice 82

6.0 Electrical Incident Review 84

Acknowledgements 86
Methodology 86
References 90
Appendix A 92

A Message from the Electrical Safety Authority's Public Safety Officer

The Ontario Electrical Safety Report (OESR) is an annual report that compiles and publishes electrical safety data, providing a comprehensive collection of data and analysis that helps to make Ontario a safer place to live, work, and play free from electrical harm.

Incidents mentioned in this report are not just incidents. They are tragic circumstances where people have been injured or killed. By learning from these events, we can prevent these occurrences from happening in the future, together.

The data collected and analyzed through the OESR helps the ESA focus on risk factors and guides our efforts to reduce electrical harms in areas of highest risk.

As a society, and so much of what we do has an electrical component. Technology is changing at an incredible pace, and people are becoming too complacent around electricity. While we are seeing downward trends of incidents, one is too many, and we must remain vigilant.

Looking ahead, the ESA will become even more engaged as our provincial energy and electrification transformation continues through enhanced stakeholder engagement and expanded education and awareness campaigns.

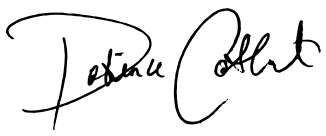
The OESR would not be possible without the collaboration of our safety partners. The OESR is compiled with the cooperation and participation from the Office of the Chief Coroner; the Ministry of Labour, Immigration, Training and Skills Development; the Office of the Fire Marshal and Emergency Management, the Canadian Institute of Health Information, and the Workplace Safety and Insurance Board of Ontario.

I would like to thank all of our partners for their contributions to the report and their dedication to improving electrical safety in Ontario.

I would like to recognize the electrical contractors, utility line crews, first responders, product manufacturers, and electrical inspectors who work every day to help keep Ontarians safe from electrical harm.

Finally, I want to recognize and thank my colleagues at the ESA who have worked hard to consolidate, analyze, and write this report to help inform the safety community at large.

I am proud of this report and of our contribution to reducing electrical harm in Ontario.



Patience Cathcart
Public Safety Officer, Electrical Safety Authority

Electrical-related Fatalities and Incidents Over the Past Ten Years (2012–2021)

142 ELECTRICAL-RELATED FATALITIES

53 Electrocution Fatalities

89 Electrical Fire Fatalities*

Electrocution Fatalities

2012–2016 vs. 2017–2021 → **3%** decrease

Utility-related Deaths

Accounted for **47%** of all electrical-related fatalities in the past ten years

Deaths from Powerline Contact

2012–2016: **8**

2017–2021: **11**

Occupational Deaths

2012–2016: **18**

2017–2021: **11**

Non-occupational

The five-year rolling average rate of fatalities has increased from **0.12** per million (2012–2016) to **0.22** per million (2017–2021).

INCREASE OF **83%**

Fire Fatalities and Events

2011–2015 vs. 2016–2020 → **5%** decrease

Cooking Fires

Most common type of fire with electricity as the ignition source

Number of Cooking Fires

2016: **712**

2020: **572**

20% decrease

Electrical Distribution Fires

Number of Electrical Distribution Fires

2016: **435**

2020: **397**

9% decrease

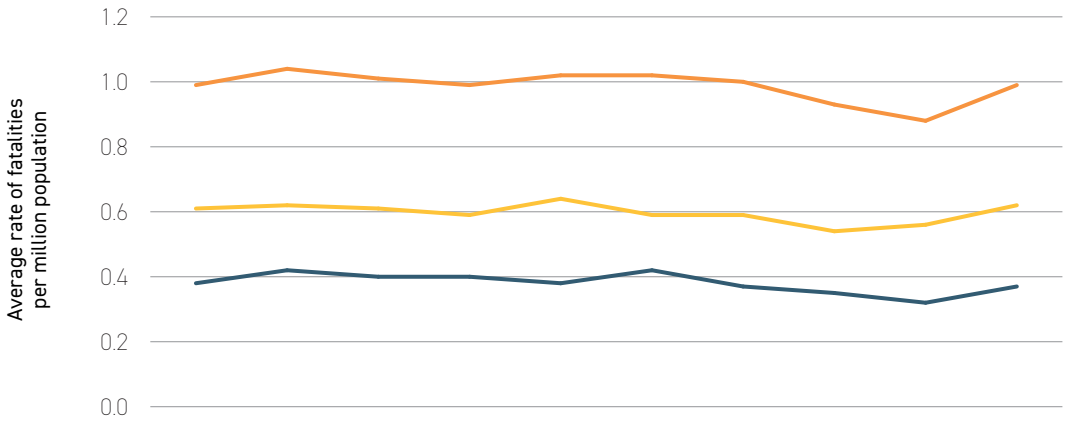
**Fire fatalities are those where the ignition source was reported as "electrical distribution equipment" or the fuel of the ignition source was reported as "electricity"*

Executive Summary

The Electrical Safety Authority's (ESA's) Ontario Electrical Safety Report (OESR) was created to provide a comprehensive perspective of electrical fatalities, injuries, and incidents in Ontario. Data presented in this report come from multiple sources, investigations, and root-cause analyses. Information is provided on potential electrical risks and high-risk sectors. This report is used by the ESA and others to better understand the dynamics of electrical safety and to encourage the development of initiatives to improve the status of electrical safety in the province.

Since 2014, the five-year average rate of electrocution and burn fatalities and electrical fire fatalities (where the ignition source was identified to be electrical) have been less than one per million population. We continue to see a downward trend in electrical fire, and electrocution and burn fatalities, although the most recent five-year average showed an increase. Progress has been made to reduce the number of fatalities and injuries, while the causes and context have shifted slightly over the time period. Concerted efforts remain essential for rates to continue to decrease.

FIVE-YEAR ROLLING AVERAGE OF ALL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



Five-year period	2008-2012	2009-2013	2010-2014	2011-2015	2012-2016	2013-2017	2014-2018	2015-2019	2016-2020	2017-2021
Electrical fire fatalities	0.61	0.62	0.61	0.59	0.64	0.59	0.63	0.58	0.56	0.62*
Electrocution and burn fatalities	0.38	0.42	0.40	0.40	0.38	0.42	0.37	0.35	0.32	0.37*
Total electrical-related fatalities	0.99	1.04	1.01	0.99	1.02	1.02	1.00	0.93	0.88	0.99*

**Preliminary data subject to change*
Source: ESA, Coroner, and OFMEM records

Electrical-related Fatalities

In the past ten years, there were 142 electrical fatalities in Ontario. From 2012 to 2021, 53 people died from electrocution (non-intentional death caused by contact with electricity) or by the effects of electrical burns, and 89 have died as a result of electrical fires (where the ignition fuel was identified as electricity and/or the ignition source was electrical distribution equipment). In comparison, the previous ten-year period from 2011 to 2020 reported 50 deaths from electrocutions and burns, and 80 fire deaths where the ignition source was identified as electrical. Although the numbers have increased, the trend rate of electrical-related fatalities per million continues to decrease.

Electrocutions and Electrical Burn Fatalities

Below are the five-year rolling average rates of electrocutions and electrical burn fatalities, comparing the two most recent five-year periods:

Comparing five-year period		
2012–2016	• 26 electrical-related fatalities • Five-year rolling average of 0.38 per million population	Rate decrease of 3%
2017–2021	• 27 electrical-related fatalities • Five-year rolling average of 0.37 per million population	

Utility-related electrocutions have accounted for 47% of all electrical-related fatalities in the past ten years:

Comparing five-year period		
2012–2016	• 31% of all electrical-related fatalities (8/26) were from powerline contact • Five-year rolling average of 0.12 per million population	Rate decrease of 25%
2017–2021	• 41% of all electrical-related fatalities (11/27) were from powerline contact • Five-year rolling average of 0.15 per million population	

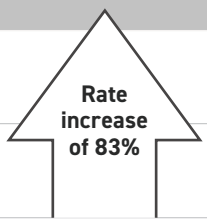
In the past ten years, occupational electrical-related fatalities continue to outnumber non-occupational fatalities. However, three of those years (2017, 2018, 2021) had a greater number of non-occupational deaths than occupational deaths.

Comparing five-year period		
2012–2016	• 69% of electrical-related fatalities (18/26) were occupational • Five-year rolling average of 0.49 per million labour force	Rate decrease of 47%
2017–2021	• 41% of electrical-related fatalities (11/27) were occupational • Five-year rolling average of 0.26 per million labour force	

Electrical trade workers (electricians and apprentice electricians) accounted for 28% of occupational electrical-related fatalities between 2012 and 2021 as they were fatally injured on the job when working energized.

Between 2017 and 2021, there were 16 non-occupational electrical fatalities.

Comparing five-year period	
2012–2016	29% of electrical fatalities (8/26) were non-occupational • Five-year rolling average of 0.12 per million population
2017–2021	60% of electrical fatalities (16/27) were non-occupational • Five-year rolling average of 0.22 per million population



Fire Fatalities and Events

The rate of electrical fire fatalities (where the ignition fuel was identified as electricity and/or the ignition source was electrical distribution equipment) has decreased by 5% when comparing the five-year rolling average in 2011–2015 and 2016–2020.

The number of structure fires where electricity was identified as the fuel of the ignition source has decreased by 25% between 2011 and 2020.

Cooking-related fires continue to be the most common type of fire where electricity was the fuel of the ignition source:

- In 2016, there were 712 cooking equipment fires;
- In 2020, there were 572 cooking equipment fires, a decrease of 20%.

Electrical distribution equipment fires are fires from electrical wiring, devices, or equipment in which its primary function is to carry current from one location to another (e.g., wiring, extension cords, terminations, electrical panels, and appliance cords) with electricity as the fuel of the ignition source. This type of fire has decreased over the most recent five years:

- In 2016, there were 435 electrical distribution equipment fires;
- In 2020, there were 397 electrical distribution equipment fires, a decrease of 9%.

Priority Issues

The ESA uses incident data from the OESR to identify areas that present the greatest risk to Ontarians, to monitor changes in incidence, and to identify emerging risks and trends.

Based on the data collected in the past ten years, the ESA has identified that the majority of electrical injuries and fatalities occur in the following specific areas. These areas have been identified as priorities for reducing electrical fatalities, serious injuries, damage, and loss in Ontario:

- Powerline contact while working accounted for 34% of all occupational electrical fatalities between 2012 and 2021.
- There was at least one critical injury to an electrical trade worker each year, in the past ten years. Safety incidents tend to be associated with unsafe work practices.
- The number of emergency department visits that were classified as critical visits has decreased by 4% in the five-year rolling average between 2011-2015 and 2016-2020.
- The five year average rate of non-occupational electrical fatalities has increased.

- Unapproved or counterfeit products account for a significant number of product incident reports.
- The ESA defines electrical products as appliances, cooking equipment, lighting equipment, other electrical and mechanical equipment, and processing equipment. The five-year average for electrical product structural loss fires (where electricity was identified as the fuel source) between 2011–2015 and 2016–2020 has decreased by 16%.
- An average of 1,490 electrical loss fires (where ignition sources were fuelled by electricity) occurred in the past five years, with an average of eight fatalities per year.

ESA Initiatives

Based on the information collected from the OESR, the ESA's five-year strategic plan (Safely Powering Tomorrow) launched in 2020 focuses on addressing those harms that represent the majority of incidents and fatalities. The ESA is working towards a goal of a 10% reduction in the electrical fatality and critical injury rate between 2020 and 2025. Harms within the following categories are prioritized for mitigation:

- worker safety;
- powerline safety;
- non-occupational electrical interactions;
- electrical product fires; and
- aging infrastructure.

Additional details on the ESA's efforts can be found at www.esasafe.com.

The ESA cannot reach its goal without the significant work and support of its partners and stakeholders within the electrical safety system. We would like to acknowledge:

- those who generate and distribute electricity;
- electrical equipment manufacturers;
- standards organizations;
- safety organizations;
- installers of electrical equipment;
- educators;
- facility owners;
- injury response and treatment providers;
- government;
- researchers;
- injury prevention specialists;
- safety regulators and worker safety advocates; and
- those who are end users of electricity.

Working together, we seek to reduce the number of electrical fatalities, injuries, and fires with the ultimate vision of "An Ontario where people can live, work, and play safe from electrical harm."

1.0 Purpose of This Report

This 21st report on the state of electrical safety in Ontario summarizes electrical incidents, electrical-related fatalities identified by the Office of the Chief Coroner, and injuries of an electrical nature. It also provides information on deaths, injuries, and damage caused by fire incidents identified by the Office of the Fire Marshal and Emergency Management (OFMEM), as well as fires and fire fatalities identified by local fire departments where electricity was identified as the ignition fuel and/or electrical distribution equipment was identified as the ignition source.

The purpose of this report is to provide stakeholders within the broad electrical safety system with an update and a longitudinal perspective of electrical safety in Ontario.

Those stakeholders include:

- electrical utilities and those organizations that generate, transmit, and distribute electricity;
- organizations that design, manufacture, distribute, and supply electrical products;
- electrical contractors who install, repair, and maintain electrical wiring installations and products in our homes, workplaces, and public spaces;
- regulators and various levels of government that write policies and regulations to protect public safety;
- Canadian and international organizations which develop standards for electrical installation and products;
- academic and commercial organizations that focus on safety research and development;
- organizations, such as insurance companies, that create policies that drive organization and consumer behaviour to reduce risk;
- health care providers, workplace and community-based safety organizations, and education and training organizations that provide public communication and increase hazard-mitigation skills and awareness;
- consumers who purchase electrical products and use and rely on electricity every day in their homes, workplaces, and public spaces;
- and more.

All of these organizations have an important role in contributing to and improving electrical safety in Ontario.

This report intends to educate and inform members of the electrical safety system by identifying key electrical safety risks. This information can be used to develop and improve standards, identify areas for continued safety research, influence the development of workplace and community-based safety programs, and lead to improved training, education, and communication programs.

1.1 Role of the Electrical Safety Authority

The Electrical Safety Authority (ESA) is an administrative authority acting on behalf of the Government of Ontario with specific responsibilities under Part VIII of the *Electricity Act, 1998*, and the *Safety and Consumer Statutes Administration Act, 1996*. As part of its mandate, the ESA is responsible for administering regulation in four key areas:

- Ontario Electrical Safety Code (Regulation 164/99);
- Licensing of Electrical Contractors and Master Electricians (Regulation 570/05);
- Distribution Safety (Regulation 22/04); and
- Product Safety (Regulation 438/07).

The ESA operates as a private, not-for-profit corporation. Funding derives from fees for electrical oversight, safety services, and licensing of electrical contractors and master electricians. Activities include:

- overseeing compliance with regulations;
- investigating fatalities, injuries, and fire losses associated with electricity;
- identifying and targeting leading causes of electrical risk, using a harm life cycle approach;
- promoting awareness, education, and training on electrical safety; and
- engaging with stakeholders to improve safety.

1.2 CASE STUDIES

This report features several case studies of ESA root-cause investigations.

The ESA conducts these investigations on select and serious incidents (especially those that include fatalities, critical injuries, and/or serious fires) in order to determine the underlying root causes. The lessons learned from these investigations help to prevent future incidents and fatalities.

The ESA's investigations go beyond compliance with any code, regulation, or standard, and are not only limited to electrical safety dimensions, but also examine occupational health and safety and the role of the integrated safety infrastructure.

Root-cause investigations assess both the events leading up to the incident and the surrounding conditions, and the events or conditions that went wrong and contributed to the incidents.

The case studies presented have been modified to protect the privacy of the individuals involved. Details from case studies for fire-related incidents have been generously provided by the OFMEM.

2.1 Electrocutions and Electrical Burn Fatalities

Electrocution occurs when a person is exposed to a lethal amount of electrical energy.

To determine how contact with an electrical source occurs, characteristics of that source before electrocution (pre-event) must be evaluated.

For death to occur, the human body must become part of an active circuit with an electric current that is capable of over-stimulating the nervous system and/or causing damage to internal organs. The extent of injuries depends on the current's magnitude (measured in amperes (Amps)), the path in which the current travels through the body, and the duration it flows through the body (event). The resulting damage to the human body and the emergency medical treatment ultimately determine the outcome of the energy exchange (post-event) (National Institute for Occupational Safety and Health, 1991).

There were 53 electrical-related fatalities reported in Ontario in the ten-year span between 2012 and 2021, which is three deaths more than the time period between 2011 and 2020.

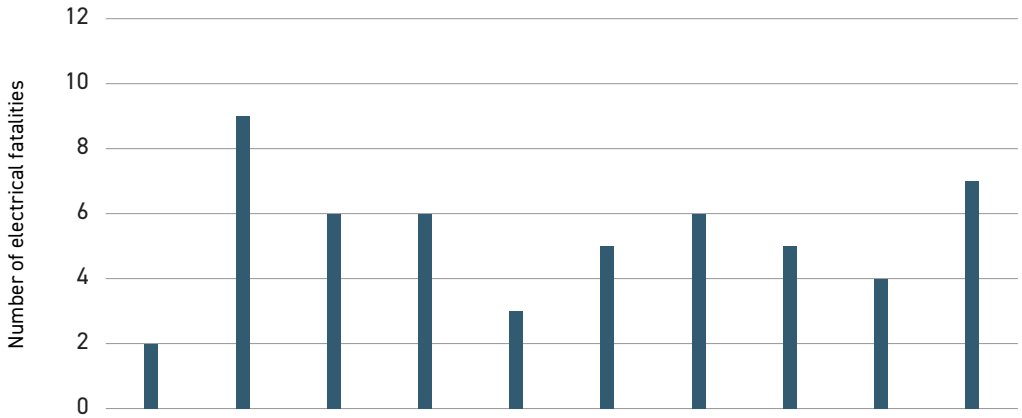
By age group, individuals aged 20 to 39 years accounted for the largest proportion of fatal injuries (47%), followed by individuals 40 to 59 years of age (32%). The majority of electrical fatalities occurred between the months of June and October (63%), with a peak of fatalities in August (21%).

The five-year rolling average rate of electrical fatalities has decreased by 3% when comparing 2012–2016 (0.38 per million population) and 2017–2021 (0.37 per million population). Notably, however, the rate of powerline fatalities has increased: when 2012–2016 (0.12 per million) and 2017–2021 (0.15 per million) were compared, there was a 25% increase in the five-year rolling average rate of powerline electrocutions.

Residential (33%), utility (19%), and commercial settings (11%) were the most common places for electrical-related fatalities between 2017 and 2021.

The five-year rolling average rate of occupational electrical-related fatalities per labour force has decreased 47% when comparing 2012–2016 (0.49 fatalities per million) to 2017–2021 (0.26 fatalities per million). The five-year rolling average rate of non-occupational electrical-related fatalities per million population has increased by 83% between the same time periods (0.12 fatalities per million to 0.22 fatalities per million).

1 NUMBER OF ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2012–2021



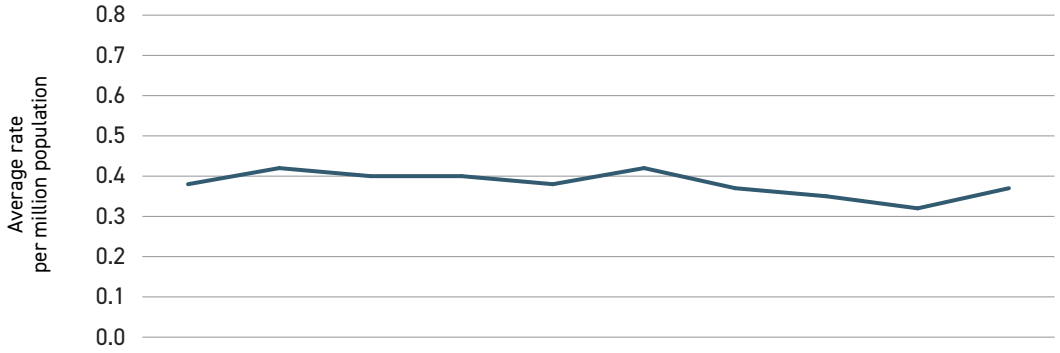
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of electrical fatalities	2	9	6	6	3	5	6	5	4	7

Source: ESA and Coroner records

Conclusion

There were 7 electrical-related fatalities in 2021. This is an increase of 3 fatalities when compared to 2020.

2 FIVE-YEAR ROLLING AVERAGE RATE OF ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



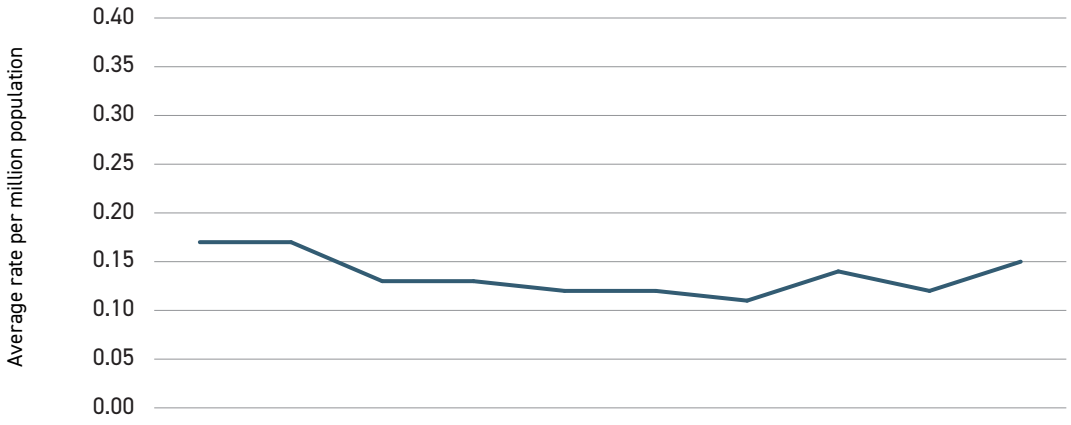
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Rate of electrical-related fatalities (per million population)	0.38	0.42	0.40	0.40	0.38	0.42	0.37	0.35	0.32	0.37

Source: ESA and Coroner records

Conclusion

The rate of electrical-related fatalities has decreased by 3% when comparing the average rate at 2012-2016 and 2017-2021.

3 FIVE-YEAR ROLLING AVERAGE RATE OF POWERLINE FATALITIES IN ONTARIO, 2008–2021



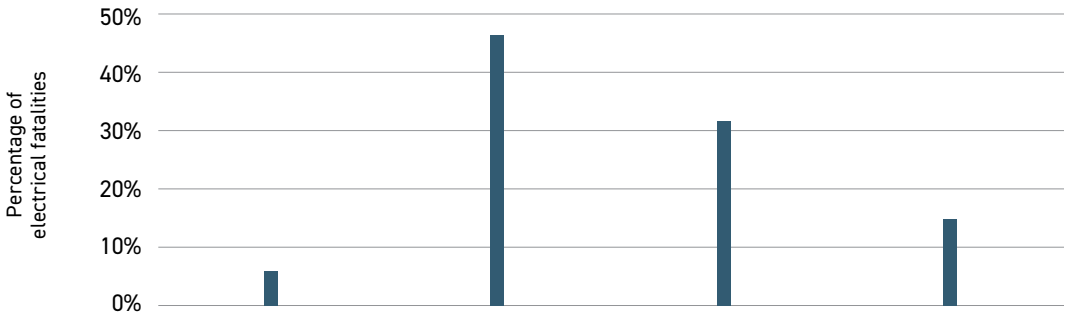
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Rate of powerline fatalities (per million population)	0.17	0.17	0.13	0.13	0.12	0.12	0.11	0.14	0.12	0.15

Source: ESA and Coroner records

Conclusion

Compared to 2012-2016, the rate of powerline fatalities in 2017-2021 has increased by 25%.

4 PERCENTAGE OF ELECTRICAL-RELATED FATALITIES BY AGE GROUP IN ONTARIO, 2012–2021



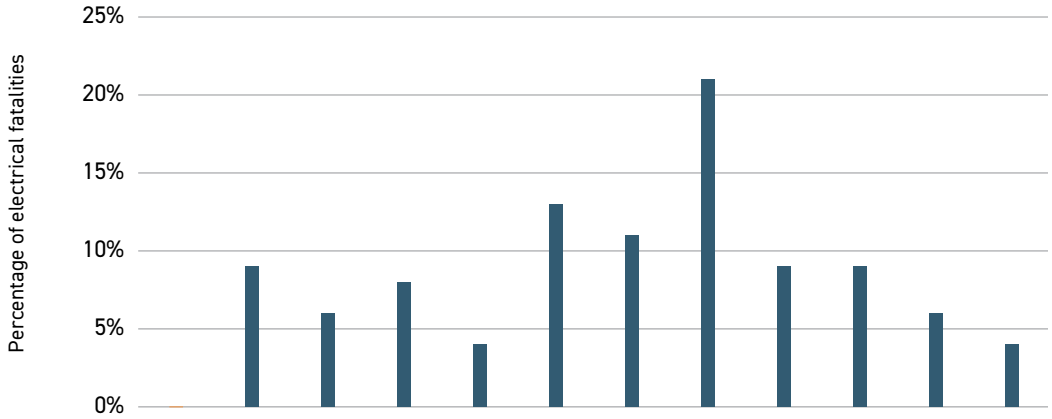
Age	0–19	20–39	40–59	60+
Percentage	6%	47%	32%	15%

Source: ESA

Conclusion

In the last ten years, 47% of electrical fatalities occurred among the 20-39 age group, followed by the 40-59 age group (32%).

5 PERCENTAGE OF ELECTRICAL-RELATED FATALITIES BY MONTH IN ONTARIO, 2012–2021



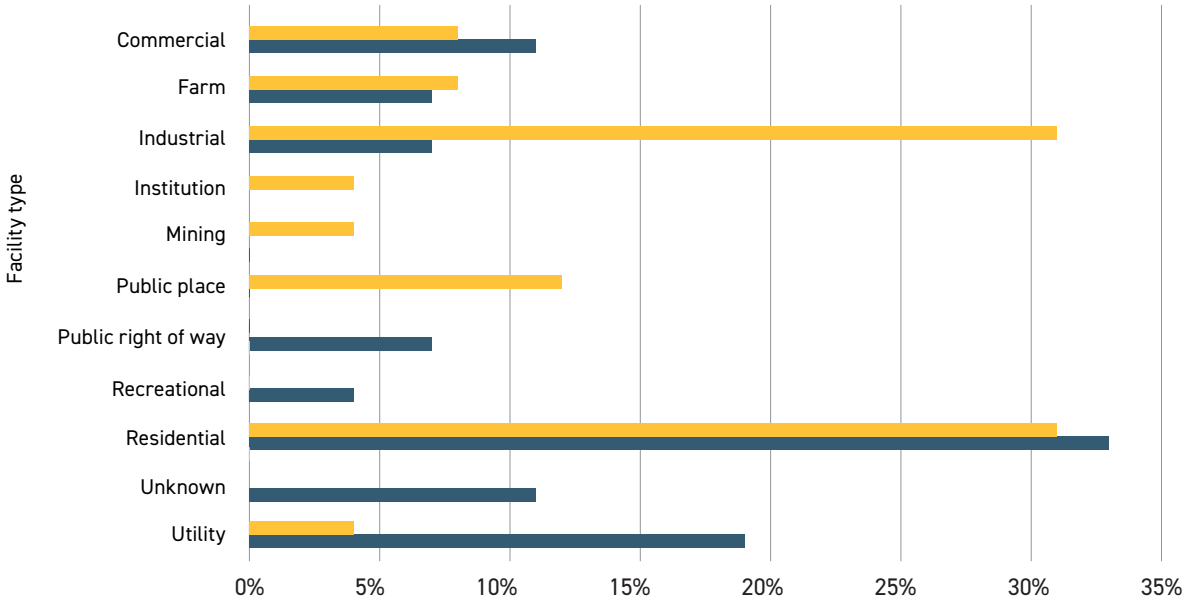
Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Percentage	0%	9%	6%	8%	4%	13%	11%	21%	9%	9%	6%	4%

Source: ESA

Conclusion

In the last ten years, August was the most common month for electrical fatalities to occur. No fatalities were reported for the month of January.

6 PERCENTAGE OF ELECTRICAL FATALITIES BY FACILITY TYPE IN ONTARIO, 2012–2016 AND 2017–2021



	Facility type	Commercial	Farm	Industrial	Institution	Mining	Public place	Public right of way	Recreational	Residential	Unknown	Utility
Percentage of electrical fatalities	2012–2016	8%	8%	31%	4%	4%	12%	0%	0%	31%	0%	4%
	2017–2021	11%	7%	7%	0%	0%	0%	7%	4%	33%	11%	19%

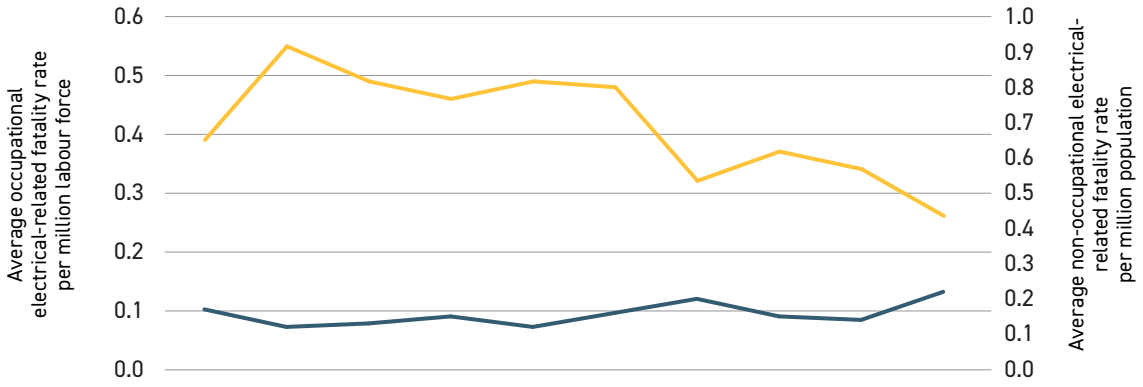
Source: ESA and Coroner records

Conclusion

Residential settings were the most common settings where electrical-related fatalities occur.

In 2012-2016, residential, industrial, and public places were the most common places for electrical-related fatalities; in 2017-2021, residential, utility and commercial were the most common places.

7 FIVE-YEAR ROLLING AVERAGE RATE OF OCCUPATIONAL AND NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Occupational	0.39	0.55	0.49	0.46	0.49	0.48	0.32	0.37	0.34	0.26
Non-occupational	0.17	0.12	0.13	0.15	0.12	0.16	0.20	0.15	0.14	0.22

Source: ESA and Coroner records

Conclusion

The five-year rolling average of occupational electrical-related fatalities has decreased 47% when comparing 2012-2016 to 2017-2021 per million labour force. The five-year rolling average rate of non-occupational electrical-related fatalities has increased by 83% between the same time periods.

2.2 Occupational Electrical-related Fatalities and Electrical Injuries

Occupational electrical-related fatalities are a particular hazard to those who routinely work near electrical sources. According to the U.S. Bureau of Labor Statistics, there were 126 fatal electrical injuries in the United States in 2020. The mining industry had the highest rate of fatal electrical injuries, followed by the construction industry. "Construction, repairing, cleaning" accounted for the leading worker activity for electrical fatalities at 64%, while "Using or operating tools, machinery" accounted for 22% of electrical fatalities (ESFI, 2022).

In Ontario, a study of occupational fatalities among construction workers between 1997 and 2007 found that electrical contact was responsible for 15% of fatalities; risk factors associated with occupational fatalities included direct contact with electrical sources, lower voltage sources, and working outdoors (Kim et al., 2016). The greatest proportion of electrocution deaths occur among electricians and electrical helpers, utility workers, and those working in the construction and manufacturing industries. Electrical-related fatalities are more common among workers who are younger than the average age of occupational deaths overall. Contact with overhead powerlines is reportedly by far the most frequent cause of fatal occupational electrocution injury (Taylor et al., 2002).

For those who survive electrical injury, the immediate consequences are usually obvious and often require extensive medical intervention. However, the long-term after-effects may be more subtle, pervasive, and less well-defined. Long-term effects are particularly difficult to diagnose, as the link between the injury and the symptoms can often go unrecognized by patients and their physicians (Wesner and Hickie, 2013; Theman et al., 2008). Substantial acute and long-term neuropsychological and social outcomes existed among patients after an electrical injury, and were similar between patients exposed to low- and high-voltage injuries (Radulovic et al., 2019).

Education and proper protection are essential in preventing electrical injuries at work. In 2022, 600 people who worked directly with electricity were surveyed about their experience with electrical shock hazards. Seventy-eight percent of respondents said they have been shocked while on the job, where 37% were shocked by less than 221 V. This is in contrast with 85% of respondents who felt they were highly confident in recognizing electrical hazards (Littelfuse, 2020). This highlights the need for ongoing and refresher training for those who work with electricity in an occupational setting.

Between 2012 and 2021, there were 29 occupational electrical-related fatalities in Ontario. In the previous time period (2011-2020), there were 30 occupational fatalities. In 2021, there was one occupational electrical-related fatality reported.

The five-year rolling average number of fatalities and critical injuries among workers (overall occupational safety) has remained the same when comparing between 2012–2016 and 2017–2021. In contrast, the five-year rolling average number of fatalities and critical injuries among electrical trade workers shows a 27% decrease when comparing these two time periods.

When comparing the five-year rolling average rate, the occupational electrical-related fatalities have decreased from 0.49 per million labour force population in 2012–2016 to 0.26 per million labour force population in 2017–2021. This is a decrease of 47%.

In the 2017–2021 time period, industrial (33%), residential (17%), and farm (17%) settings were the most common places for occupational electrical-related fatalities. Repair and maintenance was the most common type of work being done when these fatalities occurred. Between 2012 and 2021, the most commonly cited causes of death were due to improper procedure (31%) when excluding unknown causes.

Between 2012 and 2021, electrical tradespeople accounted for 28% of all occupational electrical-related fatalities. In the previous ten-year period (2011-2020), electrical tradespeople accounted for 27% of all occupational electrical-related fatalities.

A review of data provided by the WSIB from 2012 to 2021 shows that male workers continue to outnumber female workers with respect to occupational electrical injury, by a ratio of 3:1. Workers in the construction and services sectors contribute to the highest number of WSIB lost time injury claims. Machine tool and electric parts, and heating, cooling, and cleaning machinery were the most common sources of injury. There was a 1% decrease in the number of injury claims between 2012–2016 and 2017–2021, but the number of claims for electrocution has increased by 15% between the time periods.

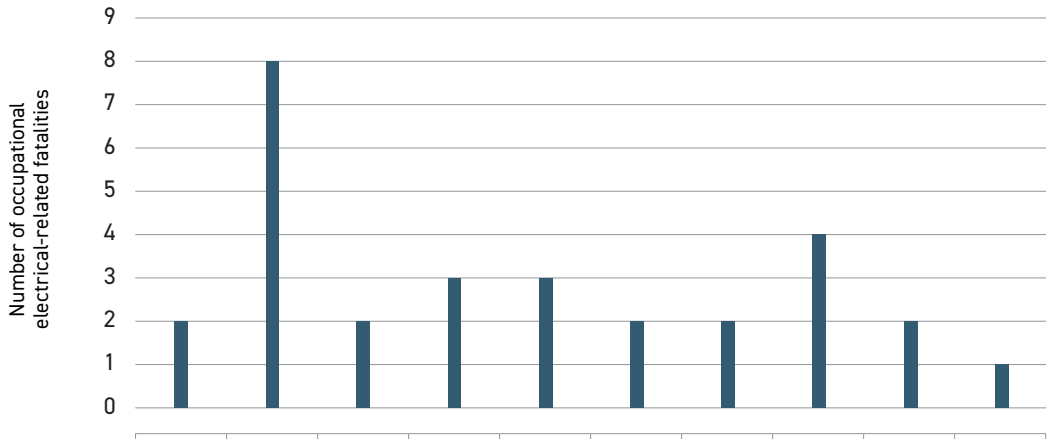
Section 2.5 provides a case study that is an example of the risk factors associated with electrical-related critical injuries for electrical contractors.

Statistics Directly Related to the ESA's Harm Reduction Priorities – WORKER SAFETY

Five-year Rolling Average Comparison

Number of worker-related electrical fatalities and critical injuries based on data reported by the Ministry of Labour, Immigration, Training and Skills Development and incidents investigated by the ESA and confirmed with the Office of the Chief Coroner indicates the worker safety five-year rolling average has remained the same between 2012-2016 and 2017-2021.

1 NUMBER OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2012–2021



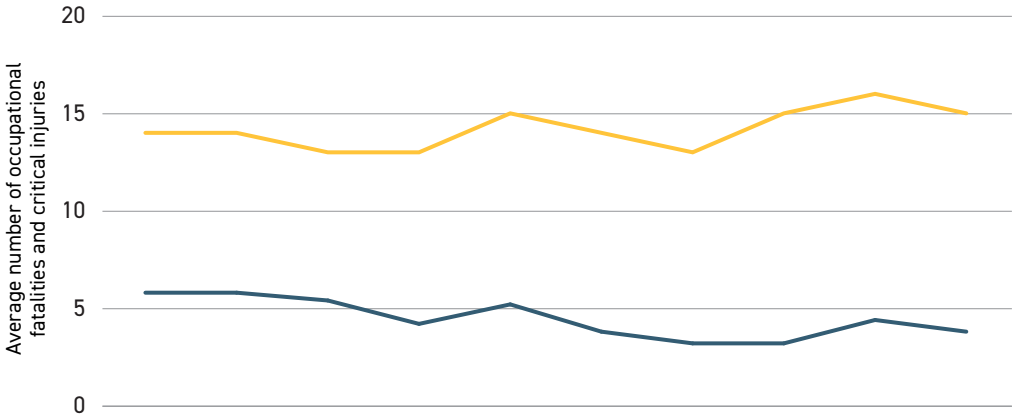
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of occupational electrical-related fatalities	2	8	2	3	3	2	2	4	2	1

Source: ESA and Coroner records

Conclusion

In 2021, there was one occupational electrical-related fatality.

2 FIVE-YEAR ROLLING AVERAGE OF OCCUPATIONAL FATALITIES AND CRITICAL INJURIES IN ONTARIO, 2008–2021



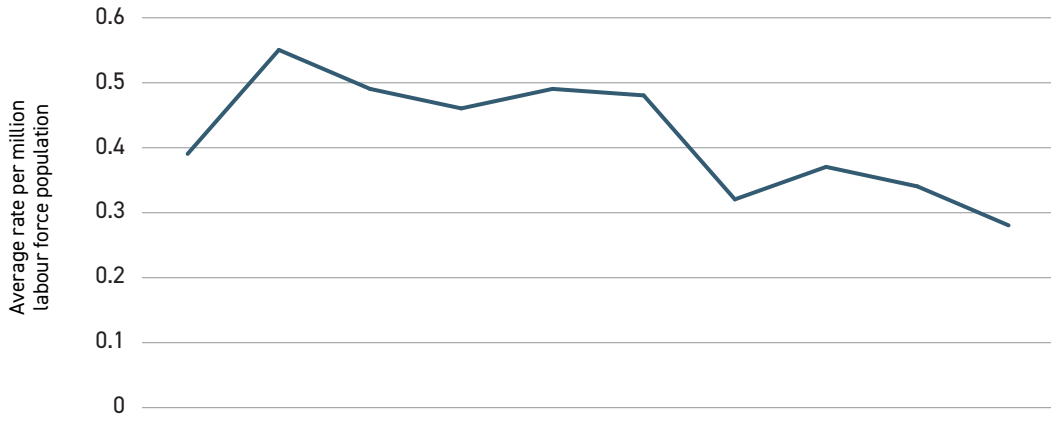
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Occupational safety overall	14	14	13	13	15	14	13	15	16	15
Electrical trade	5.8	5.8	5.4	4.2	5.2	3.8	3.2	3.2	4.4	3.8

Source: ESA, Coroner, and MOLTSD records

Conclusion

The five-year rolling average number of occupational fatalities and critical injuries (occupational safety overall) has remained the same between 2012-2016 and 2017-2021. The five-year rolling average number of fatalities and critical injuries among electrical trade workers shows a 27% decrease when comparing these two time periods.

3 FIVE-YEAR ROLLING AVERAGE RATE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



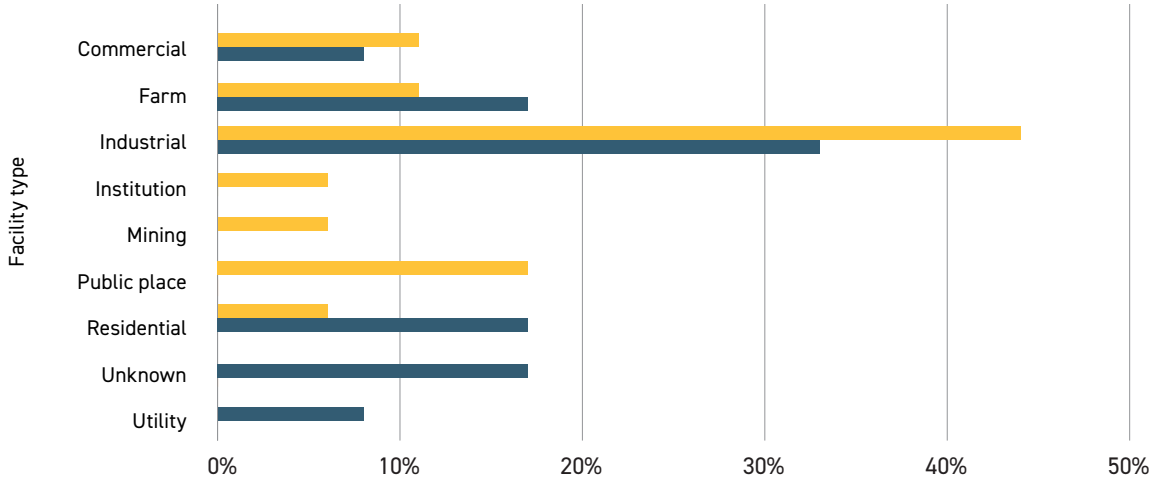
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Occupational electrical-related fatality rate	0.39	0.55	0.49	0.46	0.49	0.48	0.32	0.37	0.34	0.28

Source: ESA and Coroner records

Conclusion

The rate of occupational electrical-related fatalities has decreased by 47% when comparing 2012-2016 and 2017-2021.

4 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY FACILITY TYPE IN ONTARIO, 2012–2016 AND 2017–2021



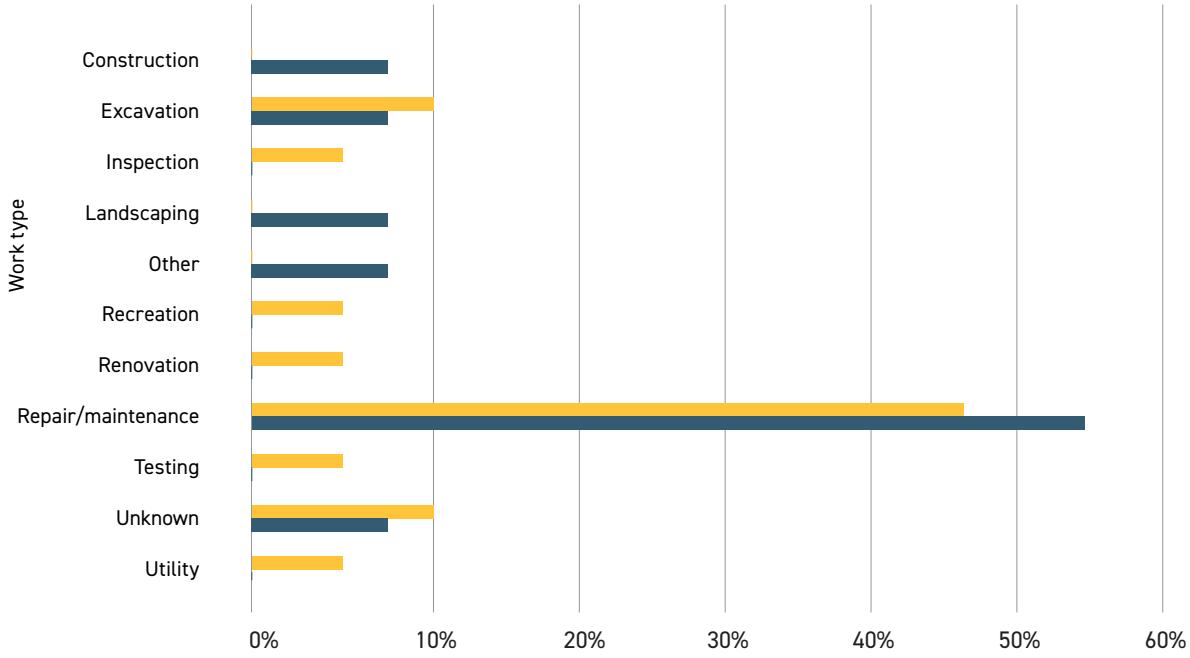
Facility type	Commercial	Farm	Industrial	Institution	Mining	Public place	Residential	Unknown	Utility
Percentage of occupational electrical-related fatalities: 2012–2016	11%	11%	44%	6%	6%	17%	6%	0%	0%
2017–2021	8%	17%	33%	0%	0%	0%	17%	17%	8%

Source: ESA and Coroner records

Conclusion

In 2012-2016, the most commonly reported settings for occupational electrical-related fatalities were industrial and public place settings. In 2017-2021, industrial, public places, commercial and farm were the most common.

5 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY TYPE OF WORK IN ONTARIO, 2012–2016 AND 2017–2021



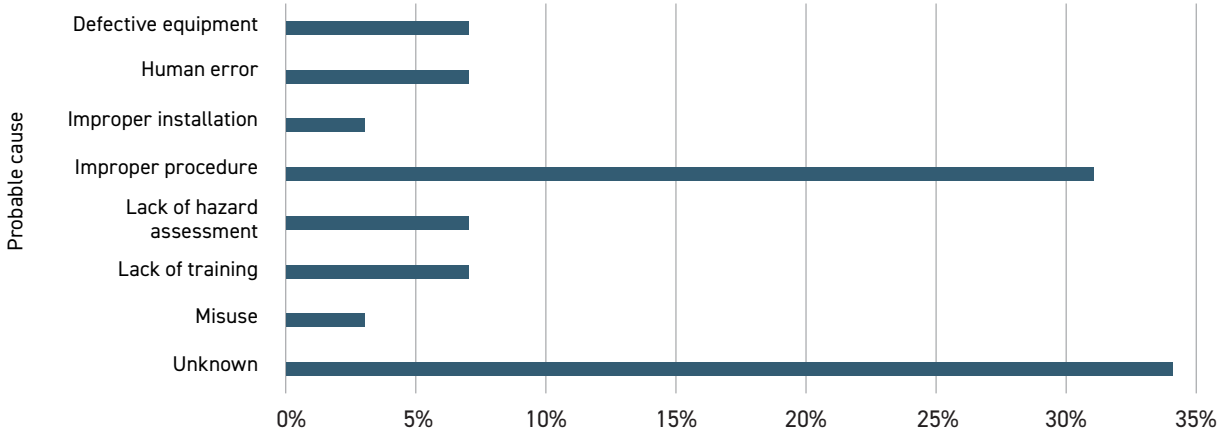
Work type	Construction	Excavation	Inspection	Landscaping	Other	Recreation	Renovation	Repair/ maintenance	Testing	Unknown	Utility
Percentage of occupational electrical-related fatalities 2012-2016	0%	12%	6%	0%	0%	6%	6%	47%	6%	12%	6%
2017-2021	9%	9%	0%	9%	9%	0%	0%	55%	0%	9%	0%

Source: ESA and Coroner records

Conclusion

In 2012-2016 and 2017-2021, repair/maintenance activities were the most common types of work for occupational electrical-related fatalities.

6 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY PROBABLE CAUSE IN ONTARIO, 2012–2021



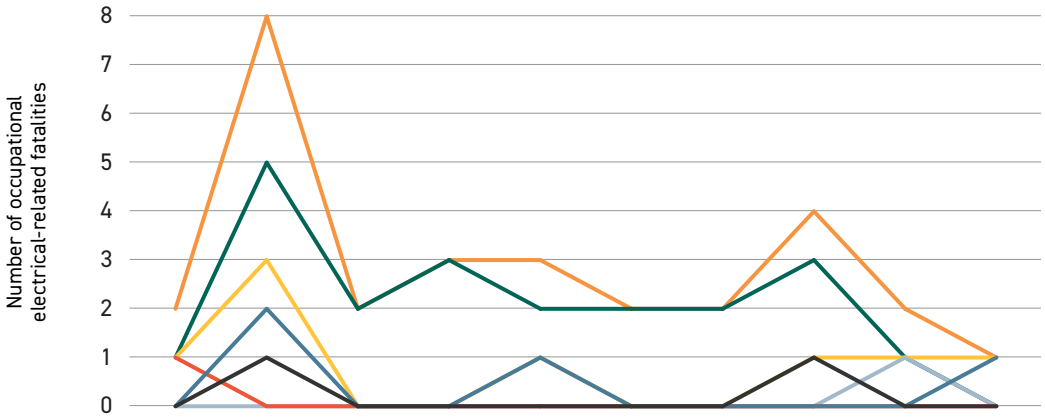
Probable cause	Defective equipment	Human error	Improper installation	Improper procedure	Lack of hazard assessment	Lack of training	Misuse	Unknown
Percentage of occupational electrical-related fatalities	7%	7%	3%	31%	7%	7%	3%	34%

Source: ESA and Coroner records

Conclusion

Aside from unknown cause, the most commonly cited causes of occupational electrical-related fatalities were improper procedure and lack of hazard assessment in the most recent ten-year period.

7 NUMBER OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY OCCUPATION IN ONTARIO, 2012–2021



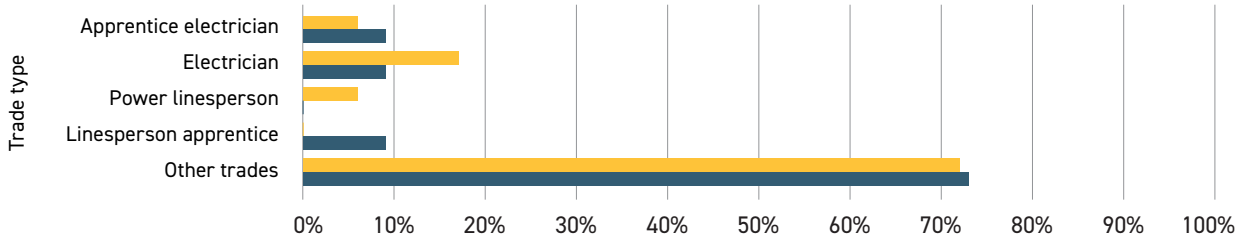
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Apprentice electrician	0	1	0	0	0	0	0	1	0	0
Electrician	0	2	0	0	1	0	0	0	0	1
Power linesperson	1	0	0	0	0	0	0	0	0	0
Linesperson apprentice	0	0	0	0	0	0	0	0	1	0
Total electrical	1	3	0	0	1	0	0	1	1	1
Other trades	1	5	2	3	2	2	2	3	1	0
All occupational fatalities	2	8	2	3	3	2	2	4	2	1

Source: ESA and Coroner records

Conclusion

Since 2012, on average, there has been less than one electrical trade fatality per year. In contrast, there has been an average of three occupational fatalities (all trades) per year.

8 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY TRADE, 2012–2016 AND 2017–2021



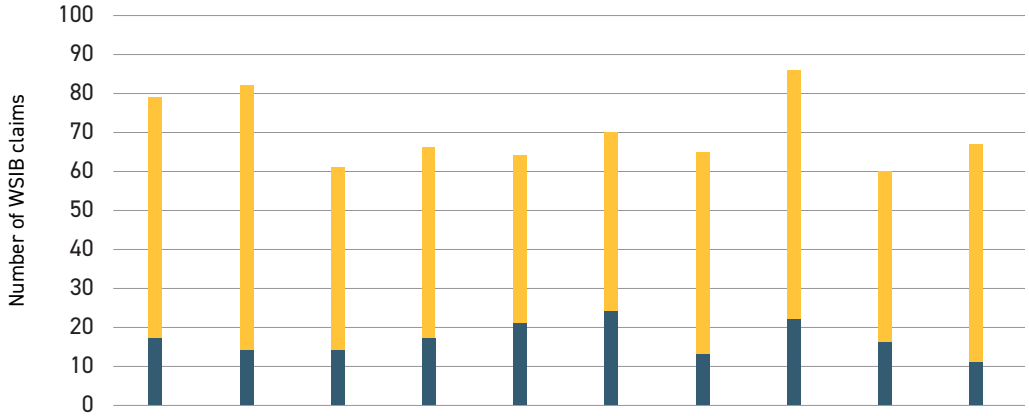
Trade type	Apprentice electrician	Electrician	Power linesperson	Linesperson apprentice	Other trades
Percentage of occupational electrical-related fatalities 2012–2016	6%	17%	6%	0%	72%
Percentage of occupational electrical-related fatalities 2017–2021	9%	9%	0%	9%	73%

Source: ESA and Coroner records

Conclusion

In the most recent five year period (2017-2021), the proportion of occupational electrical-related fatalities among other trades has remained similar to the previous five years (2012-2016).

9 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY SEX IN ONTARIO, 2012–2021



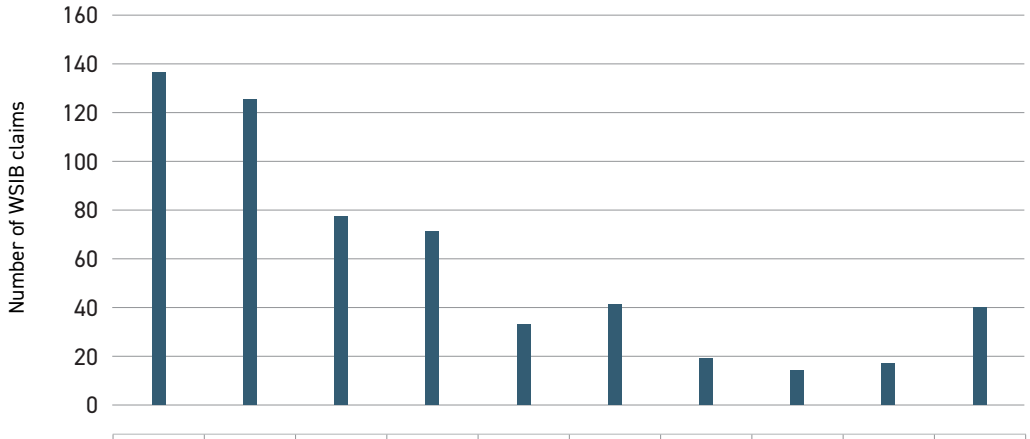
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Male	62	68	47	49	43	46	52	64	44	56
Female	17	14	14	17	21	24	13	22	16	11

Source: Workplace Safety and Insurance Board

Conclusion

Between 2012-2021, the number of WSIB claims related to electrical injury among males was three times greater than the number of claims among females.

10 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY SECTOR IN ONTARIO, 2012–2021



Sector type	Construction	Services	Manufacturing	Schedule 2*	Health care	Electrical	Transportation	Automotive	Food	Other
Number of WSIB claims	136	125	77	71	33	41	19	14	17	40

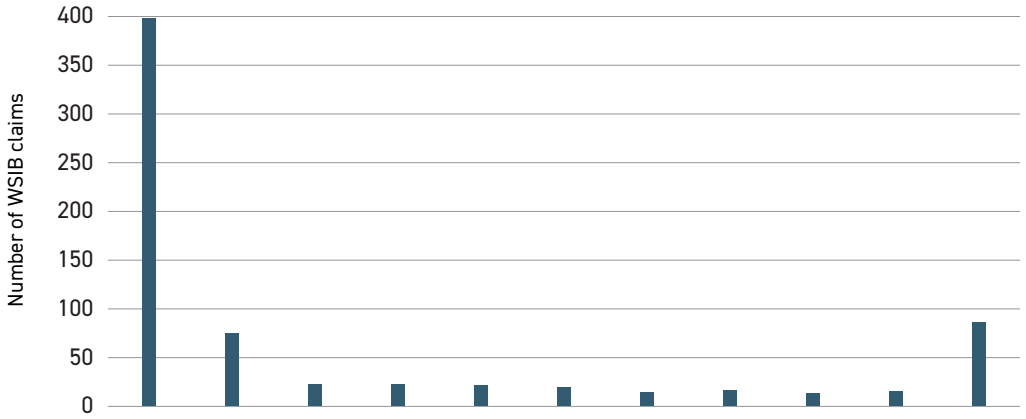
Source: Workplace Safety and Insurance Board

Conclusion

Between 2012 and 2021, WSIB lost time electrical injury claims were more commonly reported by workers from the construction and services sectors.

* Schedule 2 workers are those that work in firms funded by public funds (federal, provincial, and/or municipal governments), firms legislated by the province but self-funded, or firms that are privately owned but involved in federally regulated industries such as telephone, airline, shipping, and railway.

11 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY THE TOP 10 SOURCES IN ONTARIO, 2012–2021



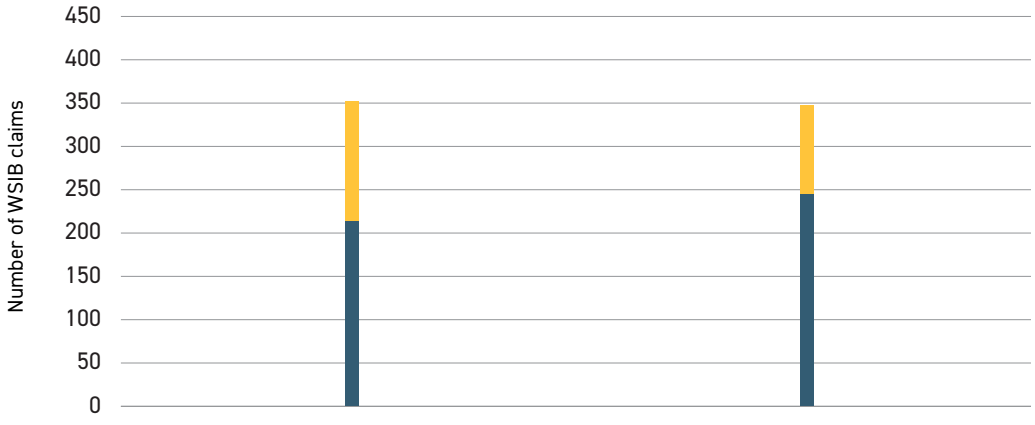
Source	Number of WSIB claims
Machine tool and electric parts	398
Heating, cooling, and cleaning machinery	74
Metal woodworking and plastic, rubber, concrete, and other processing	22
Misc. machinery (e.g., audio, video, televisions, telephones, snowblowers)	22
Hand tools, powered	21
Other tools, instruments, equipment, unspecified not elsewhere classified	19
Fire, flame, smoke	14
Special process machinery (e.g., food slicers, paper, printing, wrapping, sewing, pumps)	16
Furniture and fixtures	13
Office and business machines	15
Other sources	86

Source: Workplace Safety and Insurance Board

Conclusion

Machine tool and electric parts, and heating, cooling, and cleaning machinery were the most common sources of WSIB electrical injury claims between 2012 and 2021.

12 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY NATURE OF INJURY IN ONTARIO, 2012–2016 AND 2017–2021



Nature of injury	2012-2016	2017-2021
Burns, electrical	138	102
Electrocutions, electric shock	214	246

Source: Workplace Safety and Insurance Board

Conclusion

There is an overall decrease of 1% in the number of injury claims between 2012-2016 and 2017-2021; however, the number of electrocutions has increased by 15%.

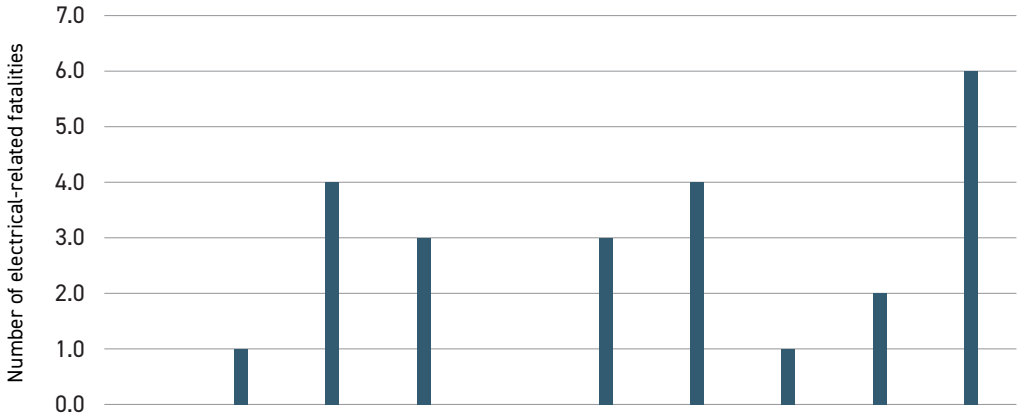
2.3 Non-occupational Electrical-related Fatalities and Injuries

Injuries are a significant health problem. They are the leading cause of death for the young and contribute substantially to the burden on the health care system. Many injuries are predictable and preventable.

In 2021, there were six non-occupational electrical-related fatalities. In the previous year, there were two non-occupational electrical-related fatalities. The five-year rolling average rate between 2012–2016 and 2017–2021 has increased by 83% from 0.12 per million population to 0.22 per million population.

In the past ten years, the residential setting was the most common place for non-occupational electrical-related fatalities. Human error, improper use/misuse, misadventure, and theft were the most common activities associated with fatalities.

1 NUMBER OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2012–2021



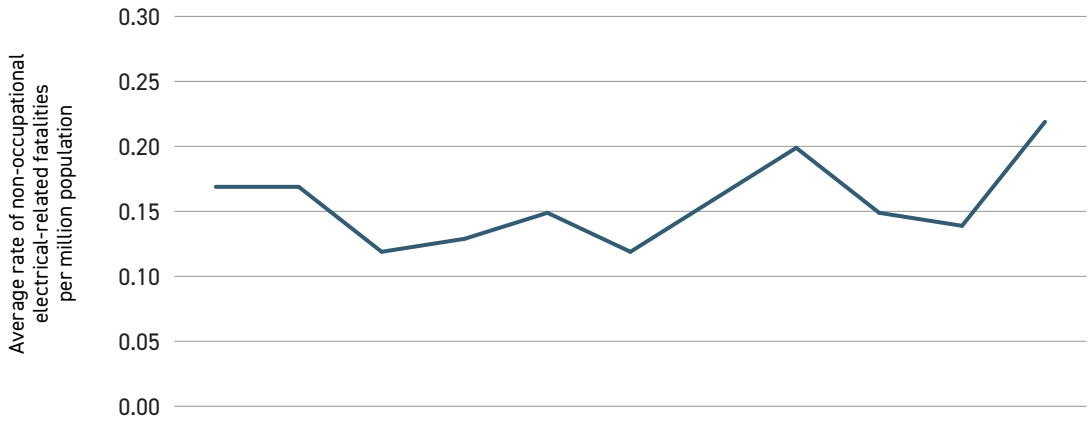
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of non-occupational electrical-related fatalities	0	1	4	3	0	3	4	1	2	6

Source: ESA and Coroner records

Conclusion

In 2021, six non-occupational fatalities occurred; this is the highest number of non-occupational electrical fatalities recorded in the past ten years.

2 FIVE-YEAR ROLLING AVERAGE RATE OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



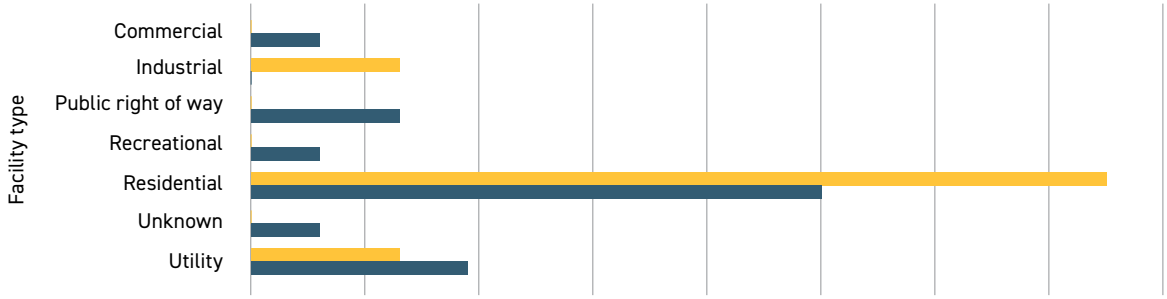
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Rate of non-occupational electrical-related fatalities per million population	0.17	0.12	0.13	0.15	0.12	0.16	0.20	0.15	0.14	0.22

Source: ESA and Coroner records

Conclusion

The five-year rolling average rate of non-occupational electrical-related fatalities has increased by 83% when comparing 2012-2016 and 2017-2021.

3 PERCENTAGE OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY FACILITY TYPE IN ONTARIO, 2012–2021



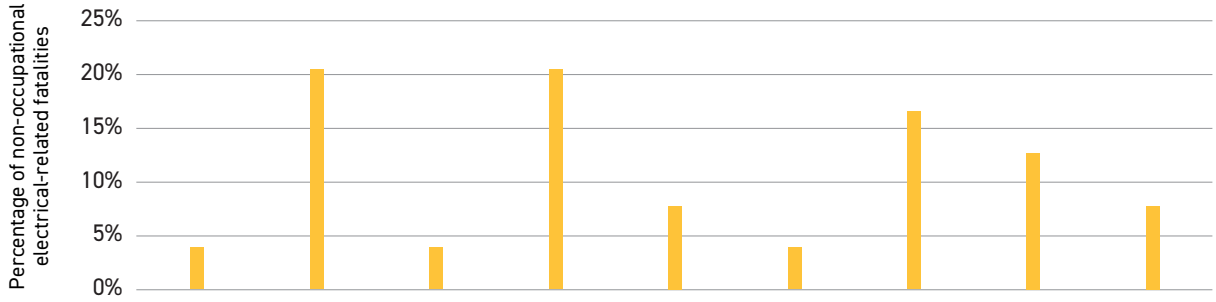
Facility type	Commercial	Industrial	Public right of way	Recreational	Residential	Unknown	Utility
Percentage of non-occupational electrical-related fatalities 2012–2016	0%	13%	0%	0%	75%	0%	13%
2017–2021	6%	0%	13%	6%	50%	6%	19%

Source: ESA and Coroner records

Conclusion

In the past ten years, the residential setting has been the most common place for non-occupational electrical-related fatalities.

4 PERCENTAGE OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY ACTIVITY TYPE IN ONTARIO, 2012–2021



Activity type	Equipment failure	Human error	Improper installation	Improper use/misuse	Lack of awareness of hazard	Lack of maintenance	Mis-adventure	Theft	Unknown
Percentage of non-occupational electrical-related fatalities	4%	21%	4%	21%	8%	4%	17%	13%	8%

Source: ESA and Coroner records

Conclusion

Human error (21%), improper use/misuse (21%), misadventure (17%), and theft (13%) were the most common activities associated with non-occupational electrical-related fatalities.

2.4 Electrical Injury and Emergency Department Visits in Ontario, 2011–2020

Factors that affect the presence of electrical injury and its severity depend on the magnitude of the electric current, its transmission (direct or indirect), body entry and exit sites, the path the current takes through the body, and the surrounding environmental conditions (e.g., wet or dry environments) (Duff, 2001).

Exposure to electricity can result in a range of injuries. It can lead to cardiovascular system injuries (e.g., rhythm disturbances), cutaneous injuries and burns, nervous system disruption, respiratory arrest, head injuries, and fractures and dislocations (caused by being "thrown" or "knocked down") from the severe muscle contractions caused by the current (Duff and McCaffrey, 2011; Koumbourlis, 2002).

Small or minor burns may be managed in an emergency department, but patients with severe burns may be transferred to regional burn centres for additional management (Koyfman and Long, 2020).

Approximately 20,000 electrical-related emergency department visits occur every year in North America (Singerman et al., 2008). These injuries are the most common form of occupationally related burn injury and the fifth leading cause of occupational fatality in the United States (Singerman et al., 2008).

From 2011 to 2020, 9,824 visits to Ontario hospitals' emergency departments (ED) were due to electrical injury. The trend of males outnumbering females in electrical injuries is also observed in ED visits with 69% of ED visits from males. The age group with the largest number of ED visits is 25- to 30-year-old males and females.

Using the Canadian Triage and Acuity Scale (CTAS), the severity of electrical injury was assessed upon each ED visit. In the past ten years, 85% of ED visits were classified as the most severe – that is, requiring resuscitation, conditions that are a potential threat to life, limb, or function requiring medical intervention or delegated acts, or conditions that could potentially progress to a serious problem requiring emergency intervention (Canadian Triage and Acuity Scale between 1 and 3).

In 65% of all ED visits, the principal diagnosis was identified as electrical current, while burns were the principal diagnosis in 18% of cases.

When excluding unspecified place of occurrence, the most common locations for electrical injury were the home (32%), followed by trade and service areas (19%), and industrial and construction locations (17%).

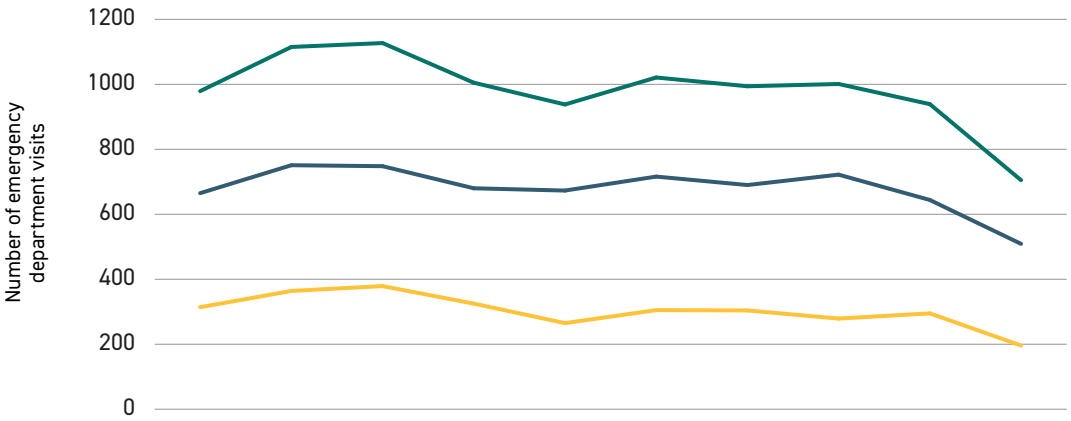
Statistics Related to the ESA's Harm Reduction Priorities – NON-OCCUPATIONAL ELECTRICAL SAFETY

Five-year Rolling Average Comparison

Number of emergency department visits due to critical electrical injuries (Canadian Triage and Acuity Scale levels 1-3) reported to the Canadian Institute of Health Information.

The number of emergency department visits that were classified as critical visits has decreased by 4% in the five-year rolling average between 2011-2015 and 2016-2020.

1 NUMBER OF EMERGENCY DEPARTMENT (ED) VISITS FOR ELECTRICAL INJURY BY SEX IN ONTARIO, 2011–2020



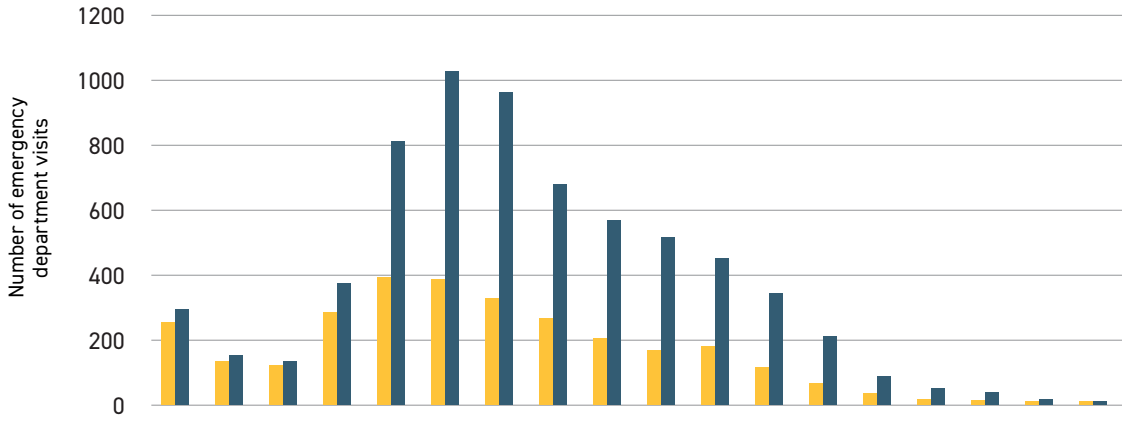
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Female	314	364	379	325	265	305	304	279	295	196
Male	665	751	748	680	673	716	690	722	644	509
Total	979	1115	1127	1005	938	1021	994	1001	939	705

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, Ministry of Health and Long-Term Care (MOHLTC)

Conclusion

The total number of ED visits for electrical injury has decreased by 28% in the past ten years.

2 NUMBER OF EMERGENCY DEPARTMENT (ED) VISITS FOR ELECTRICAL INJURY BY AGE AND SEX IN ONTARIO, 2011–2020



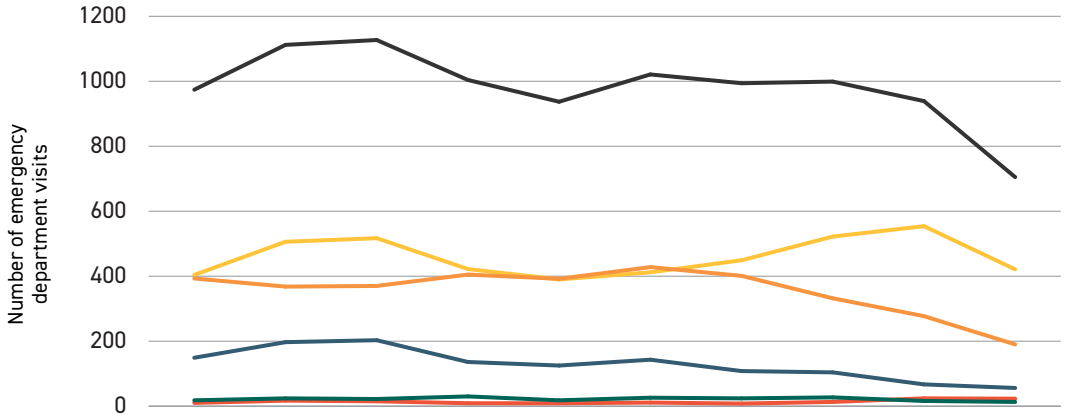
Age	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+
Female	257	136	123	289	397	391	332	269	207	168	182	118	66	37	18	13	11	12
Male	297	155	136	377	821	1038	972	686	575	522	455	347	214	89	50	38	16	10

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, MOHLTC

Conclusion

The number of males seen at the ED for electrical injury is greater than the number of females in all age groups in the past ten years. Electrical injury presenting at the ED is most commonly seen in the 25-29 age group.

3 NUMBER OF ED VISITS FOR ELECTRICAL INJURY BY CANADIAN TRIAGE AND ACUITY SCALE (CTAS) IN ONTARIO, 2011–2020



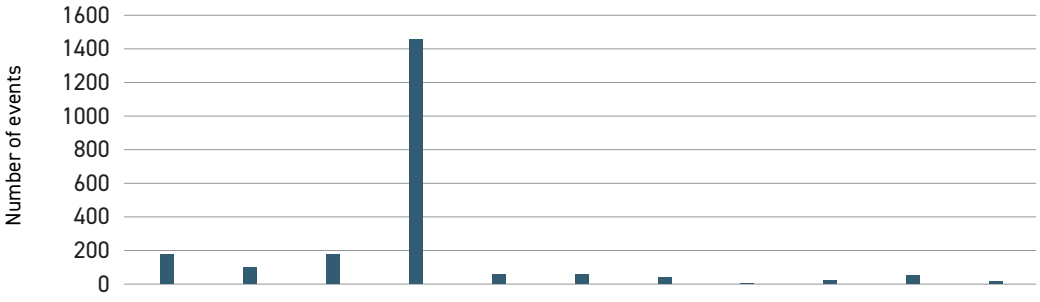
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Resuscitation/ life threatening (level 1)	18	24	22	30	18	26	24	27	16	13
Emergent/potentially life threatening (level 2)	393	368	370	405	392	428	401	332	277	190
Urgent/potentially serious (level 3)	404	506	517	422	390	412	449	522	554	421
Less-urgent/ semi-urgent (level 4)	149	197	203	136	125	143	108	104	67	56
Non-urgent (level 5)	10	17	15	9	9	11	8	13	24	23
Total	974	1112	1127	1004	937	1021	994	999	939	705

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, MOHLTC

Conclusion

85% of ED visits for electrical injury were classified on the Canadian Triage and Acuity Scale (CTAS) at levels 1-3 (Resuscitation, Emergent, Urgent).

4 LOCATION OF BURNS ASSOCIATED WITH ELECTRICAL INJURY IN ONTARIO, 2011–2020



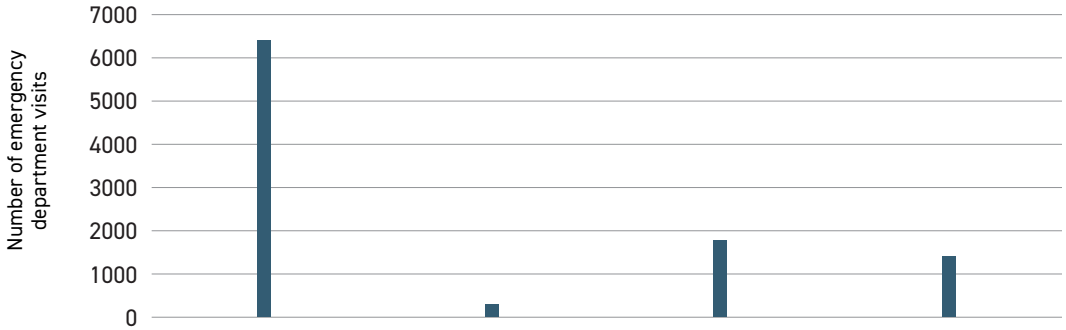
Location of burns	Head and neck	Trunk	Shoulder and upper limb, except wrist and hand	Wrist and hand	Hip and lower limb, except ankle and foot	Ankle and foot	Eye and adnexa	Respiratory tract	Other internal organs	Multiple body regions	Unspecified body areas
Total	168	96	171	1412	57	52	38	1	21	48	12

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, MOHLTC

Conclusion

Of the ED visits from an electrical injury that resulted in a burn, the majority of injuries were found on the wrist and hand.

5 PRIMARY DIAGNOSIS OF EMERGENCY DEPARTMENT VISITS FOR ELECTRICAL INJURY IN ONTARIO, 2011–2020



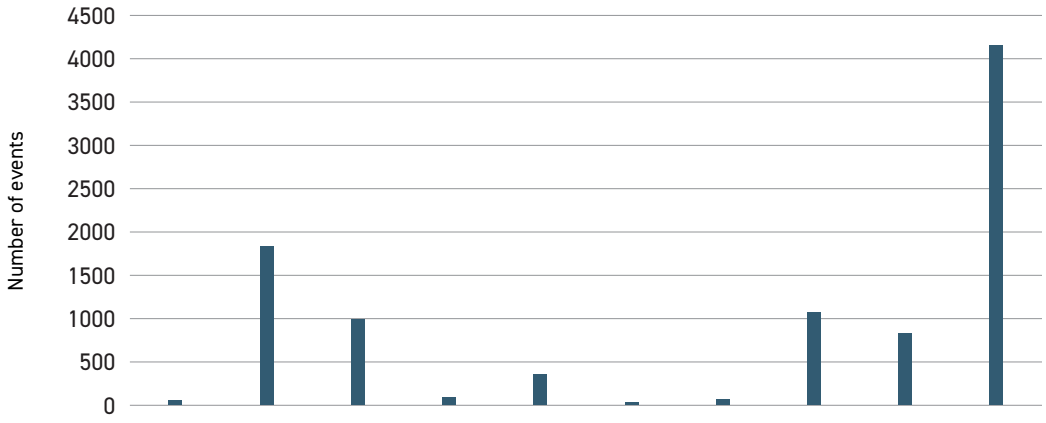
Primary diagnosis	Effects of electric current (T75.4)	Effects of lightning (T75.0)	Burns (T20–T31)	Other diagnoses
Number of ED visits	6388	286	1755	1395

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, MOHLTC

Conclusion

The majority of ED visits for electrical injury had a principal diagnosis of electric current (65%), followed by burns (18%).

6 PLACE WHERE ELECTRICAL INJURY OCCURRED IN ONTARIO, 2011–2020



Place	Farm	Home	Industrial and construction area	Residential institution	School, other institution, and public area	Sports and athletics area	Street and highway	Trade and service area	Other specified place of occurrence	Unspecified place of occurrence
Total	57	1834	989	81	350	27	62	1062	831	4151

Source: ED All Visit Main Table (CIHI), IntelliHEALTH, MOHLTC

Conclusion

While many ED visits from electrical injury were from unspecified places of occurrence, the most commonly reported places of injury were the home, industrial and construction areas, and trade and service areas.

2.5 CASE STUDY

Electrical Contractor

While performing preventive maintenance to a motor control centre in an industrial facility, an electrician received a 4800 V shock that resulted in a critical injury.

The electrician (the victim) was one of a two-person crew working for an electrical contractor. The scope of work was to perform preventive maintenance (PM) on the motor control centre (MCC) powering the heating, ventilating, and air conditioning (HVAC) unit for the plant, a task electricians from this contractor had conducted for the facility many times prior without incident. The lead electrician had performed PM on this MCC prior to the day of the incident but performed the work alone.

To perform this task as part of the facility's safe work procedure, the crew must first obtain from the facility a safe work permit. The process requires a contractor to fill out the form, have it signed off by their contact person at the plant, then take the form and proceed with the work. Once the work is completed, the contractor would complete the checklist on the safe work permit, sign it, and return it to their contact person at the plant.

Figure 1: The contactor would be rolled out of the cell using the built-in rails in each compartment.

Figure 2: The highlight at the top left shows the racking handle for the R1 starter. The highlight at the bottom right shows the racking handle for the Q101 ("M" starter).

The lead electrician briefly discussed with the victim the task at hand before starting work. They performed PM on the first three cells without incident.

2.5 CASE STUDY (continued)

Next, while the victim rolled contactor "B" out of Cell 3L (Figure 3) and completed PM on it, the lead electrician did the same with contactor "A". The lead electrician completed PM on contactor "A", then rolled it back into Cell 2U. Then, he cleaned and checked Cell 3L while the victim was completing PM on contactor "B". The lead electrician then closed the door for Cell 2 and went to the truck to retrieve his face shield and gloves. When he returned with his personal protective equipment (PPE) on, he exercised the racking handle on Cell 2 two or three times. There was no discussion between himself and the victim about exercising the racking handle before proceeding to do so.

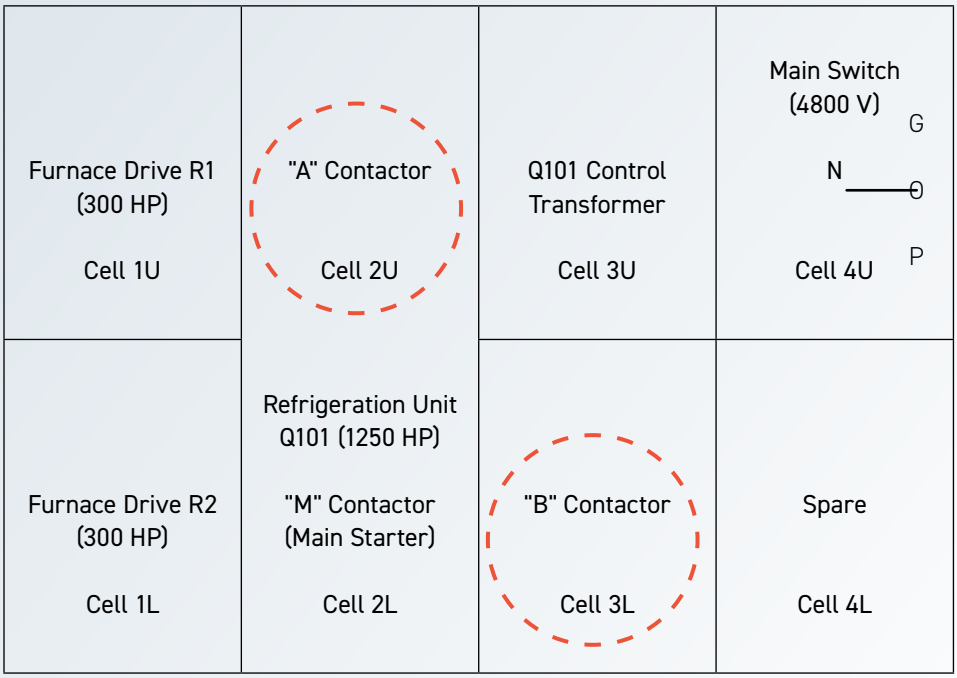


Figure 3: The highlight on Cell 2U shows where the lead electrician was when exercising the racking handle. The highlight on Cell 3L shows where the victim was crouching at the time of the incident.

After exercising the racking handle, the lead electrician dropped off his PPE at his truck and then came back to help the victim with his work. He found the victim on the floor as the victim had received a shock at some point while making contact with contactor "B" through the A and C phases (Figure 3 shows the burn marks on Phases A and C as a result). He performed CPR until some help arrived and emergency response was called in. The victim survived the incident but lost both arms as a result.

2.5 CASE STUDY (continued)

Additional information was revealed in the analysis:

- There was no line diagram of the MCC; the crew did not request to see a diagram before starting work.
- Contactors "M" and "B" shared the same branch in the circuit. When in closed (energized) position, the circuit was completed and the machine was energized.
- When contactor "M" was racked in, 4800 V was fed into contactor "B" through the exposed buss.
- When the door of Cell 3L was open, the buss mentioned above was still energized.
- No attempt was made to lock out the entire station. The main switch for the unit was located on Cell 4U (Figure 3). The workers assumed it was safe to work on the machine once they received the work permit.

CAUSAL FACTOR 1

The crew did not consider the hazards when there was a change in work method

According to the lead electrician, PM was performed on this equipment previously with no incident, and the PM had always been performed by one technician on one cell at a time. The electrician did not realize that working with two people introduced new hazards. The awareness of the associated hazards would have led to several other preventative measures (indicated below as other causal factors to this incident, such as reviewing electrical schematics as well as lockout and tag-out procedures).

CAUSAL FACTOR 2

The crew did not review schematics of equipment or line diagrams

It is unknown whether the line diagrams for MCC-42 were reviewed in previous visits by the contractor, but no one reviewed the electrical drawings for this particular job on the day of the incident. As well, the lead electrician indicated that the drawings in the control cell appeared to be a control diagram and not a line diagram.

CAUSAL FACTOR 3

No hazard assessment was performed by the client or contractor crew

Aside from a brief discussion of the work to be performed, no hazard assessment was conducted by the facility or contractor crew. No discussions took place between the contractor and customer regarding potential hazards involved with performing PM on the MCC.

2.5 CASE STUDY (continued)

CAUSAL FACTOR 4

The safe work permit failed to identify gaps in the contractor's work procedure

The facility owner's criteria for granting a safe work permit is unknown since the document was not available to review. Best practice for safe work permits typically includes identification, assessment, and control of the hazard. There appears to be a gap in either the criteria of granting a safe work permit and/or the review process of the safe work permit conducted by the facility owner.

CAUSAL FACTOR 5

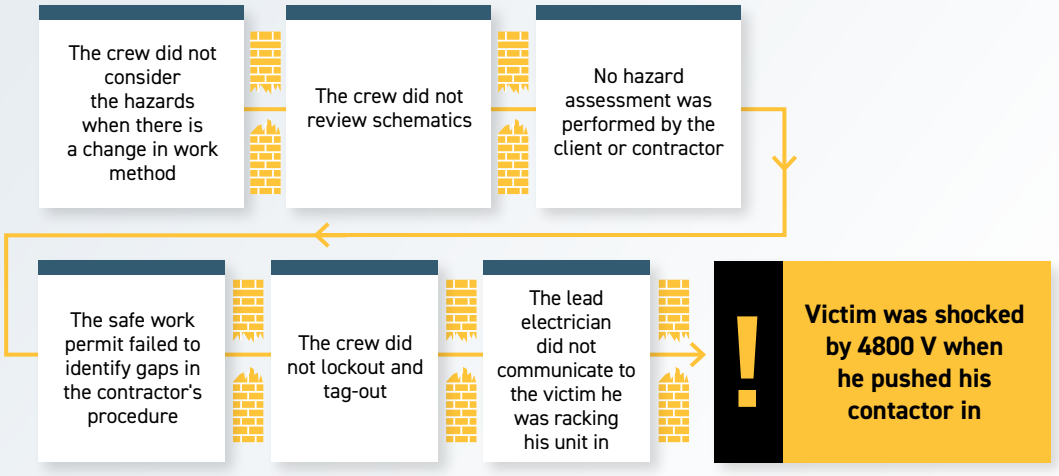
The crew did not perform lockout and tag-out (LOTO) in accordance with the Occupational Health and Safety Act (OHSA) and Regulations Requirements

OHSA and Regulations requires using LOTO methodology when two or more individuals are working on the same equipment. Both the customer and the contractor had written procedures for LOTO, but the procedures were not followed.

CAUSAL FACTOR 6

The lead electrician did not communicate to the victim that he was racking his unit in

While the victim was performing PM on contactor "B", the lead electrician racked his contactor in without informing the victim of his action. This action energized all the equipment, which made contact with the buss across the MCC.



3.0 Utility-related Equipment

Utility-related equipment includes electrical equipment and devices used by Local Distribution Companies (LDCs), privately owned companies, or property owners that distribute electricity to customers' facilities or buildings. Examples of such equipment include overhead and underground powerlines (including most equipment on utility poles), substations, electrical chambers (vaults), high-voltage switchgear, and transformers. Utility-related equipment carries dangerous amounts of energy or power, and if barriers are breached, can be fatal. Overhead and underground equipment barriers are typically clearances above and below the ground, while substation barriers typically include fences and walls. Each barrier is designed to prevent public access and prevent exposure to electric shock hazards.

From 2012 to 2021, there were 25 electrical-related fatalities associated with utility-related equipment, which made up 47% of the total electrical fatalities in Ontario. This number has decreased when compared to the previous ten-year period of 2011–2020 at 50%.

Contact specifically with powerlines accounted for 19 of the electrical-related fatalities in the most recent ten-year period, which contributed to 77% of utility-related equipment fatalities. The five-year rolling average rate for powerline electrocutions has increased by 33% when comparing 2012–2016 and 2017–2021.

Overhead powerline contact remains the leading cause of utility-related electrical incidents every year. In 2021, there have been less than five reported incidents related to overhead powerlines among LDC workers (as a subset of the utility sector).

Under-reporting is especially prevalent with utility contact incidents (especially in earlier years), and this information should be interpreted with caution. Reported injuries because of utility-related equipment have decreased over the past ten years, although property damage has been increasingly reported in the most recent five years.

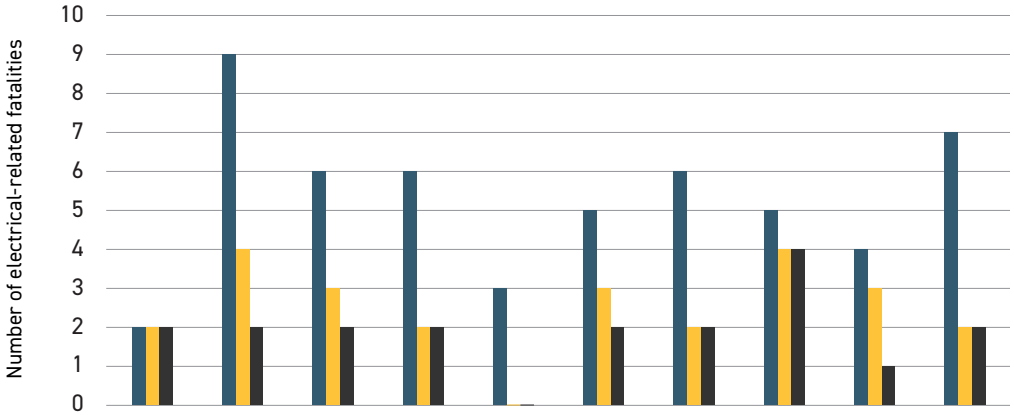
Section 3.1 provides a case study that is an example of the risk factors associated with overhead powerline contact among workers.

Statistics Directly Related to the ESA's Harm Reduction Priorities – POWERLINE CONTACT

Five-year Rolling Average Comparison
The statistics below represent the number of worker and non-worker powerline-related contact incidents based on data reported to the ESA.

The powerline safety five-year rolling average has increased by 32% between 2012-2016 and 2017-2021.

1 NUMBER OF UTILITY-RELATED EQUIPMENT ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2012–2021



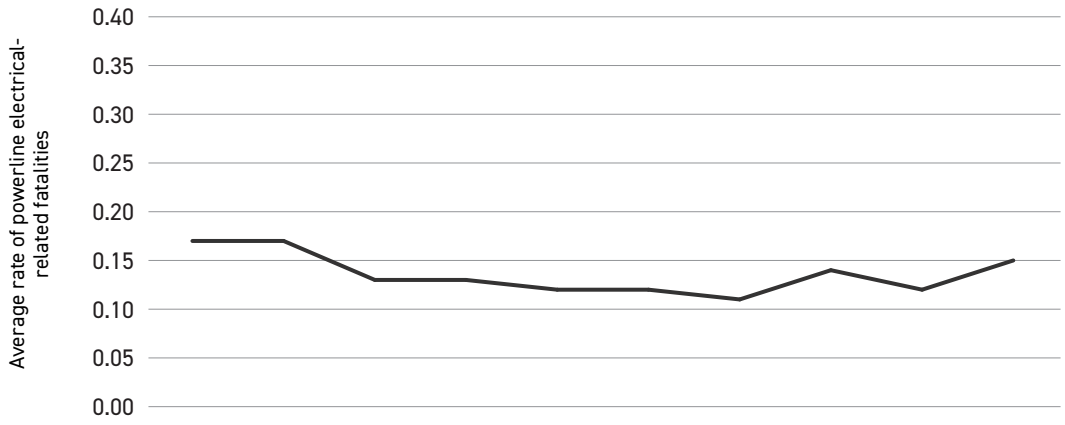
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Electrical-related fatalities	2	9	6	6	3	5	6	5	4	7
Utility equipment electrical fatalities	2	4	3	2	0	3	2	4	3	2
Powerline electrical-related fatalities	2	2	2	2	0	2	2	4	1	2

Source: ESA and Coroner records

Conclusion

The number of utility-related equipment fatalities has been within a range of zero to four fatalities reported per year. In 2021, there were two utility equipment fatalities reported, both of which were from powerline contact.

2 FIVE-YEAR ROLLING AVERAGE OF POWERLINE ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2008–2021



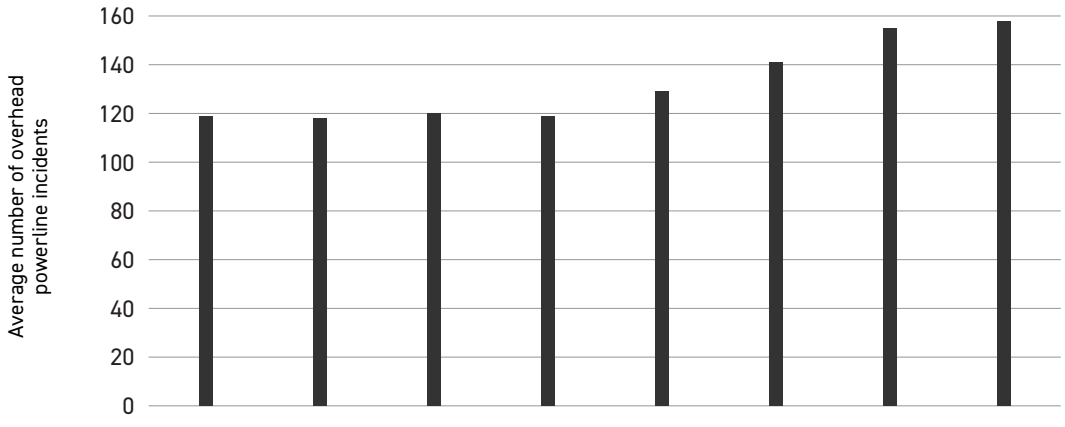
Five-year period	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021
Rate of powerline electrical-related fatalities	0.17	0.17	0.13	0.13	0.12	0.12	0.11	0.14	0.12	0.15

Source: ESA and Coroner records

Conclusion

The rate of powerline electrical-related fatalities has increased by 25% when comparing 2012-2016 and 2017-2021.

3 FIVE-YEAR ROLLING AVERAGE NUMBER OF OVERHEAD POWERLINE INCIDENTS IN ONTARIO, 2010–2021



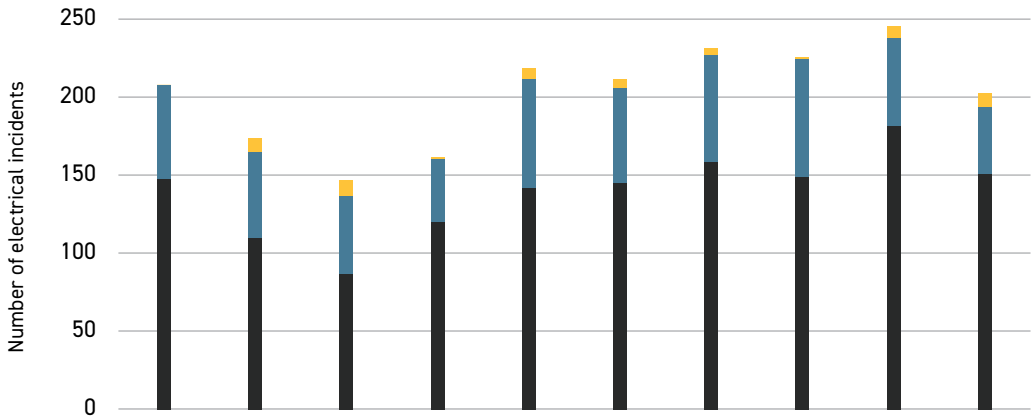
Five-year period	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016-2020	2017-2021
Number of overhead powerline incidents	119	118	120	119	129	141	155	158

Source: ESA records

Conclusion

The five-year rolling average number of overhead powerline incidents has increased by 32% when comparing 2012-2016 and 2017-2021. The most recent five-year period of 2017-2021 shows a 2% increase in overhead powerline contacts when compared to the previous time period of 2016-2020.

4 NUMBER OF UTILITY-RELATED ELECTRICAL INCIDENTS BY CONTACT TYPE IN ONTARIO, 2012–2021



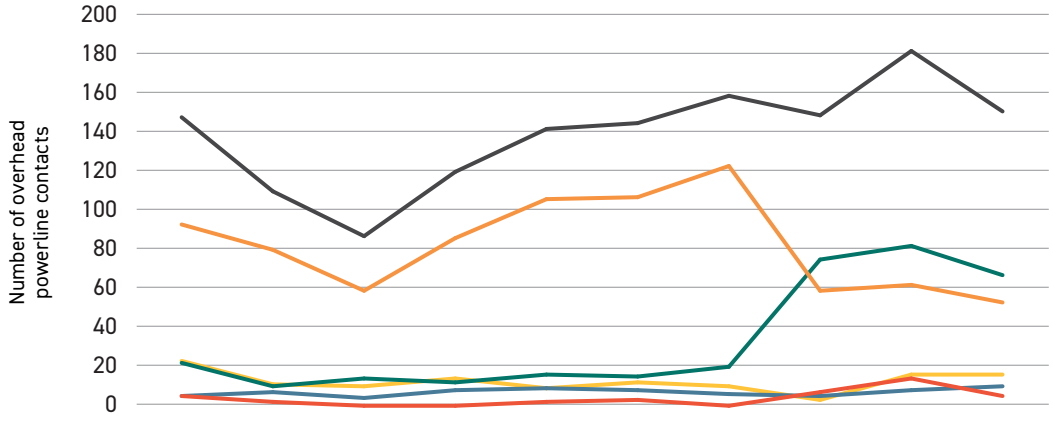
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Vaults, substations, and padmounts	0	9	10	1	7	6	5	1	8	9
Underground powerline contact	60	55	50	41	70	61	68	76	56	43
Overhead powerline contact	148	110	87	120	142	145	159	149	182	151

Source: ESA records

Conclusion

Overhead powerline contact remains the leading cause in utility-related electrical incidents between 2012 and 2021. The total number of utility-related electrical incidents has decreased by 2% when comparing 2012 and 2021.

5 NUMBER OF OVERHEAD POWERLINE CONTACTS BY SECTOR IN ONTARIO, 2012–2021



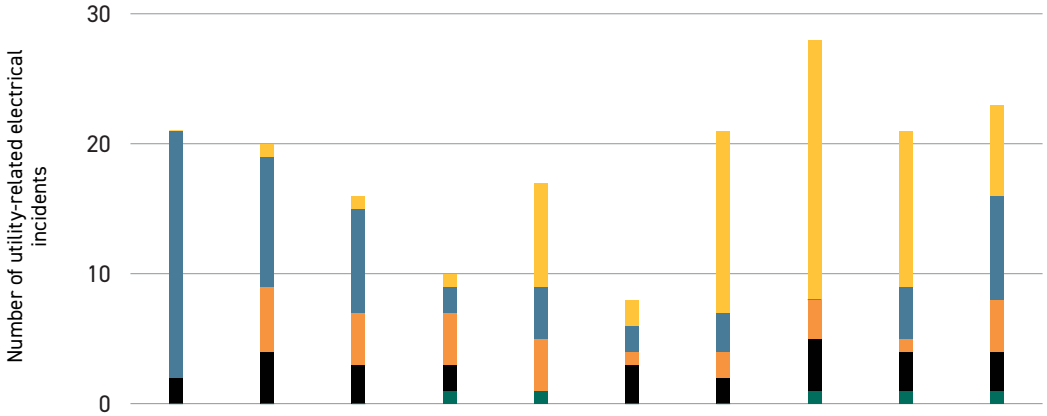
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Construction	93	80	59	86	106	107	123	59	62	53
Farm	5	2	0	0	2	3	0	7	14	5
Public	22	10	14	12	16	15	20	75	82	67
Transport	5	7	4	8	9	8	6	5	8	10
Utility	23	11	10	14	9	12	10	3	16	16
Total	**148**	**110**	**87**	**120**	**142**	**145**	**159**	**149**	**182**	**151**
LDC worker as a subset of utility sector	<5	0	0	<5	0	0	0	0	<5	<5

Source: ESA records

Conclusion

Construction has been the leading sector in overhead powerline contacts in the past ten years, although incidents reported in public settings have increased in the recent three years. In 2021, there have been less than five reported incidents involving LDC workers and overhead powerline contact.

6 NUMBER OF UTILITY-RELATED ELECTRICAL INCIDENTS BY OUTCOME IN ONTARIO, 2012–2021



Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Property damage	0	1	1	1	8	2	14	20	12	7
Non-critical injury	19	10	8	2	4	2	3	0	4	8
Critical injury	0	5	4	4	4	1	2	3	1	4
Fatality	2	4	3	2	0	3	2	4	3	3
Unknown	0	0	0	1	1	0	0	1	1	1

Source: ESA records

Conclusion

The number of reported utility-related incidents that resulted in property damage has increased since 2018. The number of critical injuries and the number of fatalities reported from utility-related incidents have remained between zero and five between 2012 and 2021.

3.1 CASE STUDY

Powerline Safety

Incident summary

Five summer students setting up an outdoor party tent received electric shocks when a tent pole they were erecting made contact with a 4.8 kV overhead powerline. One victim succumbed to his injuries, three victims suffered critical injuries, and one victim suffered a non-critical injury.

The Incident

An event rental company was contracted to supply an outdoor party tent for a wedding. The event was to be held on the front lawn of the farm house where the customer resided. The company was sent a sketch indicating where the customer wanted the tent to be located. The tent was approximately 40 ft by 100 ft. There was no mention of powerlines on the property, nor were they shown on the sketch provided (see Figure 1 for a partial plan view of the property showing location of overhead powerlines).

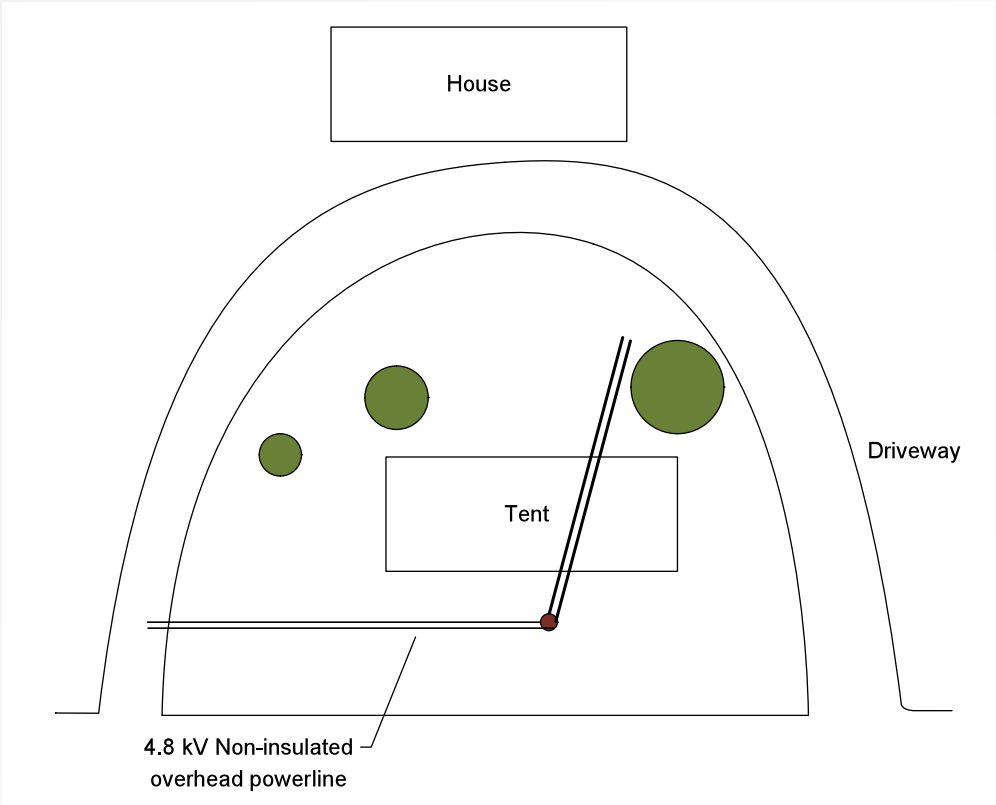


Figure 1: Plan view of the property

3.1 CASE STUDY (continued)

On the morning of the incident, the company sent a crew of six summer students to erect the tent. There was no specific method of staff selection to perform this job. The crew will be referred to as Victim #1, Victim #2, Victim #3, Victim #4, Victim #5, and Worker #6. Victim #5 took the lead role as he had three years of previous work experience with the company.

There were many ways to erect the tent. The crew chose to work by positioning themselves under the tent and pushing the pole into a vertical position through the designated hole in the tent. It should be noted that while under the tent, one's view of the other side is completely obstructed by the fabric (as shown in Figure 2).

Figure 2: Dolly and tent cover obstructing view of overhead powerlines above

The crew began erecting the tent by driving three-foot stakes into the ground to support the outer poles and support straps. They then erected two poles without incident. There was no set procedure on how to perform this work and locates were not requested prior.

No one on site was aware of the close proximity of the overhead powerlines, including the customer, who was watching from the front porch of her house.

The crew then began erecting the third pole, a 25-foot steel pole, using a custom-made dolly (shown in Figure 3).

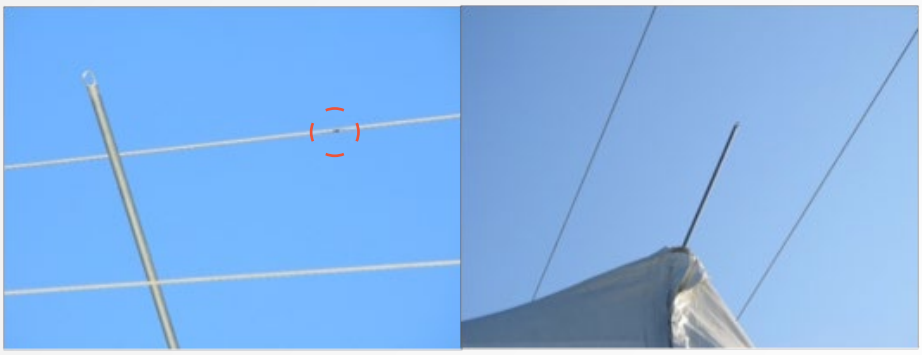
Figure 3: Dolly used to erect the steel pole

3.1 CASE STUDY (continued)

First, the crew positioned the pole through the fabricated hole in the tent cover. Then the pole was erected. While Victim #1 and Victim #2 were holding the ring handles of the dolly and pulling it, Victim #3 and Victim #4 were on their knees pushing the horizontal bar on the dolly. Victim #5 was holding the steel pole. Worker #6 was watching from nearby.

At this point, the pole came into contact with the overhead powerlines and all five workers suffered severe electric shocks. Victim #1, Victim #2, Victim #3, and Victim #4 collapsed to the ground. Victims #1, #2, and #3 were unconscious and Victim #4 was screaming for help. Victim #5 was unable to release the pole for a brief period. Because Worker #6 was within a safe distance, he did not receive an electric shock. Victim #5 and Worker #6 attempted to rescue the other four victims by moving them away from the tent pole. The customer called 911, then alternated performing CPR on Victim #1 and Victim #2.

Several minutes later, firefighters and EMS arrived at the scene. During the rescue, the pole remained within close proximity to the energized overhead powerline (as shown in Figures 4(a) and (b)). The burn mark from contact is highlighted in Figure 4(a).



A B

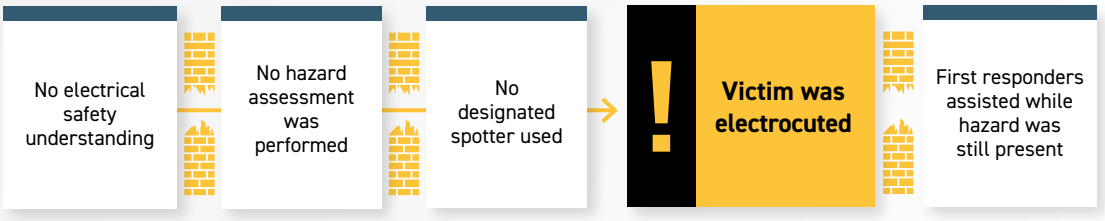
Figure 4: Tent pole in close proximity to overhead powerlines

3.1 CASE STUDY (continued)

The Local Distribution Company (LDC) arrived on scene at 5:56 pm and disconnected power to the line. Victim #1 was pronounced dead at the hospital and Victim #2 was revived.

Further investigation revealed the following:

1. ***No electrical safety understanding.*** No one raised safety concerns regarding the presence of overhead powerlines and the possibility of underground lines.
2. ***No hazard assessment was performed.*** Performing a hazard assessment would have identified the potential contact of the tent pole, resulting in preventive measures, particularly when the workers were going to be under the tent without a clear line of sight of the powerlines.
3. ***No designated spotter used.*** To ensure safe working conditions, a well-positioned designated spotter should be used when working near limits of approach. This is especially crucial when the view to the powerline is impeded.
4. ***First responders assisted while hazard was still present.*** First responders were possibly unaware that the steel tent pole was still within the limits of approach to the energized powerline. No one contacted the utility company at the time of incident or rescue. It was not until much later that the utility company became aware of the incident and de-energized the powerline. The potential for more injuries or fatalities was present as a result of this condition.



4.0 Overview of Fires in Ontario

Fire remains a significant threat to life and property in urban and rural areas. Structural fires, espeically those reported as a loss fire, are fires that result in an injury, fatality, and/or financial loss that occur in structures (as opposed to vehicles or the outdoors). The high number of electrical incidents and the associated dollar loss, as well as the number of "deliberate" fires and their associated dollar loss, are the two other areas of major concern (Asgary et al., 2010).

The OFMEM reports its data by calendar year and its data collection and verification results in a one-year lag in reporting in the OESR. Hence, the following information will be presented up to the year of 2020. Ontario reported 34,422 structure-loss fires (fires resulting in an injury, fatality, or dollars lost) between 2016 and 2020. This number is a 1% decrease from 34,793 structure-loss fires between 2015 and 2019. Residential-loss fires account for 73% of structure-loss fires from 2016 to 2020. Stove-top fires (with electricity fuel only) account for 7% of structure-loss fires and 9% of residential-loss fires. Since 2016, there has been a 2% decrease in total-loss fires, a 5% decrease in structure-loss fires, and a 2% decrease in residential-loss fires.

For the period between 2011 and 2020, the OFMEM identified the following as the most common ignition sources for structure-loss fires:

- cooking (17%);
- electrical distribution equipment – wiring (9%);
- heating and cooling equipment (8%);
- miscellaneous (includes fires – natural causes and chemical reactions) (8%);
- cigarettes (7%);
- appliances (5%); and
- other electrical, mechanical (5%).

When comparing 2011–2015 and 2016–2020, the average number of structure-loss fires per year by ignition source decreased 10% for cooking, 8% for electrical wiring, 14% for heating/cooling equipment, and 9% for appliances.

Among structures that follow the Ontario Building Code (OBC), when structure-loss fires were limited to those where electricity was identified as the fuel of the ignition source (but not necessarily the primary fuel energy source), the most common electrical-related products involved were:

- cooking equipment (39%);
- electrical distribution equipment (27%); and
- appliances (12%).

Electrical Products

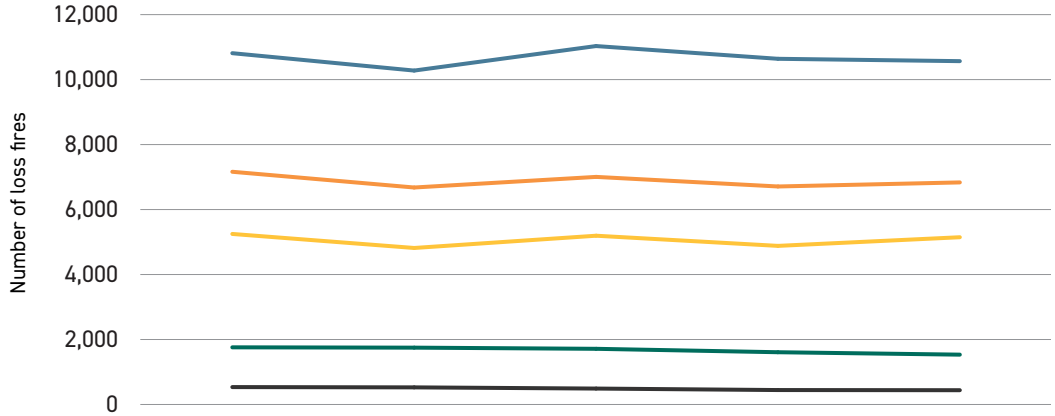
The ESA defines electrical products as appliances, cooking equipment, lighting equipment, other electrical and mechanical equipment, and processing equipment. Data from the OFMEM shows that the five-year average for electrical product fires (where electricity was identified as the fuel of the ignition source) between 2011–2015 and 2016–2020 has decreased by 16%.

Statistics Directly Related to the ESA's Harm Reduction Priorities – PRODUCT SAFETY

Number of electrical product-related fires: a product fire is defined as one involving appliances, cooking equipment, lighting equipment, and other electrical, mechanical, or processing equipment as classified by the Office of the Fire Marshal and Emergency Management data.

The product safety five-year rolling average has decreased by 16% between 2011-2015 and 2016-2020.

1 NUMBER OF LOSS FIRES IN ONTARIO, 2016–2020



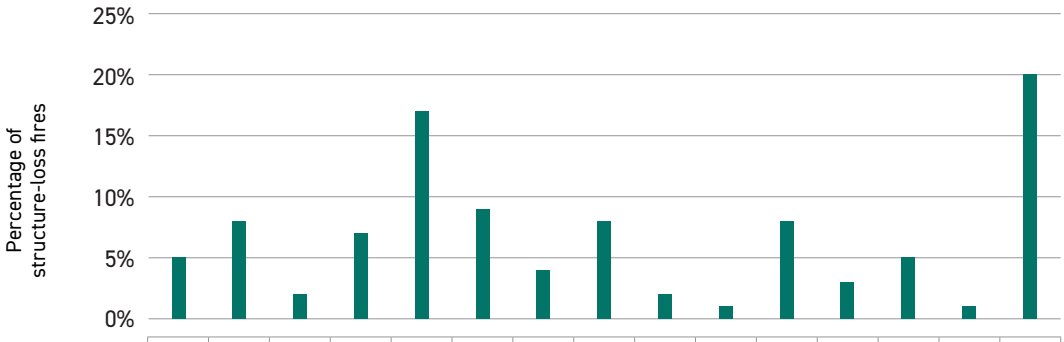
Year	2016	2017	2018	2019	2020
Total number of loss fires	10,846	10,307	11,067	10,672	10,599
Structure-loss fires	7,171	6,683	7,012	6,715	6,841
Residential-loss fires	5,244	4,809	5,189	4,874	5,142
Structure-loss fires where electricity fuelled the ignition source	1,730	1,720	1,684	1,578	1,503
Stove-top structure-loss fires	498	489	452	406	401

Source: OFMEM records

Conclusion

The number of total-loss fires has decreased, and structure-loss fires and residential-loss fires have decreased between 2016 and 2020. The number of fires where electricity fuelled the ignition source has decreased by 14% when comparing 2016 and 2020.

2 PERCENTAGE OF STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2011–2020



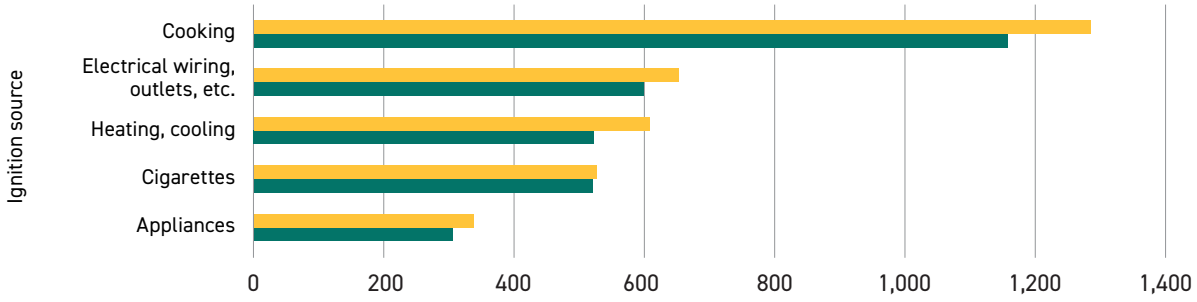
Ignition source	Appliances	Arson	Candles	Cigarettes	Cooking	Electrical wiring	Exposure	Heating, cooling	Lighting	Matches, lighters	Miscellaneous	Other open flame tools	Other electrical, mechanical	Processing equipment	Undetermined
2010-2019	5%	8%	2%	7%	17%	9%	4%	8%	2%	1%	8%	3%	5%	1%	20%

Source: OFMEM records

Conclusion

Aside from undetermined and miscellaneous sources, cooking (17%) and electrical wiring (9%) were the most common ignition sources for structure-loss fires between 2011 and 2020.

3 FIVE-YEAR AVERAGE NUMBER OF STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2011–2015 AND 2016–2020



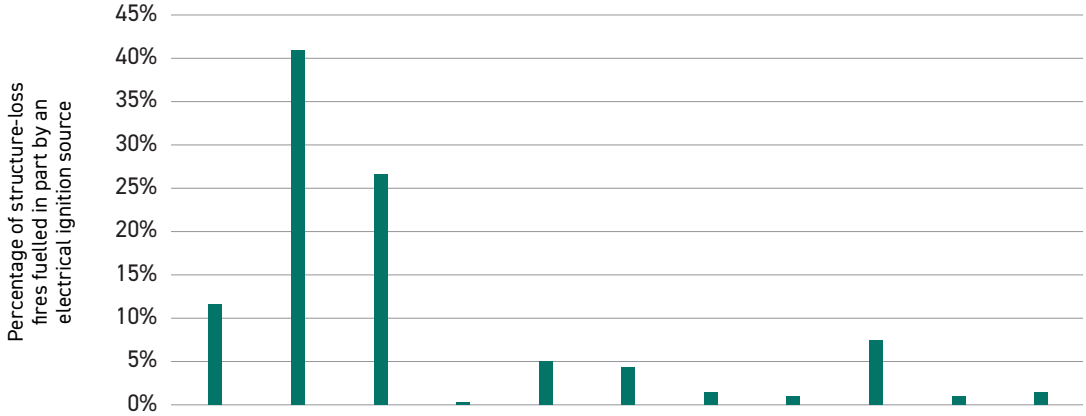
Ignition source		Cooking	Electrical wiring, outlets, etc.	Heating, cooling	Cigarettes	Appliances
Average number of structure-loss fires	2011–2015	1284	652	607	526	337
	2016–2020	1157	598	522	520	305

Source: OFMEM records

Conclusion

Cooking equipment remained the most common ignition source in 2011-2015 and 2016-2020, although the average number of structure-loss fires among cooking equipment, heating/cooling, electrical wiring, and appliances has decreased in the most recent time period.

4 PERCENTAGE OF STRUCTURE-LOSS FIRES FUELLED IN PART BY AN ELECTRICAL IGNITION SOURCE IN ONTARIO, 2011–2020 (OBC* STRUCTURES ONLY)



Electrical ignition source	Appliances	Cooking	Electrical distribution equipment	Exposure	Heating, chimney	Lighting	Miscellaneous	Open flame	Other electrical, mechanical	Processing equipment	Undetermined
Percentage of structure-loss fires	11.5%	40.9%	26.5%	0.1%	4.9%	4.2%	1.4%	0.9%	7.4%	0.9%	1.3%

Source: OFMEM records

Conclusion

When the fire is from ignition sources that use electricity, cooking equipment (41%), electrical distribution equipment (27%), and appliances (12%) were the most common ignition sources between 2011 and 2020.

**OBC is Ontario Building Code*

5 PERCENTAGE OF ELECTRICAL STRUCTURE-LOSS FIRES IN ONTARIO BY TIME OF DAY, 2011–2020 (OBC STRUCTURES ONLY)

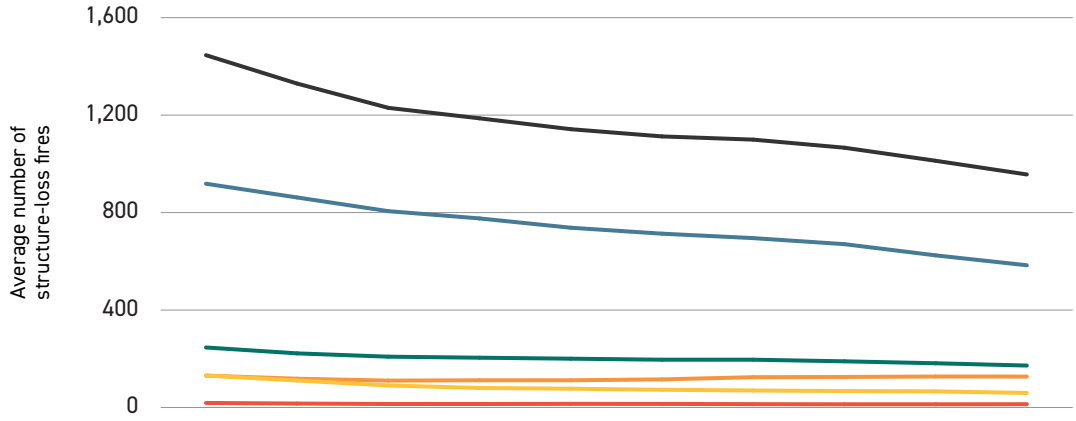
Time	Midnight – 8 a.m.	8 a.m. – 4 p.m.	4 p.m. – Midnight
Percentage	19%	38%	43%

Source: OFMEM records

Conclusion

Between 2011 and 2020, most of the electrical-related structure-loss fires occurred in the period from 4 p.m. to midnight.

6 FIVE-YEAR ROLLING AVERAGE NUMBER OF ELECTRICAL STRUCTURE-LOSS FIRES BY PRODUCTS IN ONTARIO, 2007–2020 (OBC STRUCTURES ONLY)



Five-year period	2007–2011	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020
Appliances	246	222	209	204	200	196	196	190	182	172
Cooking equipment	918	862	806	776	738	713	695	670	624	584
Lighting	131	111	91	80	77	73	70	68	66	60
Other electrical, mechanical	131	118	110	112	112	115	124	125	127	127
Processing equipment	19	16	14	14	15	15	14	13	13	14
Product safety overall	1,446	1,329	1,230	1,187	1,142	1,113	1,099	1,066	1,012	956

Source: OFMEM records

Conclusion

Between 2011-2015 and 2016-2020, the five-year rolling average number of fires related to product safety has decreased by 16%.

4.1 Fires Resulting in Fatalities

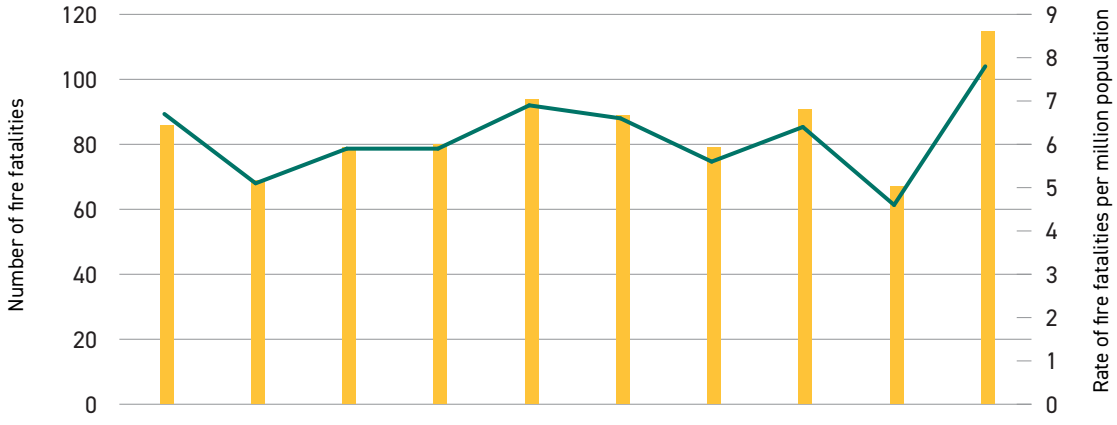
In 2007, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, and Northwest Territories reported 226 fire deaths (Wijayasinghe, 2011). Many of these incidents involved residential properties. The frequency of residential fires is concerning because they are the most common source of fire-related deaths (Miller, 2005). In 2002, 82% of the 304 fire deaths were residential fires (Council of Canadian Fire Marshals, 2002). Similarly, in 2006, 80% of Americans who died in a fire died in a residence (Karter, 2007). In the early 1990s, residential fires caused deaths of between 4,000 and 5,000 Americans and injured an additional 20,000 each year (Baker and Adams, 1993).

Ontario reported 849 deaths due to fires between 2011 and 2020. This number excludes fire deaths in vehicle collisions, fire fatalities among emergency response, or any fire deaths on federal or First Nations property. This number is more than what was reported between 2010 and 2019, where 813 deaths were reported. The OFMEM reported that in 2020, the fire death rate was 7.8 deaths per million population, which is a 16% increase when compared to the fire death rate in 2011, which was 6.7 deaths per million population.

In Ontario, there were 776 fire fatalities from structure-loss fires from 2011 to 2020. The OFMEM reported that in 2020, the structure-loss fire death rate was 7.4 per million population, which is a 17% increase when compared to the structure-loss fire death rate in 2011, which was 6.3 deaths per million population.

The OFMEM data identified 80 deaths (closed cases) in fires for which electricity was the fuel of the ignition source or which were from electrical distribution equipment between 2011 and 2020. Since 2011, the death rate from this type of fire has increased 45% from 0.47 deaths per million population to 0.68 deaths per million population. Between 2011 and 2020, 96% of these fires were considered accidental and their investigations are considered closed.

1 NUMBER AND RATE OF ALL FIRE FATALITIES IN ONTARIO, 2011–2020



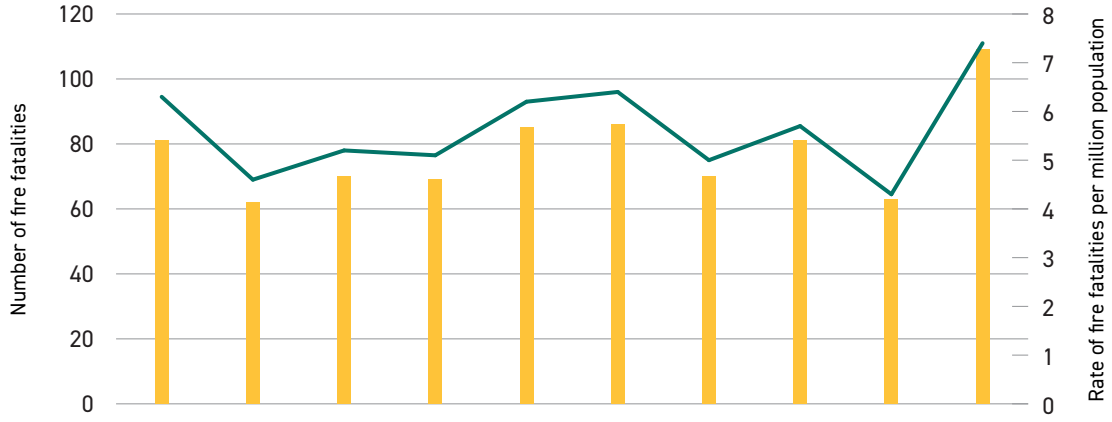
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All fire fatalities in Ontario	86	69	79	80	94	89	79	91	67	115
Ontario population in millions	12.9	13.4	13.5	13.6	13.8	13.4	14.1	14.3	14.5	14.7
Fire death rate in Ontario	6.7	5.1	5.9	5.9	6.9	6.6	5.6	6.3	4.6	7.8

Source: OFMEM records

Conclusion

The number and rate of fire fatalities have increased when comparing 2020 to 2019.

2 NUMBER AND RATE OF FIRE FATALITIES IN STRUCTURE FIRES IN ONTARIO, 2011–2020



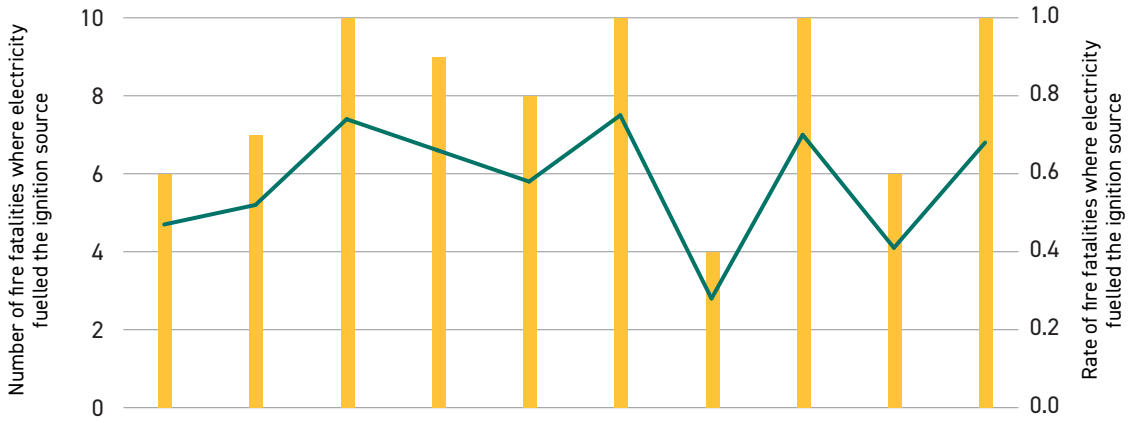
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of fire fatalities from structure fires	81	62	70	69	85	86	70	81	63	109
Ontario population in millions	12.9	13.4	13.5	13.6	13.7	13.4	14.1	14.3	14.5	14.7
Rate of fire fatalities from structure fires	6.3	4.6	5.2	5.1	6.2	6.4	5	5.7	4.3	7.4

Source: OFMEM records

Conclusion

The number and rate of fire fatalities in structure fires have increased when comparing 2011 to 2020.

3 NUMBER AND RATE OF STRUCTURE FIRE FATALITIES WHERE ELECTRICITY WAS THE FUEL OF THE IGNITION SOURCE IN ONTARIO, 2011–2020 (CLOSED CASES ONLY)



Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of fatalities where electricity fuelled the ignition source	6	7	10	9	8	10	4	10	6	10
Ontario population in millions	12.9	13.4	13.6	13.7	13.8	13.4	14.2	14.4	14.5	14.7
Rate of fatalities where electricity fuelled the ignition source	0.47	0.52	0.74	0.66	0.58	0.75	0.28	0.70	0.41	0.68

Source: OFMEM records

Conclusion

The rate of structure fire fatalities where electricity fuelled the ignition source or where fires were from electrical distribution equipment has increased 45% when comparing 2011 to 2020.

4 PERCENTAGE OF STRUCTURE FIRE FATALITIES WHERE ELECTRICITY IS THE FUEL OF THE IGNITION SOURCE BY CAUSE CLASSIFICATION IN ONTARIO, 2011–2020 (CLOSED FIRE INVESTIGATIONS ONLY)

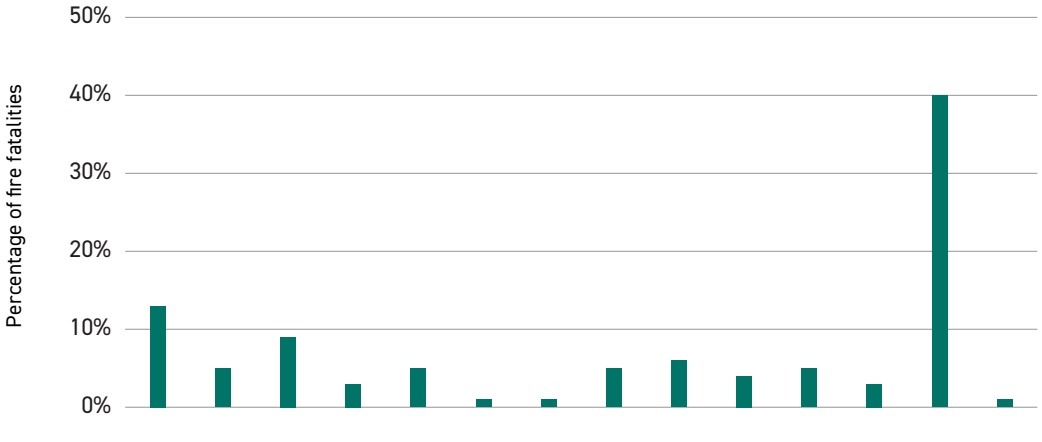
Cause classification	Accidental	Undetermined	Intentional
2011–2020	96%	3%	1%

Source: OFMEM records

Conclusion

Almost all structure fire fatalities (96%) where electricity fuelled the ignition source or where the fires were from electrical distribution equipment were accidental.

5 PERCENTAGE OF STRUCTURE FIRE FATALITIES WHERE ELECTRICITY WAS THE FUEL OF THE IGNITION SOURCE BY IGNITION SOURCE IN ONTARIO, 2011–2020 (CLOSED FIRE INVESTIGATIONS ONLY)



Ignition source	Circuit wiring – copper	Clothes dryer	Cord, cable for appliance, electrical articles	Electric blanket, heating pad	Extension cord, temporary wiring	Incandescent lamp	Multiple competent ignition sources	Other cooking items (e.g., toaster, kettle)	Other electrical	Other electrical distribution items	Oven	Space heater – portable	Stove, range-top burner	Christmas lights, decorative lighting
Percentage	13%	5%	9%	3%	5%	1%	1%	5%	6%	4%	5%	3%	40%	1%

Source: OFMEM records

Conclusion

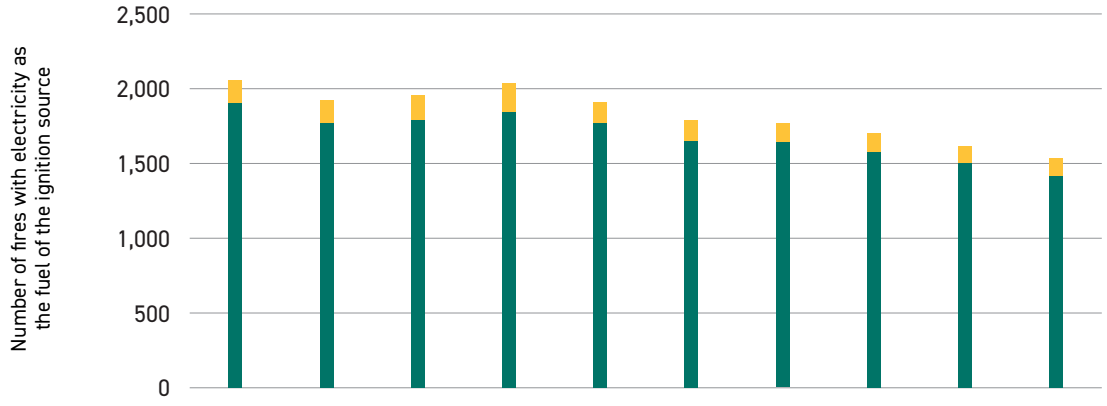
The stove (40%) remains the most common ignition source when examining structure fire fatalities where electricity fuelled the ignition source or where the fires were from electrical distribution equipment in the most recent ten-year period.

4.2 Fire Incidents with Electricity as the Fuel of the Ignition Source of the Fire

Among OBC structures, where electricity was the fuel of the ignition source of the fires, there were 16,151 loss fires and 1,364 no-loss fires for a total of 17,515 structure fires from 2011 to 2020. Over the same time period, there was a 26% decrease in structure-loss fires and a 25% decrease in total structure fires.

Between 2016 and 2020, 81% of structure fires occurred in the residential setting. Cooking equipment (46%), electrical distribution equipment (24%), and appliances (12%) remained the most common ignition sources in these fires.

1 NUMBER OF STRUCTURE FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE IN ONTARIO, 2011–2020 (OBC STRUCTURES ONLY)



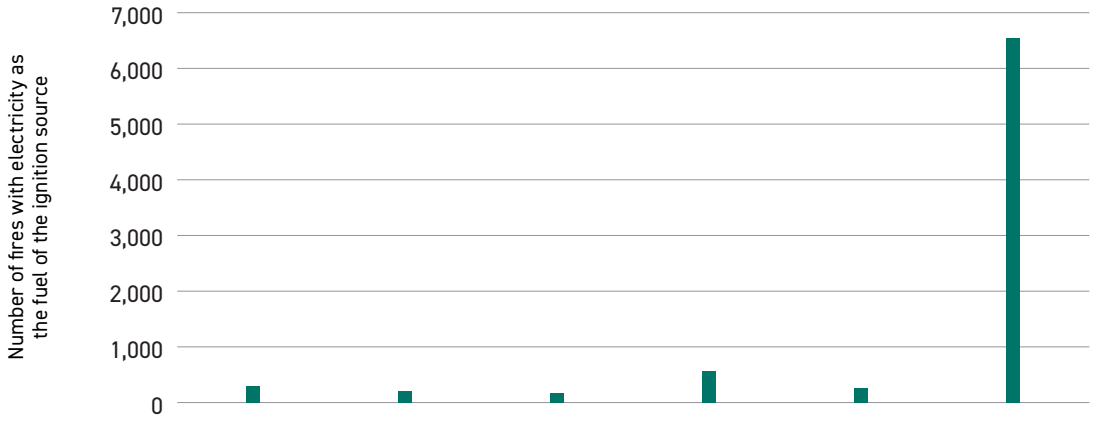
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of fires with no loss	145	146	155	182	129	137	124	120	108	118
Number of fires with loss	1,823	1,697	1,716	1,768	1,696	1,578	1,571	1,508	1,440	1,354
Total fires with electricity as the fuel	1,968	1,843	1,871	1,950	1,825	1,715	1,695	1,628	1,548	1,472

Source: OFMEM records

Conclusion

In 2020, the total number of structure fires where electricity was the fuel of the ignition source decreased by 5% when compared to 2019.

2 NUMBER OF FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY STRUCTURE CLASSIFICATION IN ONTARIO, 2016–2020 (OBC STRUCTURES ONLY)



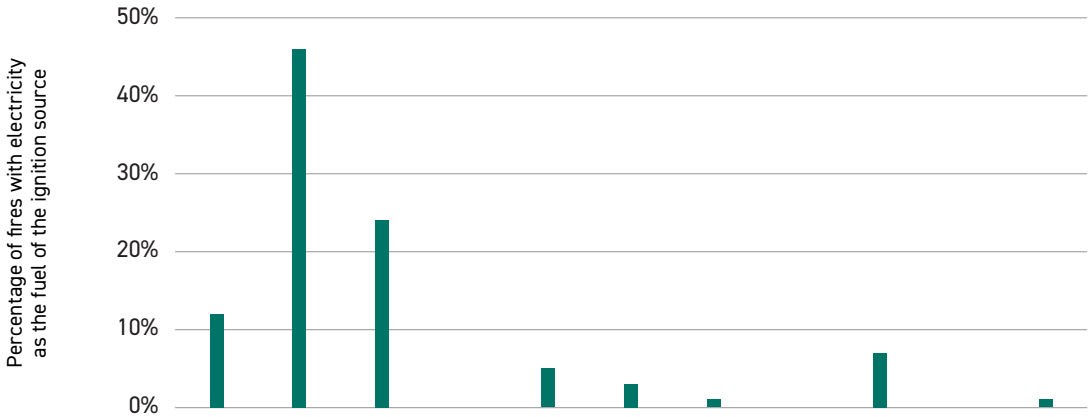
Structure classification	Assembly	Business and personal services	Care and detention	Industrial	Mercantile	Residential
Number of fires	301	203	173	572	263	6,546

Source: OFMEM records

Conclusion

Residential structures were the most common structures (81%) for fires where electricity was the fuel of the ignition source between 2016 and 2020.

3 PERCENTAGE OF RESIDENTIAL FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY IGNITION SOURCE IN ONTARIO, 2016–2020



Ignition source	Appliances	Cooking equipment	Electrical distribution equipment	Exposure	Heating equipment, chimney, etc.	Lighting	Miscellaneous	Open flame tools, smokers' articles	Other electrical, mechanical	Processing equipment	Undetermined
Percentage	12%	46%	24%	0%	5%	3%	1%	0%	7%	0%	1%

Source: OFMEM records

Conclusion

Cooking equipment and electrical distribution equipment were the leading sources in residential fires when electricity fuelled the ignition source.

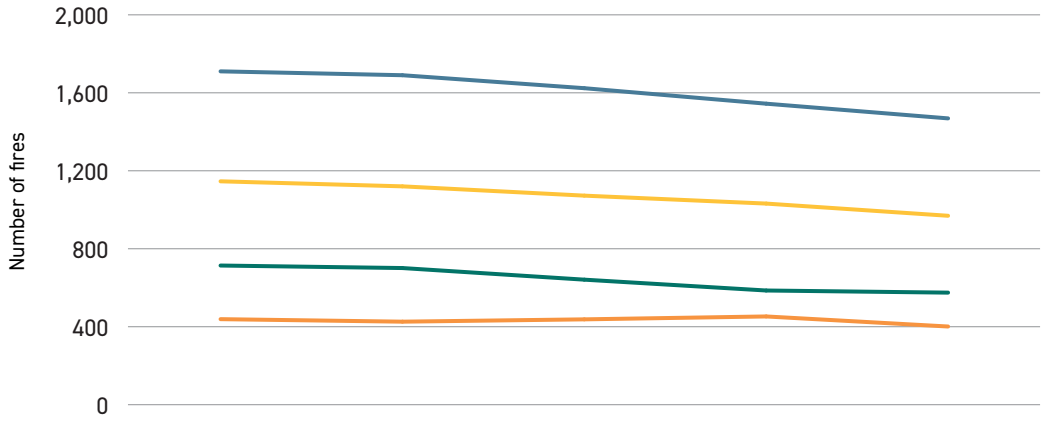
4.3 Cooking Fires with Electricity as the Fuel of the Ignition Source of the Fire

The National Fire Protection Association found that households that used electric ranges had a higher risk of cooking fires and associated losses than those using gas ranges. Their research also showed that a disproportionate share of home cooking fires were reported in apartments or other multi-family homes (Ahrens, 2017).

In a review of home fires in 2007, the major cause of home fires in Canada from British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, and the Northwest Territories was cooking fires (20%) (Wijayasinghe, 2011). In Ontario, from 2015 to 2019, there were 3,422 structure fires where the ignition source was cooking equipment fuelled by electricity. Of those, 94% occurred in homes. Since 2015, there has been a 27% decrease in this type of fire. Stove and range-top burners were the leading ignition source, followed by the oven and other cooking items. The overwhelmingly cited possible cause to these cooking fires was leaving the stove or range-top burner unattended.

The OFMEM fire-loss reporting system identified cooking equipment as one of the leading ignition sources associated with preventable home injuries. Structure fires that were ignited from cooking equipment that used electricity accounted for an annual average of 111 injuries among civilians and an average of five fatalities between 2016 and 2020. In this time period, cooking equipment was the leading ignition source in fires from electrical products or where electricity fuelled the ignition source.

1 NUMBER OF COOKING EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FIRES IN ONTARIO, 2016–2020 (OBC STRUCTURES ONLY)



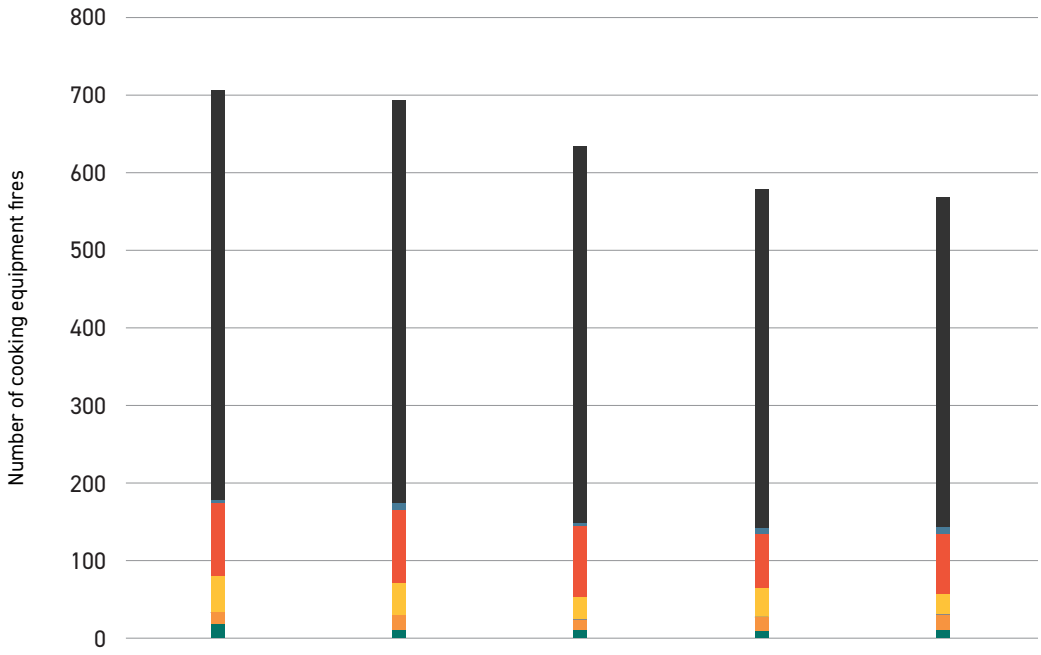
Year	2016	2017	2018	2019	2020
Cooking equipment	712	699	639	583	572
Electrical distribution equipment	435	422	434	449	397
Total cooking equipment and electrical distribution equipment fires	1,147	1,121	1,073	1,032	969
Total fires with electricity as the fuel	1,715	1,695	1,628	1,548	1,472

Source: OFMEM records

Conclusion

The number of structure fires from cooking equipment (where electricity fuelled the ignition source) and electrical distribution equipment (where electricity fuelled the ignition source) in 2020 has decreased by 16% when compared to 2016.

2 NUMBER OF COOKING EQUIPMENT FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY SOURCE IN ONTARIO, 2016–2020 (OBC STRUCTURES ONLY)



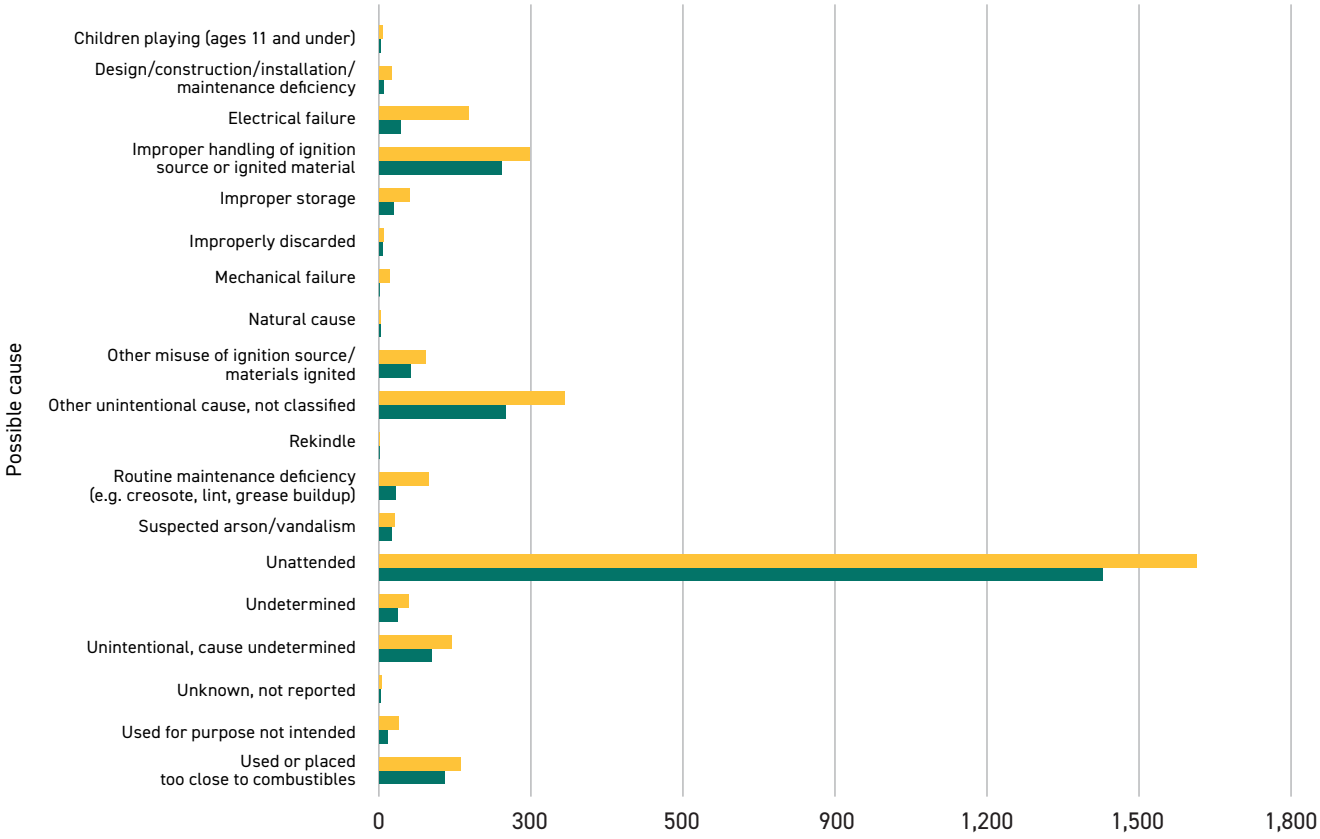
Year	2016	2017	2018	2019	2020
Stove, range-top burner	533	524	490	441	428
Range hood	4	9	4	8	9
Oven	95	95	92	69	78
Other cooking items	47	42	29	38	26
Open fired barbeque - fixed or portable	0	0	1	0	1
Microwave	16	19	13	18	20
Deep fat fryer	17	10	10	9	9

Source: OFMEM records

Conclusion

Stoves and range-top burners were the leading sources (75%) of cooking equipment fires between 2016 and 2020.

3 NUMBER OF STOVE-TOP FIRES VS. COOKING EQUIPMENT FIRES BY POSSIBLE CAUSE IN ONTARIO, 2016–2020 (OBC STRUCTURES ONLY)



Number of fires — Possible cause	Children playing (ages 11 and under)	Design/construction/installation/ maintenance deficiency	Electrical failure	Improper handling of ignition source or ignited material	Improper storage	Improperly discarded	Mechanical failure	Natural cause	Other misuse of ignition source/ materials ignited	Other unintentional cause, not classified	Rekindle	Routine maintenance deficiency (e.g. creosote, lint, grease buildup)	Suspected arson/vandalism	Unattended	Undetermined	Unintentional, cause undetermined	Unknown, not reported	Used for purpose not intended	Used or placed too close to combustibles
Cooking equipment fires	7	24	176	297	61	9	21	3	92	367	1	97	31	1614	58	143	5	39	160
Stove-top fires	3	8	42	241	29	7	0	2	63	249	0	33	24	1427	37	103	3	16	129

Source: OFMEM records

Conclusion

Leaving fires unattended was the most common cause of stove-top (59%) and cooking equipment fires (50%) between 2016 and 2020.

4.4 Electrical Distribution Equipment Fires with Electricity as the Fuel of the Ignition Source of the Fire

The OFMEM defines electrical distribution equipment as electrical wiring, devices, or equipment where the primary function is to carry current from one location to another. Thus, wiring, extension cords, terminations, electrical panels, and cords on appliances are considered electrical distribution equipment. This is not to be confused with utility equipment from Local Distribution Companies.

Among OBC structures, in the five-year period between 2016 and 2020, the OFMEM identified 2,137 fires as electrical distribution equipment fires with electricity as the fuel of the ignition source, in which 94% were identified as loss fires. The five-year rolling average of electrical distribution equipment loss structure fires has decreased by 12% between 2011–2015 and 2016–2020.

The most common ignition source of electrical distribution equipment fires was circuit wiring (aluminum and copper), and the number of fires from this source has decreased by 18% when comparing 2011–2015 and 2016–2020. Electrical failure is the most common possible cause in these types of fires.

Between 2012 and 2016, there was an estimated average of 35,150 home fires involving electrical distribution and lighting equipment in the U.S. This caused an estimated average of 490 deaths, 1,200 injuries each year in 2012–2016, as well as an estimated $1.3 billion in direct property damage per year (Campbell, 2019).

Electrical distribution or lighting equipment accounted for 6% of home structure fires between 2003 and 2007, ranking fourth among major causes behind cooking equipment, heating equipment, and intentional home fires. Electrical distribution or lighting equipment also accounted for 12% of associated deaths (ranking behind smoking materials, heating equipment, and cooking equipment) (Hall, 2008).

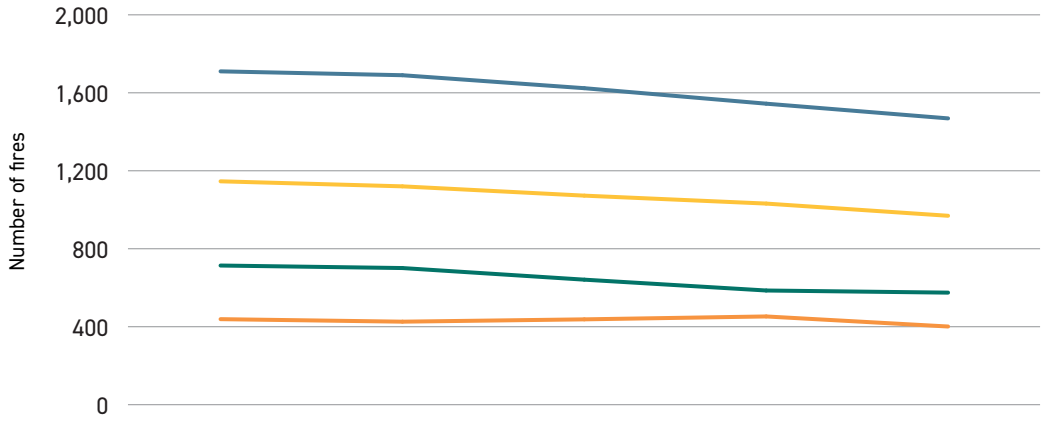
Section 4.5 provides a case study that is representative of the risk factors associated with electrical distribution equipment fires.

Statistics Directly Related to the ESA's Harm Reduction Priorities – AGING INFRASTRUCTURE AND DISTRIBUTION EQUIPMENT FIRES

Number of electrical wiring-related fires: this includes fires from copper and aluminum wiring, extension cords, appliance cords, terminations, and electrical panels - electrical devices categorized by the OFMEM as electrical distribution equipment.

The five-year rolling average for electrical distribution equipment structure loss fires related to aging infrastructure has decreased by 18% between 2011-2015 and 2016-2020.

1 NUMBER OF COOKING EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FIRES IN ONTARIO, 2016-2020 (OBC STRUCTURES ONLY)



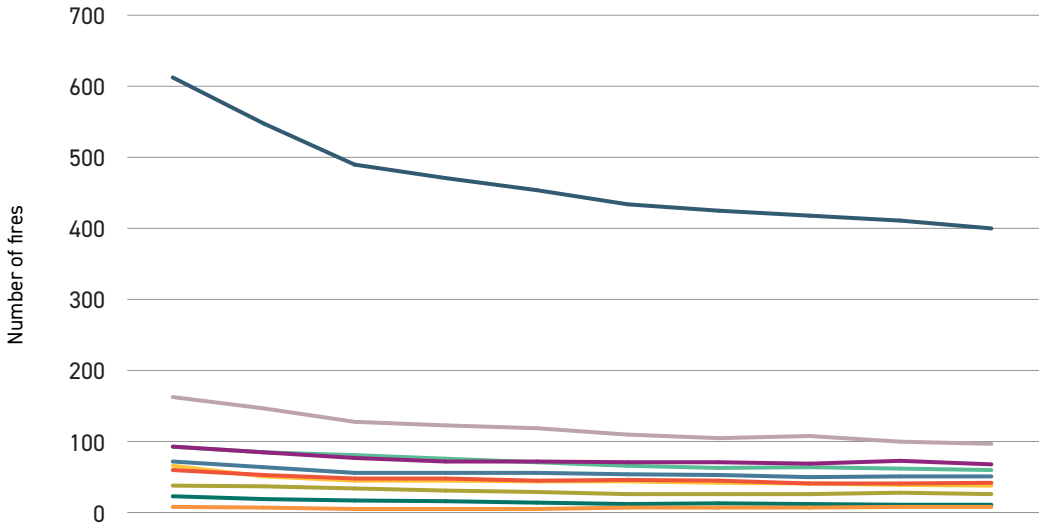
Year	2016	2017	2018	2019	2020
Cooking equipment	712	699	639	583	572
Electrical distribution equipment	435	422	434	449	397
Total cooking equipment and electrical distribution equipment fires	1,147	1,121	1,073	1,032	969
Total fires with electricity as the fuel	1,715	1,695	1,628	1,548	1,472

Source: OFMEM records

Conclusion

The total number of electrical distribution equipment structure fires has decreased 9% since 2016.

2 FIVE-YEAR AVERAGE NUMBER OF ELECTRICAL DISTRIBUTION EQUIPMENT STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2007–2020 (OBC STRUCTURES ONLY)



Five-year period	2007–2011	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016	2013–2017	2014–2018	2015–2019	2016–2020
Circuit wiring – Al, Cu (includes conductors)	163	147	128	123	119	110	105	108	100	97
Cord, cable for appliance, electrical articles	93	85	77	72	72	71	71	69	73	68
Distribution equipment (includes panel boards, fuses, circuits)	93	85	81	76	71	66	63	64	62	60
Extension cord, temporary wiring	60	53	48	48	45	46	45	41	41	42
Metre	8	7	5	5	5	7	7	7	8	8
Other electrical distribution item	72	64	56	56	56	54	53	50	51	51
Service/utility lines (includes power/hydro transmission lines)	38	37	34	31	29	26	26	26	28	26
Terminations – Al, Cu (includes receptacles, switches, lights)	66	51	45	45	44	44	42	41	39	38
Transformer	23	19	17	16	14	12	13	12	11	11
Total	614	549	491	472	455	435	426	419	412	401

Source: OFMEM records

Conclusion

Circuit wiring – aluminum and copper remained the leading ignition source in electrical distribution equipment fires between 2007 and 2020. The five-year rolling average of electrical distribution equipment loss structure fires shows an 18% decrease between 2011-2015 and 2016-2020.

3 NUMBER OF ELECTRICAL DISTRIBUTION EQUIPMENT FIRES BY POSSIBLE CAUSE IN ONTARIO, 2016–2020

Possible cause	Children playing (ages 11 and under)	Design/construction/installation/ maintenance deficiency	Electrical failure	Improper handling of ignition source or ignited material	Improper storage	Improperly discarded	Mechanical failure	Natural cause	Other misuse of ignition source/ material ignited	Other unintentional cause, not classified	Routine maintenance deficiency (e.g., creosote, lint, grease buildup)	Suspected vandalism	Unattended	Undetermined	Unintentional, cause undetermined	Used for purpose not intended	Used or placed too close to combustibles	Vehicle collision
Number of electrical distribution fires	1	130	1628	15	8	1	25	10	26	70	12	2	8	95	54	20	28	3

Source: OFMEM records

Conclusion

Electrical failure was the leading cause of electrical distribution structure fires between 2016 and 2020.

4.5 CASE STUDY

Fire from Electrical Distribution Equipment

A ceiling joist fire causing a fatality and $1,250,000 damage to the property due to electrical wiring.

A fire in the open joist ceiling of the laundry room in a two-and-a-half-storey detached home resulted in a fatality and excessive damage. The fire was investigated by the local fire department, the police, and the Office of the Fire Marshal and Emergency Management. The ignition source was identified as electrical.

Some of the resulting damages in the house were:

- Light soot on the interior of remaining glass inside window frames, more so on first-floor windows than second-floor windows (windows were blown out during fire suppression);
- Minor exterior smoke damage but minimal fire damage. More concentrated smoke damage towards the north side of the house;
- The main floor and second floor of the house sustained mostly heat and smoke damage, except for some fire damage on the main floor closest to the basement stairs. This fire damage travelled down the hallway towards the kitchen. The remainder of the floor suffered smoke damage;
- Fire broke through stud areas in the second floor on the north side;
- The third floor could not be accessed due to consumption of the roof in that area;
- The library, located along the north side on the main floor, sustained low fire damage along the south wall of the room. Fire was from below, and when sections of the hardwood floor were cut out, signs of charring were observed;
- The basement stairwell sustained charring to the ceiling with "V" patterns of fire damage on both sides of the stairwell;
- In the basement, fire damage was mostly concentrated in the laundry room along the north wall above the electrical panel and in the floor space joining the laundry room to the library above;
- There was no fire damage below the electrical panel;
- The rest of the basement sustained mostly smoke damage with a main door to access the laundry room; and
- The entry door sustained mostly smoke damage to the outside, but was severely charred on the laundry room side.

4.5 CASE STUDY (continued)

Two people were in the house at the time of the fire when a smoke alarm activated. They were both leaving the house when one of them went back in the house for an unknown reason. When firefighters arrived, one person was outside and informed them that another person was still in the house. Firefighters found this person in a bedroom on the second floor. This person succumbed to their injuries.

Investigation findings:

- The point of origin of the fire was determined to be in the ceiling joists just west of the electrical panel at the north end of the laundry room;
- Ignition sources in the area were limited to electrical wiring;
- Wiring was not properly supported in accordance with the Ontario Electrical Safety Code along the joists. Specifically, branch wiring from the panel running through the stud cavity where there was the most severe fire damage was not secured; and
- Evidence of arcing in the branch wiring in the area of origin was identified.

5.0 Product Safety

Ontario Regulation 438/07, *Product Safety,* enables the ESA to address the safety of electrical products and equipment offered for sale, sold, and used in Ontario.

O. Reg 438/07 authorizes the ESA to protect the public against potentially unsafe electrical products in the marketplace by:

1. Responding to product safety reports;
2. Removing potentially unsafe, counterfeit, and unapproved electrical products from the marketplace;
3. Requiring manufacturers to notify the public of potentially unsafe products; and
4. Implementing prevention-based and proactive detection activities.

The ESA has developed targeted response strategies for various potentially unsafe products.

The *Canada Consumer Product Act* in 2011 created concurrent product safety systems for consumer electrical products in Ontario. All incidents involving consumer electrical products are now handled by Health Canada.

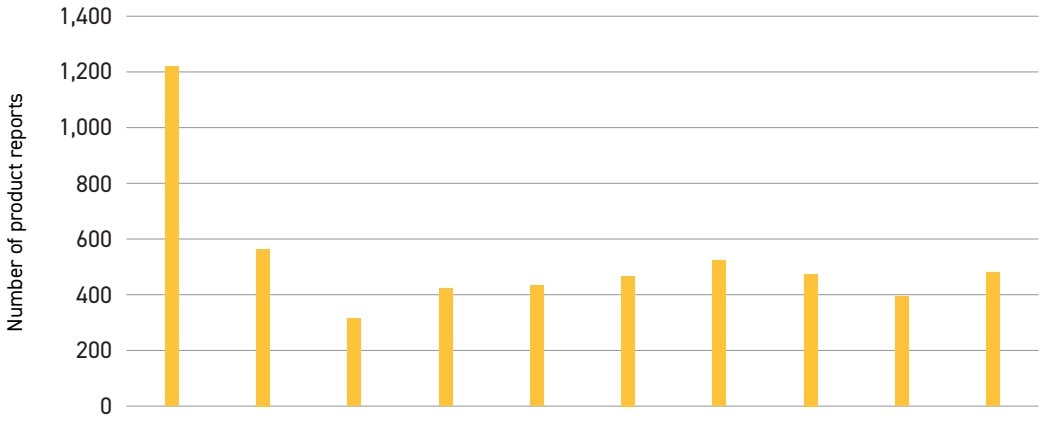
In 2021, Health Canada received 2,738 product reports, of which 167 reports were about electric ranges or ovens, where the top hazards included excessive heat/overheating, fire, and sharp edges or points. None of these reports were associated with deaths, although 38% mentioned injuries. Electrical injuries, such as shock and burns, were reported from products including ranges or ovens, telephones or accessories, and refrigerators (Health Canada, 2022).

Since 2012, there has been a 61% decrease in the number of product incidents reported to the ESA. In 2021, there were 481 reports. Compared to the previous year of 2020, this is an increase of 22%.

In 2021, all product safety investigations initiated by the ESA were a result of voluntary reporting. Seventy-seven percent (369 reports) were assigned as Priority 2, which meant that the ESA could direct a range of corrective action plans to assure that no further serious incidents or accidents could occur.

In 2021, 79% of product incident reports were concerned with unapproved products (products that have not been tested and evaluated to the applicable Canadian safety standards and may not be safe to use). A smaller percentage of reports dealt with certified products (products that were properly certified but reported to have a safety problem or a perceived safety problem), products with a suspected counterfeit label, or products requiring corrective action.

1 NUMBER OF PRODUCT INCIDENT REPORTS SUBMITTED TO THE ESA IN ONTARIO, 2012–2021



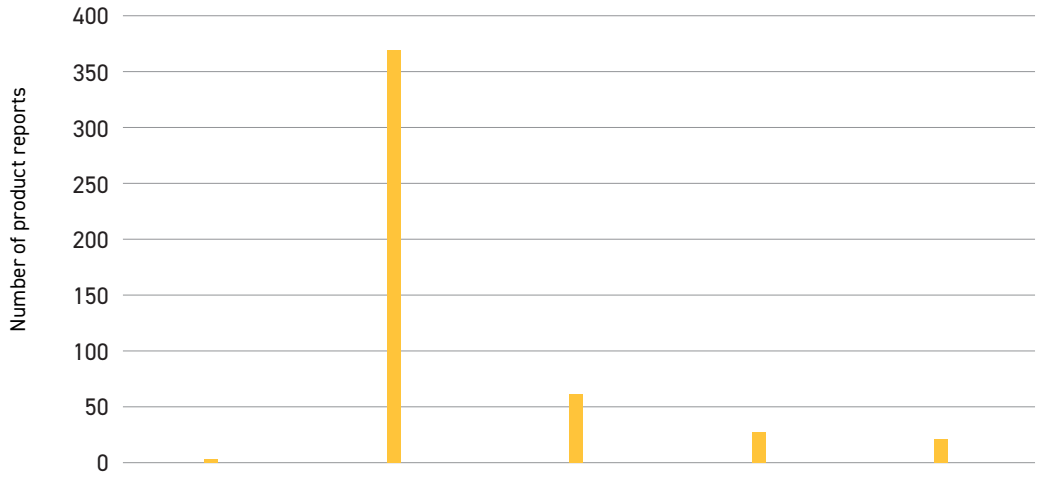
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of product reports	1,220	564	316	423	432	468	524	475	394	481

Source: ESA records

Conclusion

Mandatory reporting to ESA was introduced in 2008 with the introduction of Ontario Regulation 438/07. In 2011, the *Canada Consumer Product Act* was introduced, which included mandatory reporting to Health Canada as well. In 2013, mandatory reporting to ESA was removed as a result of amendments in the Regulation. As a result, a 54% decrease of reports between 2012 and 2013 was observed. Between 2013 and 2021, there has been a 15% decrease in product incident reports.

2 NUMBER OF PRODUCT INCIDENT REPORTS BY PRIORITY LEVEL IN ONTARIO, 2021



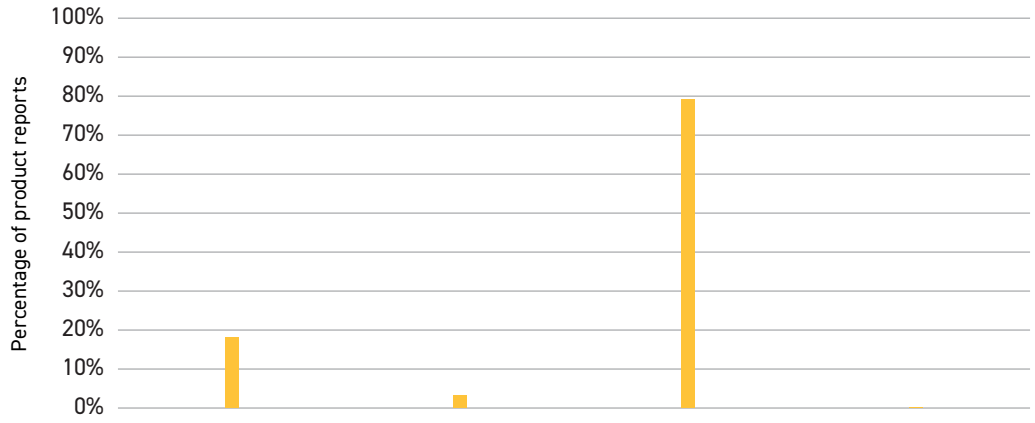
Priority level	Priority 1 (most important)	Priority 2	Priority 3	Priority 4 (least important)	Triaged by Health Canada
Number of product reports	3	369	61	27	21

Source: ESA records

Conclusion

In 2021, 77% of electrical incident reports to the ESA were classified as Priority 2.

3 PERCENTAGE OF PRODUCT INCIDENT REPORTS BY TYPE IN ONTARIO, 2021



Investigation type	Certified	With suspected counterfeit label	Unapproved	Product requires corrective action
Percentage of product reports	18%	3%	79%	0.2%

Source: ESA records

Conclusion

In 2021, 79% of electrical incident reports were from unapproved electrical products.

5.1 CASE STUDY

FLASH

May 2022

Flash 22-34-FL
Supersedes 21-34-FL

Electrical Safety Authority Warns of Unsafe Use of Electrical Equipment to Assemble Lichtenberg Generators

Hobbyists using high voltage to pattern wood, other materials has resulted in multiple serious injuries and fatalities being reported to ESA

The Electrical Safety Authority (ESA) is warning against using high voltage energy sources such as microwave oven transformers or similar components to manufacture Lichtenberg generators. These generators are used to create art and abstract objects by burning fractal patterns into various materials such as wood and acrylic.

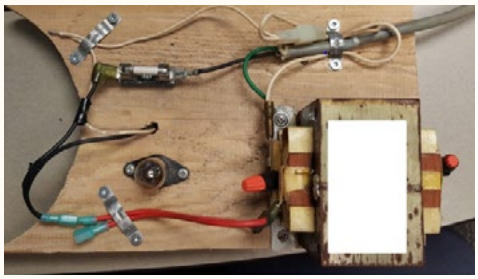
Do not attempt to assemble or use a Lichtenberg generator for any purpose. They are extremely dangerous, contain live accessible wiring and components, and are unsafe for any use or handling. Both homemade and pre-built Lichtenberg generators are considered to have the potential to seriously injure and or kill the user.

- ESA is aware of multiple incidents (5 fatalities and one serious injury) in Ontario involving these generators that were used in an unsafe manner resulting in a fatality and critical injuries.
- All of these generators, whether homemade or purchased, are unapproved by certification bodies inspection bodies, have not been evaluated or tested to any Canadian safety standards, and do not bear any recognized Canadian electrical safety certification marks.
- These generators are reportedly homemade, using instructions on the internet, and are assembled with parts and components that are obtained from a variety of sources and are not approved for this type of use.
- Some of these generators are marketed as complete products and indicate that they are built with approved/certified components. However, the overall product has not been evaluated to any known electrical safety standard(s) for this type of product, as applicable to Canadian consumers and marketplace.
    - The risks associated with building and using a Lichtenberg generator include:
        - Potentially unsafe construction and assembly methods
        - Both short-and long-term degradation of the product and components
        - Physiological effects of exposure to high voltage/high frequency energy sources
        - Lack of quality control processes and procedures
        - Inadequate instructions pertaining to usage, storage, maintenance, required type(s) of personal protective equipment, etc.

5.1 CASE STUDY (continued)

Picture 1. *Critical hand injury*

- The critical hand injury shown above (which was not the only injury that this hobbyist received) could have resulted in a fatality by electrocution had a resuscitation not been performed on the victim. Others in the immediate vicinity could have been killed or received a shock or serious injury.



Pictures 2 and 3. *Examples of homemade Lichtenberg generators*

- The combination of incorrect and/or unsuitable parts, dangerous assembly methods, and use of the finished product are considered to be major contributing factors resulting in the reported serious injury and fatality.

How to Report Unsafe Electrical Products

- If generators exist in the marketplace or are offered for sale, they should be considered unsafe and reported to ESA or Health Canada immediately. When reported, suppliers within ESA's jurisdiction will be contacted. Consumers/hobbyists are encouraged to contact ESA at 1-877-ESA-SAFE or complete the online Product Safety Reporting Form.
- Lichtenberg generators may also have counterfeit electrical safety approval labels applied to them to falsely indicate that they are safe and approved. Since it is very unlikely that these products could meet any safety standards and be approved, should a generator be found that appears to have a certification or approval mark, do not purchase or use it. Please contact ESA or Health Canada immediately with the supplier details.

The disassembling of products such as a microwave oven and/or similar devices or appliances with the purpose of removing the high voltage transformer and other parts to build these generators creates a dangerous unapproved product. To build these generators, use, and/or sell them is in breach of Ontario Regulation 438/07, *Product Safety,* and 164/99, *Ontario Electrical Safety Code*.

6.0 Electrical Incident Review

Information about electrical incidents that are reported to ESA is collected so that a trend analysis can be made. This allows the ESA to understand the current and potential electrical risks, and to assess compliance with applicable legislative and regulatory requirements. An incident review is conducted for all known incidents that are electrical in nature, or have the potential to be electrical in nature, which involve equipment/tools/devices that fall under the jurisdiction of ESA, and meets one or more of the following criteria:

1. The incident review has the potential to provide ESA or the Authority Having Jurisdiction requesting the review the opportunity to gain a better understanding of the potential harm;
2. Conducting the incident investigation may potentially address key electrical safety concerns in a proactive manner; and/or
3. When the circumstances of the current electrical incident warrant greater surveillance including, but not limited to, situations where newer technology is involved, or the electrical incident fits within the scope of a high-risk harm.

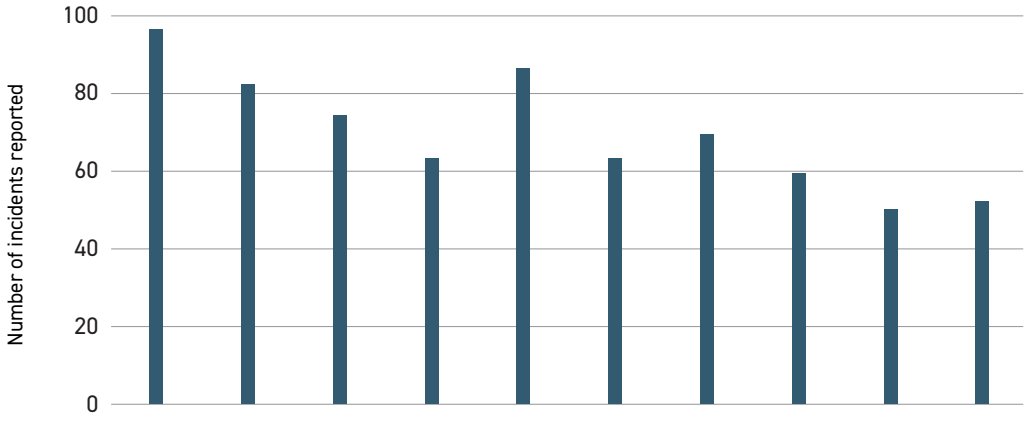
The following information is a summary of what is reported to ESA's electrical incident database. This includes:

1. General incidents, which are serious or non-serious electrical incidents where the cause and conditions leading to the incident are apparent and straightforward, and do not require an in-depth fact-finding inquiry; and
2. Root cause incidents, which are conducted for serious or non-serious electrical incidents where the cause and conditions leading to the incident are complex in that there are multiple causes and/or many conditions present that could contribute to the incident, and the incident requires an in-depth fact-finding inquiry.

Between 2012 and 2021, 699 electrical incidents were reported and reviewed by the ESA. Seven fatalities and 11 injuries related to unapproved consumer electrical products were reported during this time period. Of these, majority of these fatalities were related to Lichtenberg devices seen in the recent five years.

In 2021, 52 incidents were reported to and reviewed by the ESA. This is a 4% increase from 2020. Fifteen percent of these incidents involved utility infrastructure, and 13% of incidents involved powerlines. Sixty-two percent of reported incidents were occupational. Aside from unknown (37%), the most common cause of these incidents were "improper procedure" (12%) or "equipment failure" (4%). In 2021, there was one incident that was reported and reviewed from an unapproved consumer product resulting in a fatality. A list of incidents reviewed from 2012 and 2021 can be found in Appendix A of this report.

1 NUMBER OF INCIDENTS REPORTED TO AND REVIEWED BY THE ESA



Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of incidents reported	96	82	74	63	86	63	69	59	50	52

Source: ESA records

Conclusion

In 2021, 52 incidents were reported to and reviewed by the ESA, this is a 4% increase from 2020.

Acknowledgements

The ESA acknowledges and thanks the Ontario Ministry of Labour, Training and Skills Development (MOLTSD) for providing information, notifying the ESA of occupational electrical injuries, and co-operating with the ESA in the investigation of these incidents.

The ESA thanks the Office of the Fire Marshal and Emergency Management (OFMEM) for its continuing support in providing information on fire-related electrical incidents, partnering with the ESA on stove-top fire initiatives, and notifying the ESA of electrical fire incidents.

The ESA also thanks the following organizations for their support:

- The Office of the Chief Coroner for Ontario for sharing coroners' information on electrical-related fatalities and other deaths in Ontario;
- The Workplace Safety and Insurance Board of Ontario (WSIB) for providing occupational injury information; and
- The Canadian Institute of Health Information (CIHI) for providing information on emergency department visits for electrical injury.

Development of this report was led by a team from the ESA, including Freda Lam, Michelle Zeng, David Dawod, and Sean Burger, with assistance from staff of the ESA's Utility Regulations, Product Safety, and Communications departments.

Methodology

The ESA receives data from various resources to compile this report. These include the Office of the Chief Coroner, the MOLTSD, the Association of Workers' Compensation Boards of Canada (AWCBC), the OFMEM, and the WSIB. The ESA then cross-references these data with the coroners' reports, OFMEM's reports, and the ESA's root-cause investigation data to ensure accuracy and understanding of the incidents. Data on non-serious incidents are taken as provided.

The Electrical Safety Authority's Data

The ESA uses Ontario population estimates and projections from Ontario's Ministry of Finance (Historical and projected population for Ontario under three scenarios, 2018–2045, Part A and B: Estimates and Projections) to determine electrocution and death by fire as rate per population, and Statistics Canada labour force population estimates (Table 14-10-0287-03) to determine occupational injury rates.

The 2012 to 2021 electrocution statistics are based on Ontario coroners' reports, ESA records, and MOLITSD reports. At time of writing, OFMEM fire fatality information is only partially completed due to pending investigations and confirmations.

Data provided by the Office of the Chief Coroner takes precedence over other data in the event of discrepancies.

The electrocution and electrical burn fatality cases in the report are unintentional in nature. Suicide and deliberate attempts to injure are excluded, as well as deaths by lightning strikes. Electrocution from criminal activities such as theft of power, vandalism, pranks, or vehicles hitting a utility pole are counted as part of the statistics but are not included as part of preventable deaths. Death resulting from a fall but initiated by an electrical contact to a worker would not be recorded as an electrical-related fatality and therefore would not be accounted for in electrical injury data.

This report separates occupational and non-occupational (the general public) incidents for reasons of stakeholder interest and to aid in identifying strategies to reduce harm.

Workplace Safety Insurance Board Data

The WSIB defines lost time injuries (LTIs) as all allowed claims by workers who have lost wages as a result of a temporary or permanent impairment. LTI counts include fatalities. This data is provided by WSIB Enterprise Information Warehouse, as of May 16, 2022, for all injury years.

Allowed LTIs for electrical burns and electrical-related fatalities are based on the following CSA Z795-96 nature of injury codes:

- 05200 Electrical burns;
- 05201 First-degree electrical burns;
- 05202 Second-degree electrical burns;
- 05203 Third-degree electrical burns;
- 05290 Electrical burns, N.E.C.; and
- 09300 Electrocutions, electric shocks.

Emergency Department Visits

Separations data from the National Ambulatory Care Reporting System were provided by the Canadian Institute for Health Information (CIHI). Emergency department separation data used in this report are classified according to the Canadian Modification of the 10th revision of the International Classification of Diseases (ICD-10-CA). The inclusion criterion for the report was the presence of T75.4, T75.0, W85, W86, W87, or X33 codes indicating an electrical injury, including being a victim of lightning, among any of the diagnosis or external cause codes assigned to a record.

Reliability of Data

The numbers and figures in this report are based on current information provided to the ESA as of July 27, 2022. Parts of this material are based on data and information provided by the Canadian Institute for Health Information, and are current as of October 13, 2021. However, the analyses, conclusions, opinions, and statements expressed herein are those of the author, and not necessarily those of the Canadian Institute for Health Information. These numbers may change in subsequent reports due to additional information received after the publication of the report. These changes and explanations will be noted in future reports.

While the information is considered to be true and correct at the time of publication, the author does not warrant that it is free from errors or omission. The ESA prepares this report and makes it available on the understanding that ESA and its employees and agents shall bear no liability of any kind to users of this report for any loss, damage, costs of expense incurred or arising from the use or reliance on the report, whether caused by any error, negligence, omission or misrepresentation in the report or otherwise.

Fire Source Data

The OFMEM reports its data by calendar year. Data collection and verification for the year has a one-year lag in reporting in the OESR. The OFMEM does not publish Ontario statistics until all fire departments have reported. The larger departments – Toronto and Hamilton – generally do not finish their filing until June of the following year. At the time of writing, some OFMEM data for 2021 is unavailable and data for 2020 is presented instead. The numbers of fire incidents and fire fatalities are current as of May 5, 2022, and are considered to be the most accurate at this point in time.

The OFMEM provides information on all fire incidents except for those on federal or First Nations properties. Likewise, information on fire fatalities does not include those on federal or First Nations properties, nor fire deaths in vehicle accidents.

The ESA reports fire incidents based on data provided by the OFMEM to the ESA on:

- all fires where the ignition source was reported as “electrical distribution equipment” or the fuel of the ignition source was reported as “electricity”; and
- fire incidents and fire fatalities investigated by the OFMEM where the ignition source was reported as “electrical distribution equipment” or the fuel of the ignition source was reported as “electricity”.

In addition, the ESA conducts its own investigation of fires when called by the local fire department to assist or when jointly investigating fire incidents with the OFMEM. The ESA presents data that are consistent with the reporting convention of the OFMEM. Fires are reported by ignition source where the fuel of the ignition source was reported as electricity. It is worth noting that with the exception of fires with distribution equipment and fires identified as electricity as the ignition source by the fire departments or the OFMEM, electricity was not the primary fuel associated with the fire. These situations are illustrated below.

In the OESR, these fires will be categorized into two types of fires. These are:

1. Fires caused by the ignition of combustibles (liquids and solids) around an electrical device, equipment, appliance, or installation, but which were not the direct result of a failure of electrical equipment, devices, electrical current, or arc flash coming into contact with the object. When the primary fuel associated with the fire is not electricity (such as leaving a stove unattended with the oil catching fire), the OFMEM labels these fires as cooking fires rather than electrical fires. In addition, the OFMEM does not recommend using numbers of fire deaths to identify trends and key issues.

   Typically, these types of fires were the direct result of misuse of the equipment, device, or appliance. Some examples of these types of fires are:

   - grease fires on an electrical stove top as a result of cooking left unattended;
   - clothing catching fire while cooking;
   - clothes dryer catching fire caused by the appliance overheating due to improper cleaning of the lint cache; and,
   - combustibles catching fire around heaters or electronics when they are placed too close to the heat source.

2. Fires caused by the ignition of combustibles around an electrical device, equipment, appliance, or installation and which were the direct result of the failure of the device, equipment, or installation. In these cases, typical fires are caused by insulation surrounding electrical wiring failing and igniting a combustible in close proximity, or equipment or devices failing, causing them to overheat and later start a fire. Insulation failure could be caused by natural aging, premature aging resulting from overloading, or by mechanical breakdown of the insulation. Fires related to wiring and wiring devices are classified by the OFMEM as distribution equipment. Please note that the definition of distribution equipment in the fire section is quite different than the distribution equipment in the powerline section of the report.

   Examples of these fires are:

   - Carpet igniting caused by heat build-up of an extension cord placed under a carpet. Over time the insulation of the extension cord fails due to foot traffic on the cord, which leads to mechanical breakdown of the insulation.
   - Electrical wires poorly terminated and an installation performed without using any protective enclosure. Arcing occurs over time, resulting in a fire of combustibles around the wires.
   - Fire caused by a failure of a seized motor powered by electricity.

When fire fatality rates are calculated, the ESA displays data as it is calculated by the OFMEM, which uses Statistics Canada population estimates as the denominator. When fire fatality data is added to electrical-related death data, Ministry of Finance population estimates are used as the denominator.

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Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility Infrastructure	Cause of incident	
2021	Dec	Hamilton	Occupation	No	No	Unknown	
2021	Dec	Scarborough	Occupation	No	No	Unknown	
2021	Dec	Oakville	Occupation	No	No	Unknown	
2021	Nov	Oakville	Occupation	No	No	Unknown	
2021	Oct					Unknown	
2021	Oct	Etobicoke	Non-occupation	No	No	Unknown	
2021	Oct	Oakville	Non-occupation	No	No	Unknown	
2021	Oct	Kingston	Non-occupation	No	No	Unknown	
2021	Sep	Milton	Occupation	No	No	Unknown	
2021	Sep					Unknown	
2021	Sep	Scarborough	Occupation	No	No	Unknown	
2021	Sep	Toronto	Occupation	No	No	improper procedure	
2021	Sep	Thunder Bay	Occupation	No	No	Unknown	
2021	Sep	Toronto	Occupation	No	No	Unknown	
2021	Aug	North York	Non-occupation	No	Unknown	Unknown	

	ESA #	Incident summary	Property damage	Electrical Injuries/ Fatalities to Person	Consumer electrical product was unapproved
	WI2202	Worker was injured when replacing lamps and resupporting overhead communication cables on a skyjack in a warehouse	Unknown	Injury	Unknown
	CI22004	Worker was injured while working on a 30A 600V fused switch in a main 600A switchboard when an arc flash occurred	Unknown	Injury	N/A
	SI21002	Worker was injured when disconnecting a machine	Unknown	Injury	N/A
	SI21004	Worker was injured while working on or around the line side of a 1000A 347/600 VAC main breaker	Yes	Injury	N/A
		Unknown	Yes	None	Unknown
	CI21011	Property damage from fire on brownie production line in industrial baking equipment	Yes	None	Unknown
	CI21009	Property damage occurred when a coin became lodged across a phone charger and caused a short, damaging three devices connected to the circuit	Yes	None	Unknown
	EI21004	Property damage from fire	Yes	None	Unknown
	SI21003	Electrical worker was injured when investigating a possible phase loss, when the meter failed, causing a flash	Unknown	Injury	Unknown
		Unknown	Unknown	Injury	Unknown
	CI21010	Electrical worker was injured when after typing in subfeeder, re-energizing SB-1, and caused a fault	Unknown	Injury	Unknown
	CI21012	Property damage occurred when worker was drilling into concrete and contacted live conductor	Yes	None	N/A
	NI21004	Property damage occurred when workers were digging underground for water line replacement and caught streetlighting feed	No	None	N/A
	CI21007	Property damage occurred when HV switch was energized while the load side conductors in the downstream transformer were not terminated, causing a short to the ground inside the transformer	Yes	None	N/A
	TBD1	Property damage from fire of an HV transformer failure in a high-rise apartment building	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2021	Aug	Toronto	Occupation	Yes	Yes	Unknown	
2021	Aug	Toronto	Occupation	Yes	Yes	Damaged equipment	
2021	Aug	Cornwall	Occupation	No	No	Improper procedure	
2021	Aug	London	Occupation	No	No	Unknown	
2021	Jul	Burlington	Occupation	No	No	Unknown	
2021	Jul	North York	Occupation	No	No	Improper procedure	
2021	Jul	Toronto	Occupation	Yes	Yes	Unknown	
2021	Jul	Mississauga	Occupation	Yes	Yes	Unknown	
2021	Jul	Brantford	Non-occupation	No	Unknown	Unknown	
2021	Jun	Kingston	Occupation	No	No	Unknown	
2021	May	Delaware	Non-occupation	No	Yes	Unknown	
2021	May	Orangeville	Non-occupation	No	No	Unknown	
2021	May	North York	Occupation	No	No	Incorrect installation	
2021	May	Vaughan	Occupation	No	No	Unknown	
2021	May	Ottawa	Non-occupation	No	No	Animal contact	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CUI21006	Property damage occurred when excavation work made contact with primary underground line, causing power outage	Yes	None	N/A
	CUI21005	Worker was injured from water pipes as a result of a bad neutral connection at a residential standpipe	Unknown	Injury	N/A
	EI21003	Electrical worker was injured when filler plates appeared to have fallen into energized buses within an MCC	Unknown	Injury	N/A
	WF21006	Property damage from fire of the power supply of a Baxter pump; saline solution was dripping onto power supply and receptacle	Yes	None	Unknown
	SF21002	Property damage from fire when a light fixture sparked	Yes	None	Unknown
	CI21004	Worker was injured when pulling conductors into an energized enclosure when contact was made	Unknown	Injury	N/A
	CUI21003	Workers were injured when removing a metal ladder in the proximity of a live 16 kV primary line	Unknown	Injury	N/A
	TBD	Property damage from contact of a fire truck to a primary overhead line	Yes	None	N/A
	WF21005	Meter failure causing a fire	Yes	None	Unknown
	EI21002	Worker was eletrocuted while working on a rail-mounted crane that came into contact with energized slip springs on the topside of the crane	Unknown	Fatality	N/A
	WUI21007	Person was injured when lawnmower came into with hydro pole	Unknown	Injury	N/A
	TBD2	Person was injured when moving an electric space heater over a wet saturated carpet	Unknown	Injury	Unknown
	CI21002	Property damage from fire when electrical worker was changing a de-energized 208V panel, but 600V 60A fusible disconnect was wired in reverse, leaving the fuses live when turned off	Yes	Unknown	N/A
	SF21001	Property damage from fire when a 200A 600V switch created an arc flash	Yes	None	N/A
	EF21002	Property damage from fire caused by squirrel nest built under solar panels	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2021	May	Westport	Occupation	Yes	Yes	Lack of hazard assessment	
2021	May	London	Occupation	No	No	Misuse	
2021	May	London	Occupation	No	No	Unknown	
2021	May	Cambridge	Non-occupation	No	No	Theft	
2021	Apr	Pembroke	Non-occupation	No	No	Unknown	
2021	Apr	Cambridge	Occupation	No	No	Unknown	
2021	Apr	Thunder Bay	Non-occupation	No	No	misuse	
2021	Apr	Thames Centre	Non-occupation	No	No	Unknown	
2021	Apr	Tiverton	Occupation	No	No	Improper installation	
2021	Apr	Barrie	Occupation	No	No	Improper procedure	
2021	Mar	Welland	Non-occupation	Yes	Yes	Theft	
2021	Mar					Unknown	
2021	Mar	Kincardine	Non-occupation	No	No	Unknown	
2021	Mar					Unknown	
2021	Feb	Toronto	Occupation	No	No	Unknown	
2021	Feb	Windsor	Occupation	No	No	Equipment failure	
2021	Feb	Bluewater	Occupation	Yes	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EI21001	Worker caused property damage to underground conduits from excavation; in attempts to repair the damage, he made contact with a 4800V live feed	Yes	None	N/A
	WF21004	Property damage from fire when ballast/ LED mismatch	Yes	None	Unknown
	WF21003	Property damage from fire from a Baxter pump	Yes	None	Unknown
	WI21005	Person was injured when attempting copper theft in a high voltage substation	Unknown	Injury	N/A
	EI2100	Property damage from fire	Yes	Unknown	N/A
	"WI21004 Notification: 20565629"	Worker was injured while working with a semi-automatic tube welder	Unknown	Injury	Unknown
	NI21001	Person was burnt when creating a Lichtenberg fractal wood burning device	Unknown	Fatality	Yes
	WF21002	Property damage from fire from lithium battery storage	Yes	None	Unknown
	NI21003	Worker was injured when attempting to connect a hydraulic hose to a machine; phase line was reversed with a bonding conductor resulting in energizing the chassis of the machine	Unknown	Injury	Unknown
	NI21002	Electrical worker was injured when testing the voltage of a CNC tooling machine. One of the leads created a short, resulting in an arc flash	Unknown	Injury	Unknown
	WUI21003	Property damange to a hydro pole was found; LDC suspected it was an attempt to steal copper	Yes	None	N/A
	TBD3	Property damage from fire	Yes	None	Unknown
	TBD4	Property damage from fire originating from basement bathroom	Yes	None	Unknown
	TBD5	Unknown	Unknown	Unknown	Unknown
	CI21001	Electrical worker was injured by an arc lash at a 200A 347/600V main service disconnect	Unknown	Injury	N/A
	WI21001	Electrical worker was injured when replacing and re-energizing a panel	Unknown	Injury	Unknown
	WUI21002	Property damage when contact was made between machine and overhead powerlines	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2021	Feb	Sarnia	Occupation	No	No	Improper procedure	
2021	Feb	Sarnia	Occupation	No	No	Improper procedure	
2021	Jan	Toronto	Non-occupation	No	No	Unknown	
2021	Jan	Amherstburg	Occupation	No	No	Equipment failure	
2021	Jan	Sault Ste. Marie	Non-occupation	No	No	Misuse	
2020	Dec	Ottawa	Occupation	Yes	Yes	Improper procedure	
2020	Dec	Ottawa	Occupation	No	No	Improper installation	
2020	Nov	Oakville	Non-occupation	No	No	Incorrect installation	
2020	Nov	Thunder Bay	Non-occupation	No	No	Misadventure	
2020	Nov	Bayham	Non-occupation	No	Yes	Unknown	
2020	Nov	Toronto	Non-occupation	No	No	Unknown	
2020	Nov	Niagara Falls	Non-occupation	No	No	Unknown	
2020	Oct	Cornwall	Occupation	No	No	Equipment failure	
2020	Oct	Cornwall	Occupation	No	No	Equipment failure	
2020	Oct	Ingersoll	Occupation	Yes	Yes	Miscommunication	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WI21006	Worker was injured from an arc flash when replacing a 480V 15A bucket on an energized MCC	Unknown	Injury	N/A
	WI21006	Worker was injured from an arc flash when replacing a 480V 15A bucket on an energized MCC	Unknown	Injury	N/A
	CF21001	A property fire resulted in fatalities caused by the wiring above the chandelier	Unknown	Fatality (not electrical)	Unknown
	WF21001	Property damage when 600V hot water tank caught fire at element leads inside the electrical compartment	Yes	None	Unknown
	NF21001	Property damage from fire when a battery charger failed and ignited surrounding materials	Yes	None	Unknown
	EUI20005	Property damage from contact between garbage truck and secondary conductors	Yes	None	N/A
	EF20004	Property damage from fire originating from incorrect wiring to its electrical service panel	Yes	None	Unknown
	CI20009	Person was injured from back fence rail due to it being energized from the damaged insulation of a 120 V supply conductor that created a conductive path to the contact point	Unknown	Injury	N/A
	NF20003	Property damage from fire from a fuse panel due to power theft	Unknown	None	Unknown
	WF20008	Property damage from explosion from meter malfunction	Yes	None	No
	CF20007	Property fire from a multi-unit dwelling	Yes	None	Unknown
	WI20003	Person was injured from slipping into shower and causing a hair dryer to fall into the water	No	Injury	Unknown
	EI20007	Electrical worker was injured from an arc flash when replacing a fuse, and an arc flash occurred after attempting to re-energize the system	Yes	Injury	Unknown
	EI20007	Electrical worker was injured from an arc flash when replacing a fuse, and an arc flash occurred after attempting to re-energize the system	Yes	Injury	Unknown
	WUI20003	Property damage was caused when water department workers were digging to repair a water main and made contact with an underground 16 kV powerline	Unknown	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2020	Oct	St Catharines	Occupation	No	No	Unknown	
2020	Oct	Cobalt	Non-occupation	Yes	Yes	Improper procedure	
2020	Sep	Pickering	Occupation	No	No	Incorrect installation	
2020	Sep	Hearst	Occupation	No	No	Unknown	
2020	Aug	St. Clair	Non-occupation	Yes	No	Incorrect installation	
2020	Aug	Toronto	Occupation	Yes	Yes	Unknown	
2020	Aug	Madsen	Occupation	Yes	Yes	Unknown	
2020	Aug	Russell Township	Occupation	No	No	Unknown	
2020	Aug	Bothwell	Non-occupation	Yes	Yes	Unknown	
2020	Jul	London	N/A	No	No	Improper installation	
2020	Jul	Windsor	Occupation	No	No	Lack of maintenance	
2020	Jul	Mississauga	Occupation	No	No	Unknown	
2020	Jul	Owen Sound	Non-occupation	No	No	Unknown	
2020	Jul	South Bruce	Occupation	Yes	Yes	Unknown	
2020	Jul	Oro-Medonte	Occupation	No	No	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	SF20003	Property damage in a manufacturing plant from a failure in the rack out breakers of an MCC unit	Yes	None	N/A
	NUI20003	Person was injured when contact was made with an overhead powerline after climbing atop a sand pile in a public works property	Unknown	Injury	N/A
	EF20003	Property damage from a fire from an improperly installed dishwasher during a kitchen renovation	Yes	None	Unknown
	NI20001	Electrical worker was burned during an arc flash when turning on a circuit breaker	No	Injury	Unknown
	WF20006	Property damage from a fire in a gas dryer vent that was caused by a damaged overhead service neutral from a tree limb	Yes	None	N/A
	CUI20008	LDC linesperson was electrocuted when working in an underground transformer	Unknown	Fatality	N/A
	NUI20001	Worker was injured when anchoring a fire hose around a tree after it had fallen on an energized overhead 44 kV primary line	No	Injury	N/A
	EI20006	Worker was electrocuted when contact was made with photovoltaic equipment	Unknown	Fatality	Unknown
	WUI20002	Person was injured when using a lift to remove a tree on their property when it made contact with an overhead primary line	Unknown	Injury	N/A
	SF20002	Property damage from a fire due to improper installation of an electronic ballast in a light fixture	Yes	None	Unknown
	WF20004	Property damage from an arc flash of an unapproved transport trailer	Yes	None	Yes
	CI20007	Electrical worker was injured when testing 44 kV equipment in a metering cabinet	Unknown	Injury	N/A
	WF20005	Property damage occurred in a dwelling where an electrical worker had installed new receptacles with no CAFCI devices, without pulling permits	Yes	None	Unknown
	WI20002	Property damage to equipment occurred when a logging company caused a fallen tree to down an overhead line and pole top transformer	Yes	None	N/A
	CF20006	Property damage to a charger due to a forklift battery charger failure	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2020	Jun	Maple	Occupation	No	No	Unknown	
2020	Jun	Tweed	Non-occupation	Yes	No	Improper procedure	
2020	Jun	Ottawa	Occupation	Yes	Yes	Improper procedure	
2020	Jun	Toronto	Occupation	No	No	Unknown	
2020	Jun	Barrie	Occupation	No	No	Improper procedure	
2020	Jun	Pickering	Occupation	No	No	Equipment failure	
2020	Jun	Harriston	Occupation	Yes	Yes	Unknown	
2020	Jun	South Frontenac	Non-occupation	No	No	Unknown	
2020	May	Ottawa	Occupation	Yes	Yes	Lack of awareness of hazard	
2020	May	Napanee	Non-occupation	No	Yes	Unknown	
2020	May	Orillia	Occupation	No	No	Equipment failure	
2020	May	Kitchener	Occupation	No	No	Unknown	
2020	May	Hamilton	Occupation	No	No	Improper procedure	
2020	May	Cobourg	Occupation	Yes	Yes	Unknown	
2020	Apr	Toronto	Non-occupation	No	No	Misuse	
2020	Mar	Thunder Bay	Non-occupation	No	No	Improper use	
2020	Mar	Woodstock	Occupation	No	No	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CI20006	Worker was injured when potential electrical contact was made with live exposed contacts on 120 V solenoid	Unknown	Injury	N/A
	EI20005	Property damage when person moved a ladder into secondary overhead conductors while tree trimming	Yes	None	N/A
	EUI20004	Property damage due to dump truck making contact with hydro pole and downing 27.6 kV cables	Yes	None	N/A
	CF20004	Property damage to electrical riser due to bus duct failure in a commercial structure	Yes	None	N/A
	CI20005	Electrical worker was injured when drilling into an energized bus bar	Yes	Injury	N/A
	SI20005	Property damage due to power correction capacitor failure on 150 HP motor	Yes	None	N/A
	WUI20001	Property damage when dump truck made contact with overhead neutral line	Yes	None	N/A
	EF20002	Property damage when a panel failure was found	Yes	None	Unknown
	EUI20003	Property damage from an unsecured piece of downspout that flew into the utility overhead service conductors	Yes	None	N/A
	EF20001	Property damage from a meter base fire	Yes	None	No
	CF20005	Property damage from a fire from a 24 kW photovoltaic inverter failure	Yes	None	N/A
	SF20001	Property damage from a fire in an industrial facility from rectifier/HVAC penthouse; equipment was energized	Yes	None	N/A
	SI20001	Worker was injured when a steel guard rail was being installed and hit a 120 V underground street light feeder	Unknown	Injury	N/A
	EUI20002	Property damage due to an HV fuse blowing open because a vac truck had opened a pit and hit the blue and red phases	Yes	None	N/A
	CF20003	Property damage from a fire where computer processor overheated	Yes	None	Unknown
	NF20001	Property damage from a fire due to incorrectly installed ceramic heater in a multi-unit building garage	Yes	None	Unknown
	SI20003	Property damage when an arc flash occurred when replacing an energized aging panelboard	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2020	Mar	Toronto	Occupation	No	No	Improper procedure	
2020	Mar	Wellesley	Occupation	No	No	Lack of maintenance	
2020	Feb	Toronto	Occupation	No	No	Improper procedure	
2020	Feb	Brampton	Non-occupation	No	No	Misuse	
2020	Feb	Petawawa	Occupation	Yes	Yes	Unknown	
2020	Feb	Blue Mountains	Non-occupation	No	No	Incorrect installation	
2020	Feb	Toronto	Non-occupation	No	No	Unknown	
2020	Jan	Toronto	Occupation	No	No	Improper procedure	
2020	Jan	Toronto	Occupation	No	No	Improper procedure	
2020	Jan	Oshawa	Non-occupation	No	No	Aging	
2020	Jan	London	Occupation	No	No	Incorrect installation	
2019	Dec	Brampton	Occupation	No	No	Improper procedure	
2019	Nov	Meaford	Occupation	Yes	Yes	Incorrect procedure	
2019	Nov	Greater Napanee	Non-occupation	No	No	Incorrect installation	
2019	Nov	London	Non-occupation	No	No	Misuse	
2019	Nov	Oakville	Occupation	No	No	Equipment failure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CI20003	Electrical worker was injured from an arc flash when working on an electrical breaker	Unknown	Injury	Unknown
	WF20003	Worker was injured from a fire when using a steel chop saw that sparked and ignited nearby exposed insulation	Yes	Injury	Unknown
	CI20004	Electrical worker was injured from an arc flash when working on a switchboard	Unknown	Injury	Unknown
	CF20002	Property damage from a fire where extension cords were used to daisy chain kerosene space heaters	Yes	None	Unknown
	EUI20001	Property damage when an arc flash occurred when contact was made between service conductors and the roof	Yes	None	N/A
	WF20001	Property damage from a fire when stove was found to be incorrectly installed	Yes	None	Unknown
	CF20001	Property damage from a fire starting from a space heater in a shed	Yes	None	Unknown
	CI20001	Electrical worker was injured from an arc flash when working on a disconnect switch	Unknown	Injury	N/A
	CI20001	Electrical worker was injured from an arc flash when working on a disconnect switch	Unknown	Injury	N/A
	SI20001	Animal was injured when it came into contact with an improperly bonded streetlight	No	None	N/A
	WI20001	Property damage from a shorted termination resulting in upstream fuses opening, causing hot water to flood the room and surrounding area	Yes	None	N/A
	CI19012	Worker was injured from an arc flash when making contact with an energized bus bar between a switch and panel	Unknown	Injury	N/A
	WUI19005	Property damage from an excavator making contact with overhead neutral lines	Yes	None	N/A
	EF19005	Property damage from an incorrectly installed light fixture	Yes	None	Unknown
	WI19007	Person was injured from an arc flash by plugging a USB jack into the side pin of a power bar	Yes	Injury	Unknown
	CI19011	Property damage from a fire from a failing exhaust fan	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2019	Oct	Fizroy Township	Non-occupation	No	Yes	Unknown	
2019	Oct	King City	Occupation	Yes	Yes	Miscommunication	
2019	Oct	London	Occupation	No	No	Improper procedure	
2019	Oct	Hamilton	Occupation	No	No	Unknown	
2019	Oct	Chatsworth	Occupation	Yes	Yes	Improper procedure	
2019	Oct	Toronto	Occupation	Yes	No	Unknown	
2019	Nov	Toronto	Non-occupation	No	No	Unknown	
2019	Sep	Horseshoe Valley	Occupation	Yes	No	Unknown	
2019	Sep	Vaughan	Occupation	Yes	Yes	Unknown	
2019	Sep	Tudor and Cashel	Occupation	Yes	Yes	Human error	
2019	Sep	Vaughan	Occupation	Yes	Unknown	Unknown	
2019	Sep	Kirkfield	Occupation	Yes	Yes	Improper procedure	
2019	Sep	Kirkfield	Occupation	Yes	Yes	Improper procedure	
2019	Sep	Toronto	Occupation	Yes	Yes	Unknown	
2019	Sep	Toronto	Occupation	No	No	Unknown	
2019	Aug	Ottawa	Non-occupation	Yes	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EUI19017	Property damage from a car hitting a hydro pole carrying 7.2/12.5 kV line	Yes	None	N/A
	CUI19010	Property damage from contact with an underground 8 kV primary cable while worker was performing directional boring	Yes	None	N/A
	SI19004	Worker was injured when restoring junction boxes with missing covers	Unknown	Injury	Yes
	SI20002	Worker was injured when using dispatch equipment	No	Injury	Unknown
	WUI19004	Property damage from a vacuum truck that made contact with a primary 4.8 kV line	Yes	None	N/A
	CI19009	Property damage from a skyjack making contact with 120 V secondary overhead line	Yes	None	N/A
	CF19007	Property damage from a space heater fire	Yes	None	Unknown
	CI19006	Worker was injured when skyjack boom lift made contact with 44 kV overhead line	Unknown	Injury	N/A
	CI19008	Property damage from a worker excavating two 16 kV underground primary cables, causing two fuses upstream to operate	Yes	None	N/A
	EI19015	Property damage from a dump truck that made contact with overhead primary line	Yes	None	N/A
	CI19007	Worker was electrocuted when heavy drilling equipment made contact with overhead powerlines	Unknown	Fatality	N/A
	EUI19016	Worker was electrocuted when hedge trimmer made contact with 7.2 kV overhead powerlines	Unknown	Fatality	N/A
	EUI19016	Worker was injured when hedge trimmer made contact with 7.2 kV overhead powerlines	Unknown	Injury	N/A
	CI19005	Worker was injured when tower crane made contact with 8 kV overhead powerline	Unknown	Injury	N/A
	CI19004	Worker was injured from an arc flash when overhead lines made contact with Hydro's overhead triplex's neutral	Unknown	Injury	N/A
	EI19013	Property damage from a vehicle that struck a neutral cable on a hydro pole that made contact with the primary line	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2019	Aug	Ottawa	Occupation	No	No	Improper procedure	
2019	Sep	Nepean	Occupation	Yes	Yes	Incorrect procedure	
2019	Jul	Ottawa	Occupation	Yes	Yes	Unknown	
2019	Jul	Pembroke	Occupation	Yes	No	Miscommunication	
2019	Jul	Toronto	Occupation	No	No	Improper procedure	
2019	Jul	London	Non-occupation	No	No	Arson	
2019	Jul	Barrie	Non-occupation	No	No	Improper installation	
2019	Jul	Barrie	Non-occupation	No	No	Improper installation	
2019	Jun	Trent Lakes	Occupation	Yes	Yes	Equipment failure	
2019	Jun	Toronto	Occupation	No	No	Lack of training	
2019	Jun	Ottawa	Occupation	No	No	Improper procedure	
2019	Jun	Hamilton	Occupation	No	No	Unknown	
2019	Jun	Niagara Falls	Occupation	No	No	Improper procedure	
2019	Jun	Ripley	Non-occupation	Yes	Yes	Human error	
2019	Jun	Ottawa	Occupation	Yes	Yes	Unknown	
2019	May	Stratford/Perth	Occupation	No	Yes	Equipment failure	
2019	May	Windsor	Non-occupation	Yes	Yes	Human error	
2019	May	Hamilton	Occupation	Yes	No	Improper installation	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EI19012	Property damage from an excavator making contact with underground conductor	Yes	None	N/A
	EI19014	Property damage from an excavator making contact with underground primary 120/240 V lines	Yes	None	N/A
	EI19008	Property damage from workers making contact with HV underground utility cables with a pick axe	Yes	None	N/A
	EI19010	Property damage when excavator made contact with secondary underground line	Yes	None	N/A
	CF19005	Property damage from stove top fire	Yes	None	Unknown
	WF19002	Property damage from arson	Yes	None	N/A
	CI19002	Person was injured when contact made with a fluorescent light fixture pin that did not have a bulb in place	No	Injury	Unknown
	CI19002	Person was injured when contact made with a fluorescent light fixture pin that did not have a bulb in place	No	Injury	Unknown
	EI19009	Property damage from a dump truck axle making contact with a transformer pole	Yes	None	N/A
	CI19003	Worker was electrocuted while working on an energized sign	Unknown	Fatality	Unknown
	EI19011	Worker was injured while working on an electrical distribution panel	Unknown	Injury	Unknown
	SI19003	Worker was injured when using an electrical kettle	Unknown	Injury	Unknown
	WI19006	Worker was injured from an arc flash when working on an energized switchgear	Unknown	Injury	N/A
	WUI19002	Animal was electrocuted after the elevator it was pulling made contact with overhead primary conductor	Unknown	None	N/A
	EI19007	Worker was injured when contact was made with primary line with a pump jack	Unknown	Injury	N/A
	WUI19003	Property damage from meter failure	Yes	None	No
	WUI19001	Property damage when a tree being trimmed fell onto a 16 kV overhead distribution line	Yes	None	N/A
	SI19002	Property damage when a worker cut through a 13.8 kV underground cable	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2019	May	Niagara Falls	Occupation	Yes	Yes	Human error	
2019	May	Orangeville	Non-occupation	No	No	Incorrect installation	
2019	Apr	Stouffville	Non-occupation	No	No	Incorrect installation	
2019	Apr	Brampton	Non-occupation	No	No	Animal	
2019	Apr	Sudbury	Occupation	No	No	Equipment failure	
2019	Apr	Vaughan	Non-occupation	No	No	Unknown	
2019	Apr	Townsend	Non-occupation	No	No	Incorrect installation	
2019	Apr	Rideau Lakes	Non-occupation	Yes	Yes	Human error	
2019	Apr	London	Non-occupation	No	No	Incorrect installation	
2019	Mar	Hamilton	Occupation	No	No	Improper procedure	
2019	Mar	Hamilton	Occupation	Yes	Yes	Improper procedure	
2019	Mar	Port Stanley	Non-occupation	Yes	Yes	Human error	
2019	Mar	Strathroy	Non-occupation	No	No	Human error	
2019	Feb	Brampton	Occupation	No	No	Human error	
2019	Feb	Brampton	Occupation	No	No	Act of God	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WI19005	Property damage when a worker loading a garbage bin pulled the truck forward and made contact with overhead lines	Yes	None	N/A
	CF19002	Property damage from a fire from a non-OESC complaint rooftop solar installation	Yes	None	Yes
	CF19004	Property damage from a fire from an incorrectly installed sauna with a plug in connector	Yes	None	Unknown
	SF19001	Property damage from a fire in a semi-detached dwelling where gnawed-off wire was observed	Yes	None	Unknown
	NI19001	Worker was injured from an arc flash when closing the 225 amp main disconnect switch on a ground fault panel	Unknown	Injury	Unknown
	CF19003	Property damage from a fire in home due to overheated feeder cables that appeared to lack a neutral path back to the ground	Yes	None	Unknown
	WI19003	Person was injured when coming into a contact with a chain that was connected to a non code compliant installation of lights in a metal drive shed	Unknown	Injury	Yes
	EI19006	Property damage when driver made contact with a utility pole	Yes	None	N/A
	WF19001	Property damage from a fire when a nail was observed to be attached through a wire near the ceiling joists	Yes	None	Unknown
	SI19001	Worker was injured from an arc flash from opening a 600 V panel	Yes	Injury	N/A
	WI19004	Worker was electrocuted when replacing flags and made contact with overhead powerlines	Unknown	Fatality	N/A
	"WI19002"	Property damage on a boat from contact with overhead primary lines	Yes	None	N/A
	"WI19001"	Person was injured from an arc flash when removing a cord from a receptacle and a bracelet charm slipped between the cord and receptacle	Unknown	Injury	Unknown
	CI19001	Property damage when a tape measure made contact with the energized blades in a welding lab	Yes	None	N/A
	CF19001	Property damage from a fire caused by a flood breaching into the distribution panel of a high-rise building	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2019	Feb	Kingston	Non-occupation	No	No	Unknown	
2019	Jan	Kanata	Occupation	Yes	No	Unknown	
2019	Jan	Kingston	Occupation	No	No	Overloading	
2019	Jan	Ottawa	Occupation	No	No	Unknown	
2019	Jan	Ottawa	Non-occupation	No	Yes	Unknown	
2019	Jan	Kingston	Occupation	No	Yes	N/A	
2019	Jan	Kingston	Occupation	No	Yes	N/A	
2018	Dec	Woodstock	Occupation	No	Yes	N/A	
2018	Dec	Port Rowan	Non-occupation	No	No	Unknown	
2018	Nov	Sault Ste. Marie	Non-occupation	N/A	N/A	Unknown	
2018	Nov	Leamington	Occupation	No	No	Improper procedure	
2018	Nov	Toronto	Occupation	No	No	Incorrect installation	
2018	Nov	Thamesville/ Chatham-Kent	Non-occupation	No	No	Loose connection	
2018	Unknown	Toronto	Non-occupation	No	No	Improper use	
2018	Oct	Russell	Occupation	Yes	No	Human error	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EF19003	Property damage from an exploding halide lamp	Yes	None	Unknown
	EI19004	Worker was injured when excavating at a residence and made contact with live service conductors	Unknown	Injury	N/A
	EI19003	Property damage from when a worker was overloading a branch circuit repeatedly causing spray foam insulation to blacken	Yes	None	Unknown
	EF19002	Property damage from a fire occurring at the phase quest rotary phase converter equipment junction box	Yes	None	N/A
	EF19001	Property damage when directional boring caused arcing and sparking in a meter base	Yes	None	No
	EI19001	Property damage when pick up truck made contact with transformer pole	Yes	None	N/A
	EI19002	Property damage when an aluminum residential service conduit and internal copper wires were cut	Yes	None	N/A
	WUI18002	Property damage from arcing when an excavation pulled adjacent energized conductors free from the meter base	Yes	None	N/A
	WF18013	Property damage from a fire when a baseboard heater ignited nearby combustibles	Yes	None	Unknown
	NF18004	Property damage from an electrical fire, although scene was compromised	Yes	None	Unknown
	WI18010	Worker was electrocuted while working live on an unapproved electrical cabinet	Yes	Fatality	Yes
	CI18010	Worker was injured from contact with equipment that was near an energized utility transformer	Unknown	Injury	N/A
	WF18006	Property damage from a fire due to a loose incoming neutral at the main panel, causing arcing when metal overhead stack came into contact with metal roof flashing	Yes	None	Unknown
	SF18002	Property damage when a mixer from a different country was plugged into the receptacle	Yes	None	Yes
	EI18009	Property damage when dump truck made contact with 4.8 kV utility line	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2018	Oct	North York	Occupation	No	No	Improper procedure	
2018	Oct	London	Non-occupation	Yes	No	Human error	
2018	Oct	Toronto	Occupation	No	No	Incorrect installation	
2018	Oct	Tiverton	Occupation	No	No	N/A	
2018	Oct	Caledon East	Non-occupation	No	No	Unknown	
2018	Oct	London	Non-occupation	No	No	Unknown	
2018	Oct	Selwyn	Non-occupation	No	No	Animal	
2018	Oct	Mississauga	Non-occupation	Yes	Yes	Equipment failure	
2018	Sep	Dunrobin	Non-occupation	No	No	Act of God	
2018	Sep	Brantford	Occupation	No	No	Incorrect installation	
2018	Sep	Mississauga	Non-occupation	No	No	Equipment failure	
2018	Sep	Belleville	Non-occupation	No	No	Equipment failure	
2018	Sep	Peterborough	Non-occupation	Yes	No	Equipment failure	
2018	Sep	Strathroy	Occupation	No	No	Human error	
2018	Aug	Ottawa	Occupation	No	No	Incorrect installation	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CI18009	An electrical worker was injured from an arc flash when performing an unauthorized 200 Amp service installation into an energized 800 Amp distribution centre	Yes	Injury	N/A
	WF18010	Property damage from a fire when the service equipment mast had a square opening cut into it and illegal connections were made	Yes	None	N/A
	SI18001	Property damage when cam lock hot and neutral were reversed on last tee tower on the run, feeding two trucks	Yes	None	Unknown
	NI18002	Worker was injured when welder was performing hot work at a powerplant	Unknown	Injury	N/A
	CF18004	Property damage from arcing when 4160 V, 1200 Amp cell failed	Yes	None	N/A
	WF18009	Property damage from a fire, originating from living room receptacle	Yes	None	Unknown
	EF18005	Property damage from a fire from animal interaction	Yes	None	Unknown
	CUI18002	Property damage from damaged gang operated switch that had a catastrophic failure when switched	Yes	None	N/A
	EI18007	Property damage from cutting into a live wire	Yes	None	Unknown
	SF18001	Property damage from a fire from an incorrectly installed retrofitted luminaire	Yes	None	Unknown
	CI18003	Property damage from an explosion that occurred in the fuel sump pit at a gasoline station that resulted in the sump pit covers blowing off	Yes	None	N/A
	EF18004	Property damage from equipment failure of a heat recovery ventilation unit	Yes	None	N/A
	EI18008	Property damage from arc blast from equipment failure between LDC transformer and main distribution switchboard	Yes	None	N/A
	WI18009	Property damage from directional boring and making contact with 2400 V underground line	Yes	None	N/A
	EI18010	Worker was injured when testing an inoperative gas pump, which was found to be energized, as it was in the bonding path	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2018	Aug	Thunder Bay	Non-occupation	No	No	Unknown	
2018	Aug	Markstay Warren	Non-occupation	No	No	Defective equipment	
2018	Aug	Warkworth, Trent Hills	Non-occupation	Yes	Yes	Lack of awareness of hazard	
2018	Aug	Selwyn	Occupation	Yes	Yes	N/A	
2018	Aug	Toronto	Non-occupation	No	No	Lack of maintenance	
2018	Aug	Toronto	Occupation	No	Yes	Unknown	
2018	Aug	Peterborough	Occupation	Yes	Yes	Unknown	
2018	Sep	Frankford	Non-occupation	No	Yes	N/A	
2018	Aug	Toronto	Occupation	No	No	Miscommunication	
2018	Jul	Milton	Occupation	No	No	Defective equipment	
2018	Jul	Trenton	Public place	Yes	Yes	N/A	
2018	Jul	Hamilton	Occupation	No	No	Improper procedure	
2018	Jul	Ottawa	Non-occupation	Yes	Yes	Human error	
2018	Jul	Ottawa	Non-occupation	Yes	No	Human error	
2018	Jul	Brant County	Non-occupation	No	No	Damaged equipment	
2018	Jun	Kitchener	Occupation	No	No	Faulty equipment	
2018	Jun	Kitchener	Occupation	No	No	Faulty equipment	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	NF18003	Property damage from a fire from a halogen luminaire	Yes	None	Unknown
	NF18002	Property damage from a fire from the main compartment of a 200 Amp service	Yes	None	Unknown
	EUI18007	Person was electrocuted when making contact with powerline	Unknown	Fatality	N/A
	EUI18006	Property damage from contact with underground 7200 V cable	Yes	None	N/A
	CF18003	Property damage when electrical failure caused multiple fires on various levels of a building	Yes	None	Unknown
	CF18005	Property damage from fault that occurred from the primary side of the main breaker in one of the switchboards	Yes	None	N/A
	EI19005	Property damage from a broken 7200 V distribution line	Yes	None	N/A
	EI18004	Property damage from allegedly multiple overvoltage instances	Yes	None	N/A
	CI18002	Worker was injured from contact with a large teck cable lying on the ground	Unknown	Injury	N/A
	WI18008	Electrical worker was injured from arc flash when turning on a 30 A 600 V breaker	Unknown	Injury	N/A
	EUI18005	Person was injured after contact with a downed power line	Yes	Injury	N/A
	WI18006	Electrical worker was injured while working on an energized low voltage transformer	Yes	Injury	N/A
	EF18003	Property damage from a fire from homeowner downing trees onto powerlines	Yes	None	N/A
	EI18002	Property damage from a truck unintentionally hooking the service overhead conductors, pulling the service mast off the house	Yes	None	N/A
	WF18008	Property damage from arcing occurring behind aluminum siding and under roof shingles	Yes	None	Unknown
	WI18004	Worker was injured when he cut the water pipe feeding into a house	Unknown	Injury	N/A
	WI18004	Worker was injured when he cut the water pipe feeding into a house	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2018	Jun	Kitchener	Occupation	No	No	Faulty equipment	
2018	Jun	Port Colborne	Occupation	No	Yes	N/A	
2018	Unknown	Brampton	Occupation	Yes	Yes	N/A	
2018	May	Mississauga	Occupation	No	No	Loose connection	
2018	May	Seaforth	Occupation	No	Yes	Equipment failure	
2018	May	Toronto	Occupation	No	No	Human error	
2018	May	Brampton	Non-occupation	No	Yes	Defective equipment	
2018	May	Toronto	Occupation	No	No	Human error	
2018	May	Camlachie	Non-occupation	No	No	Unknown	
2018	May	Seaforth	Occupation	No	Yes	Equipment failure	
2018	May	Frankford	Non-occupation	No	Yes	N/A	
2018	Apr	London	Non-occupation	No	N/A	Equipment failure	
2018	Apr	Timmins	Occupation	Yes	Yes	N/A	
2018	Mar	Port Dover	Occupation	No	No	N/A	
2018	Mar	Bradford	Non-occupation	No	No	Equipment failure	
2018	Mar	Kapuskasing	Non-occupation	No	No	Unknown	
2018	Mar	Toronto	Occupation	Yes	Yes	Human error	
2018	Mar	London	Non-occupation	No	No	Human error	
2018	Feb	Ajax	Occupation	No	No	Human error	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WI18004	Worker was injured when he cut the water pipe feeding into a house	Unknown	Injury	N/A
	WI18007	Worker was injured while inspecting a 27.6 kV outdoor switch	Unknown	Injury	N/A
	CUI18003	Property damage from contact with an energized 13.8 kV cable	Yes	None	N/A
	CF18001	Property damage from loose connections in a generator	Yes	None	N/A
	WF18004	Property damage from meter failure	Yes	None	No
	CI18004	Electrical worker was injured from arc flash when connecting a 600 V teck cable to the controller	Yes	Injury	N/A
	CF18002	Property damage from fire when left line side lug broke off from meter base	Yes	None	N/A
	CI18005	Worker was injured when inserting a screwdriver into an energized motor contractor	Unknown	Injury	N/A
	WF18002	Property damage from fire originating from main electrical panel	Yes	None	Unknown
	WF18005	Property damage from arcing from meter failure	Yes	None	No
	EI18003	Property damage from alleged overvoltage incidents	Yes	None	N/A
	WF18003	Property damage from fire from light fixture	Yes	None	Unknown
	NI18001	Property damage from truck making contact with hydro pole	Yes	None	N/A
	WI18003	Property damage from main breaker failure	Yes	None	Unknown
	CF18006	Property damage from meter base fire	Yes	None	Unknown
	NF18001	Property damage from fire from electrical panels and wiring	Yes	None	Unknown
	CI18006	Near miss when crane came into contact with 13.8 kV high voltage line	Yes	None	N/A
	WI18002	Person was injured when working on a homemade fractal wood burning machine	Unknown	Injury	Yes
	EI18001	Worker was electrocuted when making contact with live wiring during light installation	Unknown	Fatality	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2018	Feb	Ottawa	Occupation	No	No	Unknown	
2018	Feb	Toronto	Occupation	Yes	No	Human error	
2018	Feb	Toronto	Occupation	No	No	Defective equipment	
2018	Feb	Petrolia	Occupation	Yes	Yes	Human error	
2018	Feb	Niagara Falls	Non-occupation	No	No	Misuse	
2018	Feb	Toronto	Public place	Yes	Yes	N/A	
2018	Jan	London	Occupation	No	No	Human error	
2018	Jan	London	Occupation	No	No	Human error	
2018	Jan	London	Occupation	No	No	Human error	
2018	Jan	London	Non-occupation	No	No	N/A	
2018	Jan	Newmarket	Non-occupation	No	No	Unknown	
2018	Jan	Toronto	Occupation	No	No	Human error	
2018	Jan	Ottawa	Occupation	No	No	Misuse	
2018	Jan	Toronto	Public place	Yes	Yes	N/A	
2018	Jan	Brockville	Non-occupation	No	Yes	Equipment failure	
2017	Dec	Whitby	Occupation	No	No	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EF18002	Property damage from failure of a distribution panel board after installation	Yes	None	Unknown
	CI18007	Worker was injured from contact with 27.6 kV overhead line when driving a truck	Unknown	Injury	N/A
	CI18008	Worker was injured when the electrical disconnect that was shut off had a catastrophic failure (explosion)	Yes	Injury	N/A
	WUI18001	Near miss when worker tried to maneuver a man lift that made contact with 115 kV transmission line	No	None	N/A
	SF18003	Property damage from fire originating from an internal failure of an HVAC unit	Yes	None	N/A
	CUI18001	Animal was injured from a downed utility wire	Unknown	None	N/A
	SI18002	Electrical worker was injured from an arc flash after installing a 400 Amp disconnect in a 1600 Amp, 600 V switchboard	Unknown	Injury	N/A
	SI18002	Electrical worker was injured from an arc flash after installing a 400 amp disconnect in a 1600 amp, 600 V switchboard	Unknown	Injury	N/A
	SI18002	Electrical worker was injured from an arc flash after installing a 400 amp disconnect in a 1600 amp, 600 V switchboard	Unknown	Injury	N/A
	WF18001	Property damage from fire in a home with knob and tube wiring	Yes	None	Unknown
	CF18007	Property damage from a fire	Yes	None	Unknown
	CI18001	Worker was injured from a flash burn when testing a 30 A 600 V disconnect switch	Yes	None	N/A
	EF18001	Property damage from a fire originating from the break room with a severely damaged powerbar connecting two extension cords under floor mats	Yes	None	Unknown
	CUI18001	Person was injured from a downed utility wire	Unknown	Injury	N/A
	EF18006	Property damage from a fire from a meter	Yes	None	No
	EA17011	Worker was injured when removing fuses from a live bucket	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2017	Dec	Toronto	Occupation	No	No	Improper procedure	
2017	Dec	Nairn Centre	Occupation	No	No	Equipment failure	
2017	Dec	Sault Ste. Marie	Non-occupation	No	Yes	Unknown	
2017	Dec	Ottawa	Non-occupation	No	No	Unknown	
2017	Nov	Sudbury	Occupation	No	No	Defective equipment	
2017	Nov	Petrolia	Non-occupation	Yes	No	Animal	
2017	Nov	Thames Centre	Occupation	No	No	Unknown	
2017	Oct	Wallaceburg	Non-occupation	Yes	Yes	Damaged equipment	
2017	Oct	Quinte West	Non-occupation	No	No	Unknown	
2017	Oct	Hamilton	Non-occupation	No	No	Unknown	
2017	Oct	Toronto	Non-occupation	Yes	No	Act of God	
2017	Oct	Plympton-Wyoming	Occupation	Yes	No	N/A	
2017	Sep	Toronto	Non-occupation	No	Yes	Misadventure	
2017	Sep	Ottawa	Non-occupation	No	No	Unknown	
2017	Sep	Vaughan	Non-occupation	No	No	Unknown	
2017	Sep	Peterborough	Occupation	Yes	Yes	Human error	
2017	Sep	Kanata	Non-occupation	No	No	Equipment failure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CI17009	Worker was injured from arc flash when working inside a switchboard cell	Yes	Injury	N/A
	NF18005	Property damage from arc flash from equipment failure of MCC	Yes	None	N/A
	NF17003	Property damage from a fire from a meter base	Yes	None	No
	EF17015	Property damage from fire originating from wiring between the joists	Yes	None	Unknown
	NI17005	Worker was injured when working on a light tower	Unknown	Fatality	Yes
	WI17005	Property damage from a fault due to animal contact with conductor insulation	Yes	None	N/A
	WF17004	Property damage from fire originating from connection between the heater and receptacle of recreation hall ceiling	Yes	None	Unknown
	WUI17006	Person was injured from arc flash while working on the roof when overhead secondary line made contact with metal drop edge of roof	Yes	Injury	N/A
	EF17014	Property damage from fire originating from receptacle	Yes	None	Unknown
	WF17003	Property damage from fire at main disconnect switch	Yes	None	N/A
	CF17005	Property damage from fire when a fallen neutral conductor pulled apart at overhead, causing the conductor to overheat	Yes	None	N/A
	WI17006	Worker was injured when the wind blew the boom truck's cable into overhead primary lines	Unknown	Injury	N/A
	CUI17001	Person was electrocuted when stealing copper from a substation	Unknown	Fatality	N/A
	EF17012	Property damage from fire originating from the living room of a building	Yes	Injury	Unknown
	CF17004	Property damage from fire from a smoldering and melting receptacle	Yes	None	Unknown
	EU17007	Property damage from contact with 120/208 V overhead secondary line by dump truck	Yes	None	N/A
	EF17011	Property damage from a fire originating from the HRV	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2017	Sep	Brampton	Non-occupation	Yes	No	Unknown	
2017	Aug	Peterborough	Non-occupation	No	No	Unknown	
2017	Aug	Mississauga	Non-occupation	No	No	Improper installation	
2017	Aug	Brampton	Occupation	No	No	Unknown	
2017	Aug	Kintore	Non-occupation	No	Yes	Suicide	
2017	Aug	Petrolia	Occupation	Yes	Yes	Unknown	
2017	Aug	Brockville	Occupation	No	No	Unknown	
2017	Jul	Highlands East	Non-occupation	Yes	Yes	Unknown	
2017	Jul	Ottawa	Occupation	No	No	Human error	
2017	Jul	Trenton	Occupation	No	No	Improper procedure	
2017	Unknown	South Frontenac	Occupation	Yes	No	N/A	
2017	Jul	Thunder Bay	Occupation	No	No	Unknown	
2017	Jul	Peterborough	Occupation	Yes	Yes	Unknown	
2017	Jun	Georgian Bay	Occupation	No	No	Aging	
2017	Jun	Georgian Bay	Occupation	No	No	Aging	
2017	Jun	Mitchell/West Perth	Occupation	No	No	Human error	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CI17008	Person was injured when trimming tree limbs when contact was made with primary lines	Unknown	Injury	N/A
	EF17013	Property damage from fire originating from old air conditioner	Yes	None	Unknown
	CF17006	Property damage from fire where an 8/3 NMSC was found on the ground between a house and garage	Yes	None	Unknown
	CI17007	Electrical worker was injured from arc flash when working with a panelboard on a ladder	Yes	None	N/A
	WUI17005	Person was electrocuted by suicide by making contact with electrical transformer	Unknown	Fatality	N/A
	WUI17004	Property damage from contact between a tractor and transmission equipment/line	Yes	None	N/A
	EF17009	Property damage from fire while removing and changing fluorescent tubes of a light fixture	Yes	None	Unknown
	EU17006	Property damage from a downed tree striking a single phase primary line	Yes	None	N/A
	EA17008	Property damage when worker contacted electrical wires while cutting concrete floor	Yes	None	N/A
	EA17010	Worker was injured from arc flash when making contact with energized electrical parts in electrical room	Unknown	Injury	N/A
	EUI17004	Property damage from contact between excavator and secondary underground conduit	Yes	None	N/A
	NI17004	Property damage from contact between jackhammer and 150 A panel feeder	Yes	None	Unknown
	EUI17008	Worker was electrocuted when contact was made between vehicle bucket and overhead high voltage lines	Unknown	Fatality	N/A
	CA17006	Person was injured when entering the water after resetting two breakers at the main panel for the dock	Unknown	Injury	N/A
	CA17006	Person was injured when entering the water after resetting two breakers at the main panel for the dock	Unknown	Injury	N/A
	WI17002	Electrical worker was injured when tying new conductors in existing conductors in the attic of a steel structure building	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2017	Jun	New Tecumseth	Occupation	No	No	Improper installation	
2017	Jun	Amaranth	Non-occupation	Yes	Yes	Damaged equipment	
2017	May	Dysart and Others	Public place	Yes	No	Human error	
2017	May	Toronto	Occupation	No	Yes	Improper procedure	
2017	May	Toronto	Occupation	N/A	N/A	Equipment failure	
2017	May	Ottawa	Non-occupation	N/A	N/A	Lack of maintenance	
2017	May	Fergus	Occupation	No	No	Incorrect procedure	
2017	May	Kingston	Non-occupation	No	No	Improper installation	
2017	May	Nepean	Non-occupation	Yes	Yes	Human error	
2017	May	Brantford	Occupation	No	No	Lack of training	
2017	May	Vaughan	Occupation	No	No	Human error	
2017	May	Greater Napanee	Public place	No	No	Unknown	
2017	Apr	Peterborough	Non-occupation	Yes	Yes	Human error	
2017	Apr	Haldimand	Occupation	No	No	Unknown	
2017	Mar	Ottawa	Occupation	Yes	Unknown	N/A	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CA17003	Worker was injured from arc flash when working on production equipment and metal material slipped between a 600 V/30 A twist lock cord drop	Unknown	Injury	Unknown
	WUI17003	Near miss from contact between lawn mower and dangled broken primary neutral ACSR	Yes	None	N/A
	EU17003	Property damage from boom making contact with overhead neutral conductor	Yes	None	N/A
	CUA17005	Property damage when utility inadvertently re-energized redundant feeder that was partially removed	Yes	None	N/A
	CF17003	Property damage from fire from overheated disconnect switch for PV system	Yes	None	Unknown
	EA17003	Person was injured when standing between metal barricade fencing that encompassed two separate amusement rides	Unknown	Injury	N/A
	SI17002	Worker was injured when troubleshooting energized production testing equipment	Unknown	Injury	Unknown
	EF17008	Property damage from fire originating between kitchen floor and basement ceiling near a joist	Yes	None	Unknown
	EA17009	Property damage from contact between underground secondary line and digging equipment	Yes	None	N/A
	WI17004	Worker was injured from arc flash when installing new fuses	Yes	Injury	N/A
	CA17004	Electrical worker was injured from arc flash when making contact with different phases with multimeter probe	Yes	Injury	N/A
	EF17006	Property damage from fire originating from travel trailer in campground	Yes	None	Unknown
	EA17007	Person was electrocuted from contact with primary overhead line while tree trimming	Yes	Fatality	N/A
	WF17002	Property damage from fire originating from electric heater or improper staling on conductors in a house under construction	Yes	None	Unknown
	EA17002	Property damage from contact between overhead lines and boom	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2017	Mar	Kingston	Occupation	No	N/A	N/A	
2017	Mar	Oshawa	Occupation	No	No	Faulty equipment	
2017	Mar	Ottawa	Occupation	No	No	Improper procedure	
2017	Mar	Toronto	Occupation	No	No	Defective equipment	
2017	Mar	Kingston	Occupation	No	No	Unknown	
2017	Mar	Thorndale	Occupation	No	No	Equipment failure	
2017	Mar	Thunder Bay	Non-occupation	No	No	Incorrect installation	
2017	Feb	Ottawa	Occupation	No	No	Unknown	
2017	Feb	Wallaceburg	Occupation	Yes	Yes	N/A	
2017	Feb	Ottawa	Non-occupation	No	No	Unknown	
2017	Feb	Uxbridge	Non-occupation	N/A	N/A	Human error	
2017	Feb	St. Catharines	Occupation	No		Unknown	
2017	Jan	Mississauga	Occupation	No	No	Improper installation	
2017	Jan	Sarnia	Occupation	Yes		Human error	
2017	Jan	Ottawa	Non-occupation	No	No	Unknown	
2016	Dec	Guelph	Occupation	No	No	N/A	
2016	Dec	Toronto	Fire	No	No	Equipment failure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EA17001	Worker was injured when moving a powerpack for a saw	Unknown	Injury	Unknown
	SF17001	Property damage from fire when MCC capacitor ruptured	Yes	None	N/A
	EA17006	Electrical worker was injured when testing a 600 V MCC cabinet with a multimeter	Unknown	Injury	N/A
	CA17002	Property damage from electrical worker pushing trip button on 5000 Amp breaker and the breaker failed	Yes	None	N/A
	EF17002	Property damage from fire from electrical panel in restaurant	Yes	None	N/A
	WI17001	Property damage from fault of a distribution panel at 250 A breaker location	Yes	None	N/A
	NF17002	Property damage from fire originating from basement ceiling (main floor joists)	Yes	None	Unknown
	EA17004	Electrical worker was injured when changing faulty breakers in distribution panel	Yes	Injury	Unknown
	WUI17002	Property damage from contact between forklift and utility pole	Yes	None	N/A
	EF17004	Property damage from fire originating from the rear level of a detached dwelling	Yes	None	Unknown
	EA17005	Person was electrocuted when operating a homemade Lichtenberg device	Unknown	Fatality	Yes
	SI17001	Worker was injured when contacting energized equipment frame	Unknown	Injury	N/A
	CA17001	Electrical worker was injured when working on outdoor block heater receptacles	Unknown	Injury	Unknown
	WUI17001	Property damage from demolition where material fell in the wrong direction and made contact with 27.6 kV lines	Yes	None	N/A
	EF17010	Property damage from fire originating from receptacle behind a dresser secured to the cinder block wall with wood strapping	Yes	None	Unknown
	SI16005	Property damage when a 13.9 kV cable was cut	Yes	None	N/A
	CF16003	Worker was injured by fire originating from laser cutting machine	Yes	Injury	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	Dec	Ajax	Occupation	No	No	Unknown	
2016	Dec	Sudbury	Fire	No	No	Unknown	
2016	Dec	Ottawa	Fire	No	No	Over fusing	
2016	Dec	Dysart and Others	Occupation	Unknown	Unknown	Unknown	
2016	Nov	St. Catharines	Fire	No	No	Defective equipment	
2016	Nov	Dysart and Others	Non-occupation	Yes	Yes	Improper procedure	
2016	Nov	Vaughan	Occupation	No	No	Improper procedure	
2016	Nov	King	Fire	No	No	Animal	
2016	Nov	Kingston	Fire	No	No	Unknown	
2016	Nov	Woodstock	Occupation	Yes	Yes	Miscommunication	
2016	Nov	Toronto	Occupation	No	No	Improper procedure	
2016	Nov	Ottawa	Occupation	Yes	Yes	Improper procedure	
2016	Nov	Ottawa	Occupation	No	No	Unknown	
2016	Nov	Oshawa	Non-occupation	No	No	Faulty equipment	
2016	Oct	New Tecumseth	Non-occupation	No	No	Unknown	
2016	Oct	Dresden	Occupation	No	No	Improper procedure	
2016	Oct	Bancroft	Occupation	Yes	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EI16026	Worker was injured from arc flash when working on energized switchgear	Yes	Injury	N/A
	NF16007	Property damage from fire originating from living room of a house	Yes	Fatality	Unknown
	EF16029	Property damage from fire originating from electrical wiring in the basement of a house	Yes	None	Unknown
	EI15010	Worker was injured from contact between dam gate and steel chocker	No	Injury	N/A
	WF16016	Property damage from fire originating from short circuit in receptacle	Yes	None	Unknown
	EUI16027	Property damage from contact between tree cutting and overhead powerline	Yes	None	N/A
	CA16015	Near miss when electrical worker made contact with energized buses in main switchgear	No	None	N/A
	CF16002	Property damage from fire originating from PV module of rooftop solar installation due to squirrel nesting	Yes	None	Unknown
	EF16030	Property damage from fire originating from bedroom receptacle	Yes	None	Unknown
	WUI16006	Property damage from contact between excavator and underground 16 kV cable	Yes	None	N/A
	CA16013	Worker was injured when drilling in the floor of an elevator and made contact with energized conductor	Unknown	Injury	N/A
	EUI16023	Near miss when worker made contact between utility pole and backhoe	Yes	None	N/A
	EI16025	Worker was injured from arc flash when installing a 400 A fuse into a disconnect switch	Yes	Injury	N/A
	SF16001	Property damage from fire where cabinet was cut away, exposing two receptacles mounted with aftermarket receptacle expansion device	Yes	None	N/A
	NI16008	Property damage from arc flash when a 600 V 200 A failed	Yes	None	N/A
	SI16001	Electrical worker was injured when resetting an overload for a motor starter in an MCC	Yes	Injury	N/A
	EUI16029	Worker was injured when contact was made between the truck and utility pole	Yes	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	Oct	St. Catharines	Occupation	No	No	Improper use	
2016	Sep	Windsor	Fire	No	No	Improper installation	
2016	Sep	Waterloo	Fire	No	No	Mechanical failure	
2016	Sep	Aurora	Occupation	No	Unknown	Unknown	
2016	Sep	Windsor	Occupation	No	No	Improper procedure	
2016	Aug	Kincardine	Non-occupation	No	No	Unknown	
2016	Aug	Toronto	Occupation	No	No	Improper installation	
2016	Aug	Port Credit	Occupation	Yes	Yes	Improper use	
2016	Aug	Elmira	Occupation	No	No	Unknown	
2016	Aug	Espanola	Occupation	Yes	Yes	Improper use	
2016	Aug	Espanola	Occupation	Yes	Yes	Improper use	
2016	Aug	Ingersoll	Occupation	No	Yes	Improper installation	
2016	Aug	Sault Ste. Marie	Fire	No	No	Improper use	
2016	Aug	Mississauga	Occupation	No	No	Improper procedure	
2016	Aug	Espanola	Occupation	Yes	Yes	Improper use	
2016	Aug	Thessalon	Occupation	No	No	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	SI16004	Electrical worker was injured when turning on a disconnect switch which led to a circuit powering a stud welder. The plug for the welder had been modified to fit a different configuration receptacle	Yes	Injury	N/A
	SF16002	Property damage from fire originating from electrical room where fuses were not tightened in fuse holders of disconnect switch feeding solar panels, causing overheating	Yes	None	N/A
	WF16014	Property damage from fire in electrical room where a fault occurred at hydro pole outside of the residence	Yes	None	N/A
	CA16016	Person was injured when repairing a capacitor bank	Unknown	Injury	N/A
	WI16017	Electrical worker was injured by arc flash when removing an old energized feeder	Yes	Injury	N/A
	WI16016	Person was injured when using an electrical vehicle charger	No	Injury	Unknown
	CA16010	Worker was electrocuted when changing fluorescent bulbs; a combination of equipment failure and improper bonding resulted in many energized conductive parts in the room	No	Fatality	Unknown
	CUA16011	Worker was injured from contact between boom and overhead 27.6 kV power-line	Unknown	Injury	N/A
	WI16010	Worker was electrocuted although source of electricity remains unclear	Unknown	Fatality	Unknown
	NI16005	Worker was injured from contact between pump truck boom and 115 kV powerline	Unknown	Injury	N/A
	NI16005	Worker was injured from contact between pump truck boom and 115 kV powerline	Unknown	Injury	N/A
	WUI16004	Near miss when cable became entangled with HV equipment and tripped a fuse	Yes	None	N/A
	NF16005	Property damage from fire from extension cord	Yes	None	Unknown
	CA16014	Worker was injured when contact made between fish tape and energized circuit	No	Injury	N/A
	NI16005	Worker was injured from contact between 115 kV powerline and pump truck boom	Yes	Injury	N/A
	NI16006	Electrical worker was injured from arc flash when replacing a burnt fuse in a disconnect switch	Yes	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	Aug	Strathroy	Occupation	Yes	Yes	Improper procedure	
2016	Aug	Vaughan	Occupation	No	No	Improper procedure	
2016	Jul	Fort Erie	Fire	No	Yes	Unknown	
2016	Jul	Sarnia	Occupation	Yes	Yes	Improper procedure	
2016	Jul	Mississauga	Occupation	No	No	Improper procedure	
2016	Jul	Tecumseh	Occupation	No	No	Poor design	
2016	Jul	Ottawa	Fire	No	No	Unknown	
2016	Jul	Owen Sound	Fire	No	No	Unknown	
2016	Jun	Toronto	Occupation	No	No	Improper procedure	
2016	Jun	Copper Cliff	Occupation	No	No	Improper procedure	
2016	Jun	Windsor	Occupation	No	No	Misuse	
2016	Jun	Windsor	Occupation	No	No	Misuse	
2016	Jun	Windsor	Occupation	No	No	Misuse	
2016	Jun	Kingston	Fire	No	No	Unknown	
2016	Jun	Ottawa	Occupation	Yes	No	Unknown	
2016	Jun	Napanee	Occupation	Yes	Yes	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WUI16003	Electrical worker was injured from contact between overhead powerline and drop lead	Unknown	Injury	N/A
	SA16002	Worker was injured from arc flash when changing fuses from an energized 600 V MCC	Yes	Injury	N/A
	WF16012	Property damage from fire originating from electrical distribution panel	Yes	None	N/A
	WUI16005	Property damage from contact with dump truck and 5 kV overhead primary line	Yes	None	N/A
	SA16003	Near miss from contact between jack hammer and power conduit below	Yes	None	Unknown
	WI16008	Worker was injured when power conductor of crane came loose and contacted a bonded rail, creating a current path	No	Injury	N/A
	EF16023	Property damage from fire originating from a kitchen toaster	Yes	None	Unknown
	WF16011	Property damage from fire originating from exhaust fan of lower level bathroom	Yes	None	Unknown
	CA16005	Electrical worker was injured from arc flash when removing equipment from a store	Unknown	Injury	Unknown
	NI16007	Electrical worker was injured from arc flash when removing control wires from an energized MCC bucket	Unknown	Injury	N/A
	WI16009	Worker was injured from arc flash when misusing a testing device on an energized 600 V switchgear	Unknown	Injury	N/A
	WI16009	Worker was injured from arc flash when misusing a testing device on an energized 600 V switchgear	Unknown	Injury	N/A
	WI16009	Worker was injured from arc flash when misusing a testing device on an energized 600 V switchgear	Unknown	Injury	N/A
	EF16025	Property damage from fire originating from bathroom ceiling exhaust fan	Yes	None	Unknown
	EUI16024	Property damage from contact between truck and secondary overhead 240 V conductors	Yes	None	N/A
	EUI16022	Property damage from contact between dump truck and communication wires, which pulled down an attached hydro pole	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	May	Ottawa	Occupation	Yes	Yes	Improper procedure	
2016	May	Windsor	Non-occupation	Yes	Yes	Unknown	
2016	May	Toronto	Occupation	No	No	Human error	
2016	May	Quinte West	Fire	No	No	Improper installation	
2016	May	Thunder Bay	Fire	No	No	Improper installation	
2016	May	Kingston	Fire	No	Unknown	Unknown	
2016	May	Toronto	Occupation	No	Unknown	Unknown	
2016	May	Kingston	Occupation	Yes	No	Lack of awareness of hazard	
2016	May	Kingston	Occupation	Yes	No	Lack of awareness of hazard	
2016	May	St. Clair Township	Occupation	Yes	Yes	Human error	
2016	May	Kingston	Occupation	Yes	No	Lack of awareness of hazard	
2016	Apr	Toronto	Occupation	Yes	Yes	Unknown	
2016	Apr	Ottawa	Fire	Yes	No	Miscommunication	
2016	Apr	St. Clair Township	Occupation	No	No	Incorrect procedure	
2016	Apr	Mississauga	Non-occupation	Yes	Yes	Improper procedure	
2016	Apr	Ancaster	Occupation	No	No	Lack of awareness of hazard	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EI16018	Property damage from contact between excavator and underground 4160 V line	Yes	None	N/A
	WUI16001	Property damage from contact between tree fall and 16 kV primary line	Yes	None	N/A
	CA16007	Property damage from arc flash when de-energized disconnect switch made contact with energized line side	Yes	None	N/A
	EF16024	Property damage from fire originating from electrical panel in garage	Yes	None	Unknown
	NF16002	Property damage from fire originating from crawl space where a 240 V BX cable fed a bathroom electrical heater	Yes	None	Unknown
	EF16017	Property damage from fire originating from meter base	Yes	None	No
	CA16006	Property damage from exploding meter base	Yes	None	No
	EI16015	Worker was injured when on a scaffold; service entrance conductors were mislabelled during initial service connection	No	Injury	N/A
	EI16015	Worker was injured when on a scaffold; service entrance conductors were mislabelled during initial service connection	No	Injury	N/A
	WUI16002	Property damage when tractor made contact with guy wire and snapped overhead 13.8 kV powerlines	Yes	None	N/A
	EI16015	Worker was injured when on a scaffold; service entrance conductors were mislabelled during initial service connection	No	Injury	N/A
	CA16008	Near miss from contact between shovel and underground 240 V line	Yes	None	N/A
	EF16014	Property damage from fire from contact between excavator and underground cables	Yes	None	N/A
	WI16007	Property damage from arc flash when using a grounding and testing device on a 4160 V disconnect	Yes	None	N/A
	CUA16004	Person was injured from contact when snow shovel came into contact with 4 kV primary line	No	Injury	N/A
	WI16005	Near miss from arc flash when replacing a 200 A panel; one line was energized	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	Apr	Azilda	Occupation	No	No	Improper procedure	
2016	Apr	Brantford	Unknown	Yes	Yes	Improper installation	
2016	Apr	Ottawa	Non-occupation	No	No	Faulty equipment	
2016	Mar	Guelph	Fire	No	No	Misuse	
2016	Mar	Toronto	Occupation	No	No	Defective equipment	
2016	Mar	Belleville	Fire	No	No	Unknown	
2016	Mar	North Bay	Occupation	No	No	Unknown	
2016	Mar	Hamilton	Occupation	No	No	Defective equipment	
2016	Dec	Minto	Fire	No	No	Unknown	
2016	Mar	Smiths Falls	Fire	No	No	Aging	
2016	Mar	Peterborough	Occupation	No	No	Improper procedure	
2016	Nov	Guelph	Occupation	Yes	No	Human error	
2016	Mar	Mississauga	Fire	No	No	Animal	
2016	Mar	Bath	Occupation	No	No	Miscommunication	
2016	Mar	Collingwood	Occupation	No	No	Improper procedure	
2016	Feb	Hamilton	Occupation	No	No	Improper procedure	
2016	Feb	Napanee	Occupation	No	No	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	NI16001	Worker was injured from arc flash from contact between energized disconnect switch and screwdriver	Unknown	Injury	N/A
	WI16004	Property damage from a 4 kV underground primary cable that faulted	Yes	None	N/A
	EI16021	Person was injured from contact with an energized oven door	No	Injury	Unknown
	WF16005	Property damage from fire originating from bedroom receptacle	Yes	None	Unknown
	CA16003	Worker was injured when changing 60 A fuse in a bus duct mounted switch	Yes	Injury	N/A
	EF16013	Property damage from fire originating from wiring above the panel in the basement of a house	Yes	None	Unknown
	NF16001	Property damage from fire originating from electrical room panelboard	Yes	None	Unknown
	WI16002	Electrical worker was electrocuted from contact with energized equipment while replacing a motor	Yes	Fatality	N/A
	WF16017	Property damage from fire originating from belt room	Yes	None	Unknown
	EF16009	Property damage from fire originating from loose lugs in electrical panel in electrical room	Yes	None	N/A
	EI16028	Electrical worker was injured when resetting the overload on a 600 kV starter and made contact with an energized lug	Unknown	Injury	N/A
	SI16005	Property damage from cutting into a live 13.8 kV cable in generator building	Yes	None	N/A
	CF16001	Property damage from fire from PV generator fire due to animal contact	Yes	None	Unknown
	EI16011	Worker was injured when cleaning insulators on the secondary side of a transformer for a precipitator	No	Injury	N/A
	NI16002	Near miss from contact between ground wire and energized phase terminal lug	No	None	N/A
	WI16003	Electrical worker was injured when working on an energized old dryer feed conductor with a cable cutter	No	Injury	Unknown
	EA16008	Worker was injured from arc flash from contact between screw and conduit	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2016	Feb	Napanee	Occupation	No	No	Improper procedure	
2016	Feb	Garrison Petawawa	Occupation	Yes	No	Other	
2016	Feb	London	Fire	No	No	Unknown	
2016	Feb	Ottawa	Fire	No	No	Unknown	
2016	Jan	Napanee	Occupation	No	No	Equipment failure	
2016	Jan	Stratford	Fire	No	No	Poor design	
2016	Jan	London	Occupation	No	No	Equipment failure	
2016	Jan	Stratford	Fire	No	No	Unknown	
2016	Jan	North York	Occupation	No	No	Improper procedure	
2016	Jan	Ajax	Fire	No	No	Loose connection	
2015	Dec	Ottawa	Fire	No	No	Unknown	
2015	Dec	Mississauga	Occupation	Yes	Yes	Unknown	
2015	Dec	Toronto	Occupation	Yes	Yes	Unknown	
2015	Nov	Fort Erie	Occupation	No	No	Improper procedure	
2015	Nov	Thornhill	Occupation	Yes	Yes	Unknown	
2015	Nov	Thornhill	Occupation	Yes	Yes	Human error	
2015	Nov	Sudbury	Occupation	No	No	Human error	
2015	Nov	Toronto	Fire	No	No	Equipment failure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EA16008	Worker was injured from arc flash from contact between screw and conduit	Unknown	Injury	N/A
	EA16007	Near miss from contact between excavating equipment and 600 V underground secondary line	No	None	N/A
	WF16001	Property damage from fire originating from kitchen potlight	Yes	None	Unknown
	EF16006	Property damage from fire originating from basement receptacle	Yes	None	Unknown
	EI16005	Worker was injured when replugging a monitor	Unknown	Injury	Unknown
	SF16001	Property damage from ceiling mounted heater	Yes	None	Unknown
	WI16001	Electrical worker was injured from arc flash when switching on heater blowers using the disconnect switch	Yes	Injury	N/A
	WF16002	Property damage from fire originating from bedroom receptacle	Yes	None	Unknown
	CA16002	Near miss from contact between saw and feeder wire	No	None	N/A
	EF16003	Property damage from poorly wired receptacles	Yes	None	Unknown
	EF15010	Property damage from fire originating from basement ceiling joist	Yes	None	Unknown
	CUA15007	Near miss from contact between truck's raised box and guy line	Yes	None	N/A
	CUA15006	Near miss from contact between backhoe and three phases of a 4 kV underground utility line	No	None	N/A
	SI15007	Near miss from contact between panel and two main sections of internal phase bus	No	None	N/A
	CUA15002	Worker was injured from contact with overhead 16 kV overhead powerline while putting up lighting decorations	Unknown	Injury	N/A
	CUA15003	Worker was electrocuted from contact between boom and 16 kV overhead powerline	Unknown	Fatality	N/A
	NA15007	Worker was injured when plugging a laptop into a notebook cart receptacle	Unknown	Injury	Unknown
	CF15006	Property damage from fire originating from attic as a result of modified knob and tube wiring	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2015	Nov	Brantford	Occupation	No	No	Misuse	
2015	Nov	Markham	Occupation	Yes	Yes	Miscommunication	
2015	Nov	Toronto	Occupation	No	No	Equipment failure	
2015	Oct	Ottawa	Occupation	Yes	Yes	Miscommunication	
2015	Oct	Georgetown	Non-occupation	No	No	Misuse	
2015	Oct	Mississauga	Occupation	No	No	Improper procedure	
2015	Oct	Sarnia	Occupation	Yes	Yes	Miscommunication	
2015	Oct	Mississauga	Occupation	Yes	Yes	Unknown	
2015	Oct	Dysart and Others	Occupation	Yes	No	Poor design	
2015	Oct	Stratford	Non-occupation	No	No	Incorrect installation	
2015	Oct	St. Catharines	Occupation	Yes	Yes	Human error	
2015	Sep	Thames Centre	Occupation	Yes	Yes	Lack of awareness of hazard	
2015	Sep	Norwich	Non-occupation	No	No	Lack of maintenance	
2015	Sep	Norwich	Non-occupation	No	No	Lack of maintenance	
2015	Sep	Belleville	Occupation	Yes	Yes	Damaged equipment	
2015	Aug	Wardsville	Fire	No	No	Improper use	
2015	Aug	Oakville	Occupation	No	No	Lack of hazard assessment	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WI15006	Worker was injured when holding a co-ax cable in one hand and reaching for a coupling	Unknown	Injury	Unknown
	CUA15005	Near miss from contact between backhoe and 16 kV underground utility line	No	None	N/A
	CA15005	Worker was injured from arc flash when resetting the breaker and attempting to turn on a light switch	Yes	Injury	Unknown
	EI15007	Near miss from contact between underground secondary service conductors and directional boring	No	None	N/A
	SI15006	Person was injured when inserting paper clip into receptacle	No	Injury	Unknown
	CF15005	Near miss from fire when bond conductors made contact with energized 600 A bus or termination	No	None	N/A
	WUI15007	Near miss from contact between conductor and energized 4.8 kV line	No	None	N/A
	CUA15004	Worker was injured from contact when hydrovac truck boom made contact with powerline	Unknown	Injury	N/A
	EI15005	Near miss from contact between excavator and conduit	No	None	N/A
	SI15008	Person was injured from contact with streetlight pole	No	Injury	N/A
	WI15006	Property damage from contact between tower crane arm and power line	Yes	None	N/A
	WI15003	Worker was injured from contact between overhead 16 kV primary line and ladder	Unknown	Injury	N/A
	WI15004	Person was electrocuted by a heat lamp with a frayed cord	Unknown	Fatality	Yes
	WI15004	Person was injured by a heat lamp with a frayed cord	Unknown	Injury	Yes
	EI15002	Worker was injured from contact between exposed termination crimps on a service conductor	Unknown	Injury	N/A
	WF15012	Property damage from fire originating from wall cavity	Yes	None	Unknown
	SI15005	Worker was injured from contact between saw and conduits underneath concrete floor	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2015	Aug	Windsor	Fire	No	No	Improper use	
2015	Jul	Brampton	Fire	No	No	Unknown	
2015	Jul	Toronto	Fire	No	No	Human error	
2015	Jul	Malahide	Non-occupation	Yes	No	Human error	
2015	Jul	Richmond Hill	Occupation	No	No	Unknown	
2015	Jun	Ottawa	Occupation	No	No	Equipment failure	
2015	Jun	London	Fire	No	No	Overloading	
2015	Jun	Meaford	Fire	No	No	Equipment failure	
2015	Jun	Hamilton	Occupation	Yes	No	Lack of awareness of hazard	
2015	Jun	Tecumseth	Occupation	No	No	Unknown	
2015	Jun	Guelph	Fire	No	No	Unknown	
2015	Jun	Toronto	Occupation	Yes	Yes	Unknown	
2015	Jun	Collingwood	Fire	No	Yes	Equipment failure	
2015	May	Milton	Occupation	Yes	Yes	Unknown	
2015	May	Thunder Bay	Occupation	No	No	Lack of awareness of hazard	
2015	May	Toronto	Occupation	No	No	Unknown	
2015	May	Thunder Bay	Fire	No	No	Improper installation	
2015	May	Ottawa	Occupation	Yes	Yes	Aging	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WF15011	Property damage from fire from a spliced extension cord plugged into a 15 A outlet on a 30 A breaker	Yes	None	Unknown
	SF15001	Property damage from fire from AC unit	Yes	None	Unknown
	CF15002	Property damage from fire from unattended greasetop fire	Yes	None	Unknown
	WI15002	Person was electrocuted from contact between ladder and 4.8 kV overhead powerline	Unknown	Fatality	N/A
	CA15004	Worker was electrocuted from contact between girder crane and energized shoe	Unknown	Fatality	Unknown
	EI15003	Worker was injured from arc flash when using a multimeter	Unknown	Injury	Unknown
	WF15008	Property damage from fire originated from overloaded bedroom receptacle	Yes	None	Unknown
	WF15009	Property damage from fire from loose connections on meter base	Yes	None	No
	WUI15005	Near miss from contact between zoom boom and HV lines	No	None	N/A
	WI15001	Worker was electrocuted when working on heating/cooling unit on rooftop	Unknown	Fatality	N/A
	WF15014	Property damage from fire from bedroom receptacle	Yes	None	Unknown
	CA15003	Worker was injured from contact between conductive pole and 8 kV overhead powerlines	Unknown	Injury	N/A
	CF15001	Property damage from fire originating from below the meter, meter base, and conductors encased in the meter base	Yes	None	No
	WUI15004	Near miss from contact between excavator and 16 kV overhead powerlines	No	None	N/A
	NA15005	Electrical worker was injured when changing a 1000 W metal halide lamp in an energized circuit	Unknown	Injury	Unknown
	CA15002	Electrical worker was injured while working on a 34 7 V lighting circuit	Unknown	Injury	Unknown
	NF15002	Property damage from fire originating from basement luminaire that had non-compliant wiring	Yes	None	Unknown
	EUI15011	Worker was injured from contact with bare service feeder while on the rooftop	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2015	May	Windsor	Fire	No	No	Improper use	
2015	Apr	London	Fire	No	No	Misuse	
2015	Apr	Hamilton	Non-occupation	No	No	Misadventure	
2015	Apr	Toronto	Non-occupation	No	No	Equipment failure	
2015	Apr	Wallaceburg	Fire	No	No	Improper installation	
2015	Apr	Kingston	Fire	No	No	Damaged equipment	
2015	Mar	London	Occupation	No	No	Equipment failure	
2015	Mar	Kitchener	Occupation	No	No	Improper procedure	
2015	Mar	Hamilton	Fire	No	No	Improper use	
2015	Mar	Simcoe	Occupation	No	No	Improper procedure	
2015	Mar	Prince Edward County	Occupation	No	No	Incorrect installation	
2015	Mar	Thunder Bay	Occupation	No	No	Incorrect installation	
2015	Mar	Timmins	Occupation	No	No	Unknown	
2015	Mar	Sault Ste. Marie	Occupation	No	No	Improper installation	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WF15015	Property damage from fire originating from several power bars and battery chargers in front of a computer	Yes	None	Unknown
	WF15007	Property damage from fire originating from overloaded power bar in bedroom	Yes	None	Unknown
	WUI15003	Person was injured from contact with 13.8 kV energized line while stealing copper	Unknown	Injury	N/A
	CA15001	Person died when apartment sauna did not wind down its temperature	Unknown	Fatality	Unknown
	WF15006	Worker was injured by fire from an uninspected power generation system with solar panels and small wind turbine; fire was suspected to be initiated by battery charger	Yes	Injury	Yes
	EF15003	Property damage from fuses feeding the panel being blown; cause may have been from animal contact	Yes	None	N/A
	SI15003	Worker was injured from arcing when turning off light switch; operating arm of switch broke and contacted the mounting bracket, creating a short	Unknown	Injury	N/A
	SI15004	Worker was injured from arc flash when removing a fuse in an energized disconnect switch	Unknown	Injury	N/A
	WF15004	Property damage from fire from non-compliant wiring of multiple heaters using a cheater junction box	Yes	None	N/A
	SI15002	Near miss from arc flash when worker was installing a small board and drilled through the distribution panel on the other side of the wall	No	None	N/A
	EI15001	Electrical worker was injured from contact with exposed wiring in a junction box with missing cover	Unknown	Injury	N/A
	NA15003	Electrical worker was injured from arc flash when energizing a panel; found a live wire and ground wire were connected together	Yes	Injury	N/A
	NA15001	Worker was injured from arc event when removing a tangled cord from an electric bed	Yes	Injury	Unknown
	NA15004	Electrical worker injured from arc flash while energizing a panel; one of the exterior cover fasteners had shorted out with one of the cables in the panel	Yes	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2015	Feb	Oakville	Fire	No	No	System failure	
2015	Feb	Sault Ste. Marie	Fire	No	No	Equipment failure	
2015	Feb	Ottawa	Fire	No	No	Improper use	
2015	Jan	Ottawa	Occupation	No	No	Unknown	
2015	Jan	Thorold	Occupation	No	No	Improper installation	
2015	Jan	Chatham	Occupation	Yes	Yes	Improper procedure	
2015	Jan	Hamilton	Occupation	No	No	Improper procedure	
2015	Jan	Toronto	Occupation	No	No	N/A	
2014	May	Guelph	Occupation	No	No	Improper procedure	
2014	Dec	London	Fire	No	No	Improper use	
2014	Dec	Falconbridge	Fire	No	No	Human error	
2014	Dec	London	N/A	Yes	Yes	Improper installation	
2014	Dec	Toronto	Occupation	No	No	Improper procedure	
2014	Dec	Niagara-on-the-Lake	Occupation	Yes	Yes	Improper procedure	
2014	Dec	Niagara-on-the-Lake	Occupation	Yes	Yes	Improper procedure	
2014	Dec	Wyoming	Fire	No	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WF15005	Property damage from explosion where concrete duct bank shifted with ground settlement	Yes	None	N/A
	NF15001	Property damage from fire originating from a 1 kW baseboard heater	Yes	None	N/A
	EF15002	Property damage from fire originating from ceiling trusses; there were 1500 W heaters located all over the house that had overloaded the circuit	Yes	None	N/A
	EA15002	Electrical worker was injured from contact with transformer	Unknown	Injury	N/A
	WUI15002	Worker was injured when working in a building; a phase conductor was found to be wired to the neutral, energizing all grounded metal components	Unknown	Injury	N/A
	WUI15001	Near miss from contact between excavator and overhead powerline	No	None	N/A
	SI15001	Electrical worker was injured from arc event when performing maintenance on energized generator splitter	No	Injury	N/A
	CA15008	Electrical worker was injured from arc flash when working within energized switchboard	Unknown	Injury	N/A
	WI16006	Electrical worker was injured from arc flash when installing metering equipment in an energized distribution panel	Yes	Injury	Unknown
	SF14003	Property damage from fire originating from light tube	Yes	None	Unknown
	NF14007	Property damage from fire originating from space heater being placed too closely to combustibles	Yes	None	Yes
	WA14018	Property damage from fire when ice melting heat trace cable failed on the roof and caught fire	Yes	None	N/A
	CA14005	Electrical worker was injured from arc flash when working on energized switchboard where bond wire made contact with phase conductor	Unknown	Injury	N/A
	WUA14018	Near miss from contact between severed tree branch and 16 kV single phase line	No	None	N/A
	WUA14017	Near miss from contact between severed tree branch and 2.4 kV single line	No	None	N/A
	WUA13009	Property damage from fire originating from meter	Yes	None	No

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2014	Nov	Atikokan	Occupation	No	No	Unknown	
2014	Nov	Milton	Occupation	No	No	Improper procedure	
2014	Oct	Kingston	Fire	No	No	Improper installation	
2014	Oct	Toronto	Occupation	No	No	Unknown	
2014	Oct	Brampton	Occupation	Yes	Yes	Improper procedure	
2014	Oct	Toronto	Occupation	No	No	Improper procedure	
2014	Oct	Acton	Occupation	No	No	Improper procedure	
2014	Oct	London	Non-occupation	No	Yes	Misadventure	
2014	Oct	St. Catharines	Occupation	Yes	Yes	Improper procedure	
2014	Oct	Hamilton	Occupation	No	No	Unknown	
2014	Oct	Etobicoke	Non-occupation	Yes	No	Misadventure	
2014	Oct	Etobicoke	Non-occupation	Yes	No	Misadventure	
2014	Oct	Oshawa	Fire	No	No	Unknown	
2014	Oct	Mississauga	Occupation	No	No	Human error	
2014	Sep	Petrolia	Fire	Yes	Yes	Improper installation	
2014	Sep	West Lincoln	N/A	No	No	Loose connection	
2014	Aug	Toronto	Occupation	Yes	Yes	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	NA14004	Property damage from arc flash when electrical worker was closing a breaker	Yes	None	N/A
	WA14017	Worker was injured when driving rebar into concrete encased duct, shorting out the duct	Yes	Injury	N/A
	EF14022	Property damage from fire originating from damaged conductors in ceiling space	Yes	None	Unknown
	CUA14008	Property damage from arc flash from working in a vault of the secondary side of a transformer	Yes	None	N/A
	SA14002	Near miss from contact between auger and overhead 44 kV powerline	No	None	N/A
	CA14004	Worker was injured from arc flash when cutting wires in a disconnect switch box	No	Injury	N/A
	WA14015	Electrical worker was injured from arc flash when removing a fuse in an energized fused disconnect switch	Unknown	Injury	N/A
	WUA14014	Person was electrocuted in a transformer station; suspected copper theft	Yes	Fatality	N/A
	WUA14015	Near miss from cutting into the wrong energized line; fuse was tripped	No	None	N/A
	WA14013	Electrical worker was injured from arc flash when troubleshooting an MCC	Unknown	Injury	N/A
	CA14009	Person was injured when making contact with another person who was electrocuted	Unknown	Injury	N/A
	CA14009	Person was electrocuted from contact with an overhead powerline	Unknown	Fatality	N/A
	SF14002	Property damage from fire originating from bedroom receptacle	Yes	None	Unknown
	CA14003	Property damage from contact between fish tape and energized bus	Yes	None	N/A
	WUA14012	Property damage from fire when a metallic rigid conduit became a conductor	Yes	None	N/A
	WA14016	Property damage from arcing when lug feeding a 100 A disconnect switch fell off the bus bar and shorted to an adjacent phase	Yes	None	N/A
	CUA14006	Electrical worker was injured from contact with energized equipment when performing maintenance work on 14 kV equipment in substation	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2014	Aug	Toronto	Occupation	No	No	Improper installation	
2014	Aug	Huntsville	Non-occupation	No	Unknown	Damaged equipment	
2014	Aug	Cherry Valley	Occupation	No	No	Improper installation	
2014	Aug	Toronto	Non-occupation	No	No	Misadventure	
2014	Aug	Thunder Bay	Occupation	Yes	Yes	Improper procedure	
2014	Aug	London	Fire	Yes	Yes	Equipment failure	
2014	Jul	Stratford	Occupation	No	No	Unknown	
2014	Jul	Thorold	Occupation	Yes	Yes	Miscommunication	
2014	Jul	Windsor	Fire	No	No	Unknown	
2014	Jul	Ottawa	Occupation	No	No	Incorrect installation	
2014	Jul	Chatham	Occupation	Yes	Yes	Unknown	
2014	Jul	Port Stanley	Occupation	No	No	Incorrect procedure	
2014	Jun	Belleville	Occupation	Yes	Yes	Unknown	
2014	Jun	Kitchener	Fire	No	No	Improper installation	
2014	Jun	Cambridge	Occupation	Yes	Yes	Human error	
2014	Jun	Cambridge	Occupation	Yes	Yes	Human error	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CA14001	Electrical worker was injured when plugging into dishwasher; neutral and hot wires were reversed	Unknown	Injury	Unknown
	NA14003	Person was injured from contact between broken charger and receptacle in public dock	Unknown	Injury	Yes
	EA14003	Worker was injured from contact between copper waterline and frame of mobile structure	Unknown	Injury	N/A
	CA14002	Person was injured from contact with exposed energized relays in elevator machine room	Unknown	Injury	N/A
	NA14002	Property damage from contact between 4 kV duct bank and backhoe	Yes	None	N/A
	WUA14011	Property damage from fire when underground cable faulted	Yes	None	N/A
	WF14011	Property damage from fire when removing plaster on the backside of electrical service panel	Yes	None	N/A
	WUA14008	Near miss from contact between auger and underground 13.8 kV powerline	No	None	N/A
	WF14010	Property damage from fire from electric stove	Yes	None	Unknown
	EA14001	Worker was injured from arc flash when installing duct work insulation and was pushing protruding wires into junction box	Yes	Injury	N/A
	WUA14009	Near miss from contact between helicopter crop duster and overhead powerline	No	None	N/A
	WA14019	Electrical worker was injured from arc flash when wire from neutral conductor in control panel came into contact with energized 600 V fuse	Unknown	Injury	N/A
	EUA14001	Worker was injured from arc flash from contact between overhead powerline and flashing	Unknown	Injury	N/A
	WF14014	Property damage from fire originating from a built-in hair dryer	Yes	None	Unknown
	WA14009	Property damage from contact between boom truck and overhead powerlines	Yes	None	N/A
	WA14009	Property damage from contact between boom truck and overhead powerlines	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2014	Jun	London	Non-occupation	No	No	Unknown	
2014	Jun	Thunder Bay	Occupation	Yes	Unknown	Miscommunication	
2014	Jun	Thunder Bay	Fire	No	No	Equipment failure	
2014	Jun	London	Fire	No	No	Unknown	
2014	Jun	Ottawa	Fire	No	No	Unknown	
2014	May	Cambridge	Occupation	No	No	Misuse	
2014	May	Windsor	Non-occupation	No	No	Unknown	
2014	May	Gravenhurst	Fire	No	No	Improper installation	
2014	May	Middletown Township	Non-occupation	Yes	Yes	Unknown	
2014	Apr	Niagara Falls	Fire	No	No	Unknown	
2014	Apr	Greater Napanee	Fire	No	No	Lack of maintenance	
2014	Apr	Ottawa	Fire	No	No	Equipment failure	
2014	Apr	Niagara-on-the-Lake	Non-occupation	No	No	Improper installation	
2014	Apr	Guelph	Fire	No	No	Unknown	
2014	Apr	Ottawa	Fire	No	No	Unknown	
2014	Mar	Burlington	Occupation	Yes	Yes	Unknown	
2014	Feb	London	Fire	No	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WA14011	Person was injured when resetting a 15 A single pole breaker	Unknown	Injury	N/A
	NA14001	Property damage from contact between excavator and exposed cables	Yes	None	N/A
	NF14003	Property damage from fire originating from lamp	Yes	None	Unknown
	WF14009	Property damage from fire originating from toaster	Yes	None	Unknown
	EF14013	Property damage from fire originating from keyless light in furnace room	Yes	None	Unknown
	WA14010	Near miss from worker incorrectly connecting generator to a residential complex for temporary power; transformer was rated 347/600 V on a 120/208 V system on site	No	None	N/A
	WA14008	Person was injured when removing winter caps to open in-ground pool	No	Injury	N/A
	NF14006	Property damage from fire originating from heater that was poorly wired in a non-compliant manner; paper clip was used to complete a circuit	Yes	None	Yes
	WUA14004	Person was injured from contact between falling tree branch and 16 kV powerline	Unknown	Injury	N/A
	WF14003	Property damage from fire originating from light fixture	Yes	None	Unknown
	EF14011	Property damage from fire originating from exhaust fan that had not been cleaned and was covered in dust and dirt	Yes	None	Unknown
	EF14012	Property damage from fire originating from force flow heater	Yes	None	Unknown
	WA14007	Person was electrocuted from an incorrectly installed electrical heated floor	Unknown	Fatality	Yes
	WF14005	Property damage from fire from energized potlight that overheated wood	Yes	None	Unknown
	EF14009	Property damage from fire originating from ceiling space where #6 AWG conductor cable feeding a furnace was not properly supported	Yes	None	Unknown
	WUA14005	Worker was injured from contact between ladder and 2400 V overhead powerline	Yes	None	N/A
	WUA14002	Property damage from explosion from faulting utility transformer	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2014	Feb	Cambridge	Fire	No	No	Over fusing	
2014	Feb	St. Catharines	Occupation	No	No	Unknown	
2014	Feb	Ottawa	Fire	Yes	Unknown	Unknown	
2014	Feb	Ottawa	Fire	No	No	Improper use	
2014	Feb	Toronto	Occupation	Yes	Yes	Improper procedure	
2014	Feb	Toronto	Occupation	Yes	Yes	Improper procedure	
2014	Feb	St. Catharines	Occupation	No	Unknown	Improper procedure	
2014	Feb	Stirling	Fire	No	No	Unknown	
2014	Feb	Cobourg	Fire	No	No	Loose connection	
2014	Feb	Adelaide Metcalfe	Occupation	Yes	Yes	Improper procedure	
2014	Feb	Simcoe	Occupation	No	No	Improper procedure	
2014	Feb	Thunder Bay	Fire	No	No	Improper installation	
2014	Jan	Toronto	Occupation	Yes	Yes	Unknown	
2014	Jan	Windsor	Occupation	No	No	Improper installation	
2014	Jan	Thunder Bay	Fire	No	No	Unknown	
2014	Jan	St. Marys	N/A	No	No	Lack of maintenance	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WF14006	Property damage from fire when a 30 A fuse blew from a failing heater	Yes	None	Unknown
	WA14006	Worker was injured when installing a new gas water heater	No	Injury	Unknown
	EF14004	Property damage from fire when deteriorated exterior service melted at ground level, allowing water into conduit; conductors faulted phase to phase, or phase to ground	Yes	None	N/A
	EF14005	Property damage from fire originating from extension cord used to feed portable heater	Yes	None	Unknown
	CUA14002	Electrical worker was injured when working on an energized switch	Unknown	Injury	N/A
	CUA14002	Electrical worker was injured when working on an energized switch	Unknown	Injury	N/A
	WA14004	Near miss when electrical worker made contact with energized equipment with screwdriver	Unknown	None	N/A
	EF14003	Property damage from fire originating from a light fixture	Yes	None	Unknown
	SF14001	Property damage from fire originating from outer sock of tandem lamp holder; a loose connection resulted in excessive heating	Yes	None	Unknown
	WUA14001	Near miss from contact between auger and underground 4.8 kV primary cable	No	None	N/A
	WA14003	Electrical contractor was injured when replacing defective limit switch within energized panel	No	Injury	N/A
	NF14002	Property damage from fire originating from electrical panel; screw for bonding had penetrated red wire	Yes	None	N/A
	CUA14001	Worker was injured from contact between ladder and overhead powerline	Unknown	Injury	N/A
	WA14002	Near miss from arc flash when secondary cables faulted due to damage from a guy anchor which had been installed into a secondary duct for dead end guy support	No	None	Unknown
	NF14001	Property damage from fire originating from bathroom fan cable; evidence of rodent contact	Yes	None	Unknown
	WA14001	Property damage from arc flash when a combination starter exploded within a switch gear	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2014	Jan	Ottawa	Fire	No	No	Incorrect installation	
2014	Jan	Thorold	Fire	No	No	Lack of maintenance	
2013	Dec	Brock Township	Occupation	No	Unknown	Misuse	
2013	Dec	Woodstock	Non-occupation	No	No	Improper installation	
2013	Dec	Ottawa	Occupation	No	No	Equipment failure	
2013	Nov	Oshawa	Occupation	No	No	Improper procedure	
2013	Nov	Cornwall	Occupation	Yes	Yes	Lack of hazard assessment	
2013	Nov	Niagara-on-the-Lake	Occupation	No	No	Unknown	
2013	Nov	Thorold	Occupation	No	No	Unknown	
2013	Oct	Forest	N/A	Yes	Yes	Aging	
2013	Oct	Toronto	Occupation	No	No	Improper procedure	
2013	Oct	Tavistock	Non-occupation	No	No	Human error	
2013	Oct	Sudbury	Fire	No	No	Misuse	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EF14001	Property damage from fire originating from wiring near a ceiling octagon box; wiring was fed through the box without proper connector, leading to a compressed wire	Yes	None	N/A
	WF14001	Property damage from fire when excessive moisture entered control panel of duct heating	Yes	None	N/A
	EA13012	Person was electrocuted when contacting an energized 27.6 kV transformer; building safety systems had been bypassed	Unknown	Fatality	N/A
	WA13022	Person was injured from contact with building downspout; an improperly installed sign that had no bonding was found	Unknown	Injury	Unknown
	EA13013	Worker was injured when a tube fell out of a light fixture and made contact with the skate sharpening machine that was being operated on	Yes	Injury	Unknown
	EA13010	Worker was injured when attempting to work on energized equipment within a glue machine	Unknown	Injury	Yes
	EUA13005	Near miss from contact between tractor trailer catwalk and overhead lines	Yes	None	N/A
	WA13020	Electrical worker was injured when resetting a tripped 400 A breaker on temporary service	Unknown	Injury	N/A
	WA13019	Electrical worker was injured when touching an EMT conduit running as part of a temporary feed between two buildings; junction box was not properly bonded	Unknown	Injury	N/A
	WUA13008	Property damage when a porcelain insulator on a 27.6 kV broke, causing line to fall on 2.4 kV line below and creating a surge to the feeder	Yes	None	N/A
	CA13007	Electrical worker was injured from arc flash when removing cable from energized 416 V disconnect switch; bonding conductor in cable made contact with energized lug	Yes	Injury	N/A
	WA13018	Near miss from arcing when resident's bed made contact with and dislodged mounted wire mould box off the wall	Yes	None	N/A
	NF14004	Property damage from fire when combustibles were placed on the stove top plates	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Oct	Mississauga	Occupation	No	No	Improper procedure	
2013	Oct	Ottawa	Occupation	No	No	Faulty equipment	
2013	Oct	Sault Ste. Marie	Fire	No	No	Equipment failure	
2013	Oct	Markham	Fire	No	No	Improper installation	
2013	Oct	Thunder Bay	Occupation	Yes	No	Lack of hazard assessment	
2013	Oct	London	Fire	No	No	Human error	
2013	Oct	Port Perry	Occupation	No	Unknown	Improper procedure	
2013	Oct	Southwold	Occupation	Yes	No	Human error	
2013	Sep	Toronto	Occupation	No	No	Human error	
2013	Sep	Toronto	Occupation	No	No	Human error	
2013	Sep	Mississauga	Fire	No	No	Unknown	
2013	Aug	Kingsville	Occupation	Yes	Yes	Unknown	
2013	Sep	North Dumfries	Occupation	Yes	Yes	Lack of hazard assessment	
2013	Aug	Stoney Creek	Occupation	No	No	Improper procedure	
2013	Aug	Lambton Shores	Occupation	Yes	Yes	Unknown	
2013	Aug	Markham	Occupation	Yes	Yes	Unknown	
2013	Aug	Sugar Bush Island	Non-occupation	Yes	Unknown	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CA13006	Electrical worker was electrocuted when cutting into energized 347 V switch	Yes	Fatality	N/A
	EA13011	Worker was injured originating from mixer that had a broken ground pin and a pinched wire	Yes	Injury	Yes
	NF13004	Property damage from fire originating from shredder	Yes	None	N/A
	CF13006	Property damage from fire originating from canopy where neon lights were replaced by LED; two neon transformers were missed and left energized	Yes	None	Unknown
	NA13006	Near miss from contact between excavator and utility cable	No	None	N/A
	WF13009	Property damage from fire originating from stove	Yes	None	Unknown
	EUA13004	Person was electrocuted when removing padlock off a pad mount transformer and contacted energized equipment	No	Fatality	N/A
	WA13017	Near miss when underground HV was cut	No	None	N/A
	CA13005	Electrical worker was injured from an energized scissor lift with a punctured extension cord	Yes	Injury	N/A
	CA13005	Electrical worker was injured from an energized scissor lift with a punctured extension cord	Yes	Injury	N/A
	CF13004	Property damage from fire originating from ceiling light fixture or associated wiring	Yes	None	Unknown
	WUA13007	Near miss from contact between excavator and 16 kV underground primary cable	No	None	N/A
	WUA13006	Near miss from contact between dump truck and overhead powerlines	No	None	N/A
	WA13015	Electrical worker was electrocuted after repairing an overhead crane	Unknown	Fatality	N/A
	WUA13004	Near miss from contact between excavator and primary submarine cable	No	None	N/A
	SUA13005	Near miss from contact between excavator and overhead secondary powerline	No	None	N/A
	EUA13003	Person was electrocuted when weed whacker made contact with powerline	Unknown	Fatality	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Aug	Watford	Occupation	Yes	No	Lack of hazard assessment	
2013	Aug	Watford	Occupation	Yes	No	Lack of hazard assessment	
2013	Aug	Watford	Occupation	Yes	No	Lack of hazard assessment	
2013	Aug	Watford	Occupation	Yes	No	Lack of hazard assessment	
2013	Aug	Watford	Occupation	Yes	No	Lack of hazard assessment	
2013	Jul	Minto	Non-occupation	Yes	Yes	Human error	
2013	Jul	Thorndale	Occupation	No	No	Improper procedure	
2013	Jul	Mississauga	Fire	No	No	Loose connection	
2013	Jul	Sault Ste. Marie	Fire	No	No	Unknown	
2013	Jul	Central Elgin	Occupation	Yes	Yes	Human error	
2013	Jun	Whitby	Fire	No	No	Unknown	
2013	Jun	Windsor	Occupation	Yes	Yes	Unknown	
2013	Jun	Goderich	Non-occupation	No	No	Incorrect installation	
2013	Jun	New Hamburg	Non-occupation	Yes	Yes	Misadventure	
2013	Jun	Ilderton	Fire	No	No	Aging	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WA13012	Worker was electrocuted when metal supports of tent made contact with overhead powerline	Unknown	Fatality	N/A
	WA13012	Worker was injured when metal supports of tent made contact with overhead powerline	Unknown	Injury	N/A
	WA13012	Worker was injured when metal supports of tent made contact with overhead powerline	Unknown	Injury	N/A
	WA13012	Worker was injured when metal supports of tent made contact with overhead powerline	Unknown	Injury	N/A
	WA13012	Worker was injured when metal supports of tent made contact with overhead powerline	Unknown	Injury	N/A
	WUA13010	Near miss from contact between plane and primary overhead powerline	Yes	None	N/A
	WA13013	Worker was electrocuted when working on pipe extruder when contact was made with energized equipment	Unknown	Fatality	N/A
	CF13005	Property damage from fire when a 3000 A bus duct had failed; loose terminations were found	Yes	None	N/A
	NF13002	Property damage from fire when copper conductor failed at point of entry into receptacle; nick in wire found	Yes	None	N/A
	WA13016	Near miss from contact between helicopter and 4.8 kV distribution line	No	None	N/A
	SA13004	Property damage from contact between screwdriver and line side of breaker in MCC unit	Yes	None	N/A
	WUA13005	Worker was injured from arc flash when chainsaw made contact with high voltage overhead powerline during tree trimming	Unknown	Injury	N/A
	WA13006	Person was injured when leaning on an energized metal fire extinguisher; one of the screws used for fastening it had pierced a PVC conductor which was feeding 347 V to the exit lighting	Unknown	Injury	N/A
	WUA13004	Person was injured from contact with 27.6 kV conductors while climbing a utility pole	Unknown	Injury	N/A
	WF13002	Property damage from fire when HVAC ventilation fire starter coil failed	Yes	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Jun	Windsor	Occupation	Yes	Yes	Unknown	
2013	Jun	Toronto	Occupation	No	No	Improper procedure	
2013	Jun	Ancaster	Non-occupation	No	Yes	Misadventure	
2013	Jun	London	Fire	No	No	Animal	
2013	May	Scarborough	Occupation	No	No	Lack of training	
2013	May	Ingersoll	Fire	No	No	Unknown	
2013	May	Windsor	Occupation	No	No	Unknown	
2013	May	Sarnia	Occupation	No	Yes	Human error	
2013	May	Mississauga	Occupation	No	No	Unknown	
2013	May	Guelph	Occupation	No	No	Poor design	
2013	May	Hamilton	Occupation	No	No	Improper procedure	
2013	May	Dryden	Occupation	Yes	Yes	Human error	
2013	May	Neebing	Occupation	Yes	Yes	Lack of hazard assessment	
2013	May	Oakville	Fire	No	No	System failure	
2013	May	Neebing	Occupation	No	Unknown	Unknown	
2013	Apr	Saugeen Shores	Occupation	Yes	Yes	Human error	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WUA13002	Person was injured from arc flash when screwdriver made contact with a ground wire	Unknown	Injury	N/A
	CUA13005	Near miss from contact between backhoe and 13.8 kV duct bank	No	None	N/A
	WUA13003	Person was injured from contact with 115 kV tower; person was climbing tower to take pictures	No	Injury	N/A
	WF13004	Property damage from fire originating from a cable feeding a light fixture with evidence of rodent contact	Yes	None	Unknown
	CA13003	Worker was electrocuted while working on a 347 V switch and made contact with energized equipment	Unknown	Fatality	N/A
	WF13006	Property damage from fire from a transformer with a history of failing	Yes	None	N/A
	WA13011	Worker was injured from arc flash while cleaning electrical equipment that was energized	Unknown	Injury	N/A
	WUA13001	Near miss from contact between a multimeter and primary energized terminal	No	None	N/A
	CA13004	Near miss from contact between a multimeter and energized terminals	No	None	N/A
	WA13004	Electrical worker was injured from contact with hoist cover; hoist was plugged in incorrectly	Unknown	Injury	N/A
	WA13010	Electrical worker was injured from arc flash when attempting to cut the DC output leads of the charger	Unknown	Injury	N/A
	NA13005	Near miss from contact between excavator boom and 14 kV overhead powerline	Yes	None	N/A
	NA13002	Near miss from contact between aerial work platform and overhead 25 kV powerline	No	None	N/A
	SF13002	Property damage from fire originating from distribution panel board	Yes	None	Unknown
	NA13001	Worker was injured when leaning on building; cover fell off a service connection, resulting in a live phase making contact with the steel building	Unknown	Injury	N/A
	WUA13000	Near miss from contact between tree trimmer and primary conductor	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Apr	Bracebridge	Occupation	No	No	Human error	
2013	Apr	Ancaster	Fire	No	No	Unknown	
2013	Apr	St. Catharines	Occupation	Yes	No	Lack of hazard assessment	
2013	Apr	Ottawa	Fire	No	Yes	Unknown	
2013	Apr	Greater Napanee	Fire	No	No	Over fusing	
2013	Apr	Brampton	Occupation	No	No	Unknown	
2013	Apr	Brampton	Non-occupation	No	No	Unknown	
2013	Apr	Teeswater	Occupation	No	No	Human error	
2013	Apr	Southgate Township	Occupation	No	No	Unknown	
2013	Mar	Thunder Bay	Non-occupation	No	No	Lack of awareness of hazard	
2013	Mar	Mississauga	Fire	No	No	Unknown	
2013	Mar	Sturgeon Falls	Fire	No	No	Improper installation	
2013	Mar	Kingston	Occupation	No	No	Improper procedure	
2013	Mar	Dover	Occupation	No	No	Unknown	
2013	Mar	Cobourg	Occupation	No	No	Equipment failure	
2013	Mar	Toronto	Fire	No	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	NA13001	Near miss when wrong feeding wire was cut	No	None	N/A
	WF13003	Property damage when two transformers overheated and caught on fire	Yes	None	N/A
	WA13007	Near miss from contact between excavator and underground secondary bus duct	No	None	N/A
	EF13006	Property damage from fire originating from line side of disconnect switch feeding detached home	Yes	None	N/A
	EF13007	Property damage from fire originating from power bar cord; branch circuit feeding this outlet cord was plugged into an overfused 30A instead of 15A	Yes	None	Unknown
	SA13002	Person was injured from contact with cover plate of night light; may have been a pinched wire	No	Injury	Unknown
	SA13002	Person was injured from contact with cover plate of night light; may have been a pinched wire	No	Injury	N/A
	WA13008	Near miss from arc flash when fault occurred in switchgear after a set of grounds were left on	No	None	N/A
	WA13003	Worker was injured when coming into contact with a welding control box	Unknown	Injury	N/A
	NA13004	Person was injured when coming into contact with exposed energized terminals of a dryer whose back cover had fallen off	Unknown	Injury	N/A
	CF13002	Property damage from fire originating from subpanel in basement	Yes	None	N/A
	NF13002	Property damage from fire originating from bathroom receptacle; loose connection in a GFCI receptacle was found	Yes	None	Unknown
	EA13005	Worker was injured when performing a Megger test at a 3000 V railway switch	Unknown	Injury	N/A
	WA13003	Near miss from explosion in a 230 kV substation; attributed to a phase to ground short in switchgear	No	None	N/A
	EA13003	Near miss when a fused disconnect switch failed, blowing all fuses	No	None	N/A
	CUA13003	Near miss from fire in underground cable chamber	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Mar	Orangeville	Occupation	Yes	Yes	Lack of hazard assessment	
2013	Mar	Toronto	Fire	No	Yes	Unknown	
2013	Feb	Toronto	Fire	No	No	Unknown	
2013	Feb	Ottawa	Occupation	No	No	Improper procedure	
2013	Feb	Brampton	Occupation	No	No	Improper installation	
2013	Feb	Brockville	Fire	No	No	Unknown	
2013	Feb	Rockland	Fire	No	No	Incorrect installation	
2013	Feb	Toronto	Occupation	Yes	Yes	Lack of hazard assessment	
2013	Feb	Milton	Occupation	No	No	Equipment failure	
2013	Feb	Woodstock	Occupation	No	No	Human error	
2013	Feb	Ottawa	N/A	No	No	Equipment failure	
2013	Jan	Thunder Bay	Fire	No	No	Equipment failure	
2013	Jan	Toronto	Fire	No	No	Water leak	
2013	Jan	Mississauga	Fire	No	No	Unknown	
2013	Jan	Mississauga	Occupation	No	No	Equipment failure	
2013	Jan	Williamsburg	Fire	No	No	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CUA13004	Near miss from contact between dump truck and overhead powerlines	No	None	N/A
	CUA13002	Near miss from fire in underground cable chamber	No	None	N/A
	SF13001	Property damage from fire originating from joists under the first floor	Yes	None	Unknown
	EA13004	Worker was electrocuted when making contact with leads of capacitor while performing the work	Unknown	Fatality	N/A
	CA13002	Worker was injured when unintentionally making contact with energized conductors while installing overhead door operator	Unknown	Injury	N/A
	EF13009	Property damage from fire originating from solar panel inverter housing	Yes	None	Unknown
	EF13002	Property damage from fire when the neutral and voltage lines were reversed in the solar panel control system, creating energized system	Yes	None	N/A
	CUA13001	Near miss from contact between crane and 27 kV overhead powerline	Yes	None	N/A
	WA13000	Near miss when a short circuit occurred on the line side of the switchgear in a main breaker	No	None	N/A
	WA13001	Electrical worker was injured from arc flash when concentric neutrals made contact with energized main bus at back of switchgear	Unknown	Injury	N/A
	EA13006	Near miss from general switch that failed as a result of in-rush current	No	None	N/A
	NF13001	Property damage from fire when DA double fused pullout failed	Yes	None	N/A
	CF13003	Property damage from fire when a flood made its way into the basement electrical room disconnect switch	Yes	None	N/A
	CF13001	Property damage from fire originating from disconnect switch in electrical room	Yes	None	N/A
	SA13001	Worker was injured when inflator shorted and burned	Yes	Injury	Yes
	EF13001	Property damage from fire originating from back of house	Yes	None	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2013	Jan	Kingston	Occupation	No	No	Improper procedure	
2012	Dec	North York	Occupation	No	No	Improper use	
2012	Dec	Belleville	Fire	No	No	Human error	
2012	Dec	Ottawa	Occupation	Yes	Yes	Lack of awareness of hazard	
2012	Dec	Toronto	Occupation	No	No	Human error	
2012	Dec	Petrolia	Non-occupation	No	No	Equipment failure	
2012	Dec	Belleville	Fire	No	No	Unknown	
2012	Nov	Cookstown	Occupation	No	Yes	Poor design	
2012	Nov	Osgoode	Fire	Yes	No	Act of God	
2012	Nov	Toronto	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Nov	Niagara Falls	Fire	No	No	Equipment failure	
2012	Nov	Toronto	Occupation	Yes	Yes	Miscommunication	
2012	Nov	Welland	Occupation	No	No	Human error	
2012	Nov	Brougham Township	Fire	No	No	Equipment failure	
2012	Nov	Lambton Shores	Non-occupation	Yes	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EA13001	Near miss from contact between RGC saw and underground feeders; worker was cutting concrete	No	None	N/A
	CA12015	Worker was electrocuted when operating a drive saw that had a replacement cord cap on its cord which had a ground pin removed	Unknown	Fatality	Yes
	EF12031	Property damage from fire originating from electric wall heater and debris falling into it	Yes	None	Unknown
	EUA12005	Worker was injured from contact between excavator and an underground 13.8 kV line	Unknown	Injury	N/A
	CA12012	Worker was injured when relocating disconnect switches for charging stations in a plant; main disconnect switch was energized	Unknown	Injury	N/A
	WA12019	Person was injured from arc flash when testing a receptacle with a multimeter; red lead was placed into the hot side	Unknown	Injury	N/A
	EF12028	Property damage from fire from conductor failure	Yes	None	N/A
	CUA12009	Near miss when contact was made between fish tape and energized bus	No	None	N/A
	EF12026	Property damage from fire from duress on the conductors at the bottom of the service entrance conduit	Yes	None	N/A
	CUA12008	Near miss from contact between crane and overhead high voltage powerline	No	None	N/A
	WF12007	Property damage from fire originating from failed splitter block behind a TV	Yes	None	Unknown
	CUA12007	Near miss from contact between excavator and underground 13.8 kV duct bank	No	None	N/A
	WA12019	Near miss when solar panel controls failed from an incorrect wiring installation	No	None	Unknown
	EF12029	Property damage from fire originating on line side terminations of a 600 V disconnect switch; loose connection at the terminal of this phase	Yes	None	N/A
	WUA12022	Near miss from contact between tree trimmer and overhead powerline	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Oct	Sarnia	Occupation	Yes	Yes	Improper procedure	
2012	Oct	Whitby	Occupation	Yes	Yes	Human error	
2012	Oct	Ottawa	Fire	No	No	Unknown	
2012	Oct	Sault Ste. Marie	Fire	No	No	Improper use	
2012	Oct	Owen Sound	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Oct	Casselman	Fire	No	No	Equipment failure	
2012	Oct	Mississauga	Fire	No	No	Improper installation	
2012	Oct	Mount Forest	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Oct	Bancroft	Occupation	Yes	Yes	Unknown	
2012	Oct	Toronto	Occupation	Yes	No	Lack of hazard assessment	
2012	Sep	Oshawa	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Sep	Oshawa	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Sep	Ottawa	Fire	No	No	Loose connection	
2012	Sep	St. Catharines	Occupation	No	No	Human error	
2012	Sep	Mississauga	Occupation	No	No	Improper procedure	
2012	Sep	London	Occupation	No	No	Improper procedure	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WUA12019	Worker was electrocuted when working overhead in a bucket repairing a broken neutral	Unknown	Fatality	N/A
	SA12009	Near miss from contact between sailboat mast and overhead powerline	No	None	N/A
	EF12021	Property damage from fire originating from closet halogen light	Yes	None	Unknown
	NF12002	Property damage from fire originating from extension cord with signs of balling and arcing	Yes	None	Yes
	WUA12018	Worker was injured from arc flash when lawn tractor trailer caught an air break switch	No	Injury	N/A
	EF12022	Property damage from fire originating from fluorescent light fixture	Yes	None	Unknown
	CF12005	Property damage from fire originating from spray booth that had non-compliant wiring	Yes	None	N/A
	WUA12017	Near miss from contact between delivery truck and secondary overhead powerline	No	None	N/A
	EUI16029	Worker was injured from contact when delivery truck made contact with overhead powerline	Unknown	Injury	N/A
	CA12013	Near miss from contact between excavator and crushed bus duct	No	None	N/A
	EUA12004	Worker was injured when metal ladder made contact with 8 kV overhead powerline	Unknown	Injury	N/A
	EUA12004	Worker was injured when metal ladder made contact with 8 kV overhead powerline	Unknown	Injury	N/A
	EF12010	Property damage from fire originating from electrical panelboard; main breaker had a loose termination with heavy signs of arcing	Yes	None	N/A
	WA12018	Worker was injured from arc flash when working on live disconnect switch	Unknown	Injury	N/A
	CA12011	Worker was injured while working on live disconnect switch	Yes	Injury	Unknown
	WA12013	Worker was injured by explosion when bug spray made contact with water heater	Unknown	Injury	Unknown

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Sep	London	Occupation	No	No	Improper procedure	
2012	Sep	Seaforth	Occupation	No	No	Unknown	
2012	Sep	Seaforth	Occupation	No	No	Unknown	
2012	Aug	Kingston	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Aug	Napanee	Fire	No	No	Unknown	
2012	Aug	St. Catharines	Occupation	No	No	Damaged equipment	
2012	Aug	Newmarket	Fire	No	No	Improper installation	
2012	Aug	Windsor	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Aug	Mississauga	Fire	No	No	Unknown	
2012	Aug	Kingston	Fire	No	No	Unknown	
2012	Aug	Ottawa	Fire	No	No	Unknown	
2012	Aug	Whitby	Non-occupation	No	No	Unknown	
2012	Aug	Whitby	Non-occupation	No	No	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WA12013	Worker was injured by explosion when bug spray made contact with water heater	Unknown	Injury	Unknown
	WF12004	Worker was injured from an explosion at a farm	Yes	Injury	Unknown
	WF12004	Worker was injured from an explosion at a farm	Yes	Injury	Unknown
	EUA12002	Near miss from contact between excavator and overhead secondary powerline	No	None	N/A
	EF12014	Property damage from fire originating from outside of house at connection point between utility conductor and consumer cable; circuit was ungrounded	Yes	None	N/A
	SA12005	Worker was injured when removing a cord from a receptacle; contact was made with exposed portion of another cord feeding power to an air compressor from same receptacle	Unknown	Injury	Unknown
	CF12003	Property damage from fire originating from meter base; conductor was found to be in contact with metal side of box, resulting in high impedance fault to the neutral and energizing bonding path	Yes	None	N/A
	WUA12016	Worker was injured from contact between 16 kV overhead powerline and scaffold	Unknown	Injury	N/A
	CF12002	Property damage from fire originating from disconnect switch and splitter	Yes	None	N/A
	EF12017	Property damage from fire originating from branch wiring leading to luminaire	Yes	None	Unknown
	EF12019	Property damage from fire originating from power bar	Yes	None	Unknown
	SA12006	Person was injured while playing soccer; lighting pole near player bench had melted bonding conductor into a phase conductor, thus energizing its surroundings	Unknown	Injury	N/A
	SA12006	Person was injured while playing soccer; lighting pole near player bench had melted bonding conductor into a phase conductor, thus energizing its surroundings	Unknown	Injury	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Aug	Whitby	Non-occupation	No	No	Unknown	
2012	Aug	Whitby	Non-occupation	No	No	Unknown	
2012	Aug	Toronto	Occupation	No	No	Unknown	
2012	Aug	St. Thomas	Non-occupation	No	Yes	Damaged equipment	
2012	Aug	Wilmot	Non-occupation	No	No	Improper procedure	
2012	Jul	Cambridge	Occupation	Yes	No	Lack of hazard assessment	
2012	Jul	Mississauga	Occupation	No	No	Incorrect installation	
2012	Jul	Lasalle	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jul	Toronto	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jul	Concord	Occupation	No	No	Equipment failure	
2012	Jul	London	Occupation	No	No	Incorrect procedure	
2012	Jul	Dover	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jul	Sault Ste. Marie	Occupation	No	No	Improper procedure	
2012	Jul	Ottawa	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jul	Toronto	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jun	Cambridge	Occupation	No	No	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	SA12006	Person was injured while playing soccer; lighting pole near player bench had melted bonding conductor into a phase conductor, thus energizing its surroundings	Unknown	Injury	N/A
	SA12006	Person was injured while playing soccer; lighting pole near player bench had melted bonding conductor into a phase conductor, thus energizing its surroundings	Unknown	Injury	N/A
	CA12010	Electrical worker was injured while making connections in a junction box	Unknown	Injury	N/A
	WA12015	Animal was injured when it made contact with a wooden streetlight pole; bare copper conductor was exposed at the base	No	None	N/A
	WA12012	Person was injured when working on an electrical panel	No	Injury	Unknown
	WA12016	Near miss from contact between crane boom and overhead powerline	No	None	N/A
	CA12008	Electrical worker was injured from aluminum sheath in a coreflex cable that was not bonded on the supply end	Unknown	Injury	N/A
	WUA12013	Near miss from contact between boom truck and primary 4 kV overhead powerline	No	None	N/A
	CUA12006	Near miss from contact between backhoe and 13.8 kV primary duct cable	No	None	N/A
	CA12007	Worker was injured from arc flash when disconnect switch failed	Yes	Injury	N/A
	WA12007	Worker was injured from arc flash when removing a fuse from energized disconnect switch	Unknown	Injury	N/A
	WUA12011	Near miss from contact between machine and overhead single phase primary line	No	None	N/A
	NA12002	Worker was injured from arc flash when contact made with energized parts	Unknown	Injury	N/A
	EAU12003	Near miss from contact between excavator and underground powerline	No	None	N/A
	CA12012	Worker was injured when excavator made contact with 13.8 kV powerline	Unknown	Injury	N/A
	WA12008	Near miss from contact between metal tip of air blow gun and winding transformer coil	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Jun	Guelph	Occupation	No	No	Lack of training	
2012	Jun	Oakville	Fire	No	No	Equipment failure	
2012	Jun	Toronto	Non-occupation	Yes	Yes	Lack of awareness of hazard	
2012	Jun	Adolphustown	Fire	No	No	Incorrect installation	
2012	Jun	Campbellville	Occupation	No	No	Improper installation	
2012	Jun	Milton	Non-occupation	No	No	Improper installation	
2012	Jun	Kingston	Non-occupation	No	No	Improper installation	
2012	May	Timmins	Fire	No	No	Improper use	
2012	May	Toronto	Occupation	No	No	Improper procedure	
2012	May	Nipigon	Occupation	No	No	Improper procedure	
2012	May	Oakville	N/A	No	No	Equipment failure	
2012	May	Vaughan	Occupation	No	No	Lack of training	
2012	May	Alliston	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Apr	Niagara Falls	Occupation	No	Yes	Human error	
2012	Apr	Ottawa	Occupation	No	No	Improper installation	
2012	Apr	St. Catharines	Occupation	Yes	Yes	Lack of awareness of hazard	

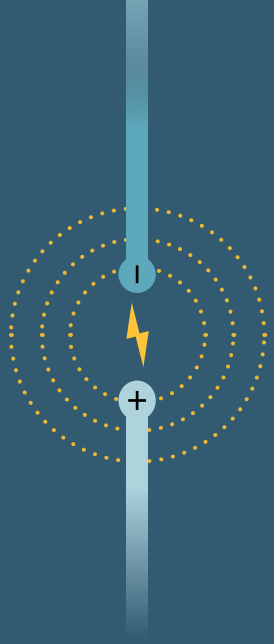
	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	WA12006	Electrical worker was injured from arc flash when working on a fan that came into contact with energized equipment	Unknown	Injury	N/A
	SF12004	Property damage from fire originating in capacitor bank	Yes	None	N/A
	CUA12005	Near miss from contact between tree trimmer and 27.6 kV overhead powerline	Unknown	None	N/A
	EF12009	Property damage from fire originating from heater in crawlspace; heater was mounted upside down in contradiction to manufacturer specifications	Yes	None	Unknown
	WA12009	Worker was injured when making contact on fuel tank; tank did not meet applicable codes and wiring to the pumps were done with unapproved products	Unknown	Injury	Yes
	WA12017	Person was injured when using hot tub; hot tub was not installed in accordance with manufacturer requirements	Unknown	Injury	Unknown
	EA12007	Person was injured when using pool pump; switch was incorrectly wired, leaving a 120 V potential	Unknown	Injury	Unknown
	NF12003	Property damage from fire originating from glue gun; breaker for circuit had tripped	Yes	None	Yes
	SA12005	Worker was injured when backfeed from another generator was on the same circuit as an energized generator terminal	No	Injury	Unknown
	NA12001	Worker was injured when making contact with an energized relay in HVAC unit	Unknown	Injury	N/A
	WA12010	Near miss from an explosion where underground cable failure occurred	No	None	N/A
	CA12005	Worker was injured from arc flash when testing for voltage with a tester incorrectly	Unknown	Injury	N/A
	CUA12001	Near miss from contact between dump truck and overhead 13.8 kV powerline	No	None	N/A
	WUA12009	Near miss when solar array was incorrectly wired 240 V to the neutral	No	None	N/A
	EA12004	Near miss from arc flash when wire was pinched during electrical maintenance	No	None	N/A
	WUA12007	Near miss from contact between excavator and underground powerline	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Apr	Woodbridge	Occupation	No	No	Equipment failure	
2012	Apr	Hamilton	Occupation	Yes	Yes	Human error	
2012	Apr	Toronto	Occupation	No	No	Human error	
2012	Apr	Belleville	Occupation	No	No	Unknown	
2012	Apr	Brockville	Non-occupation	No	No	Improper use	
2012	Apr	St. Catharines	Occupation	Yes	Yes	Lack of awareness of hazard	
2012	Apr	Ashfield Township	Occupation	Yes	Yes	Unknown	
2012	Apr	Southgate Township	Non-occupation	Yes	Yes	Human error	
2012	Mar	Nichol Township	Occupation	No	No	Mechanical damage	
2012	Mar	Toronto	Occupation	No	No	Improper procedure	
2012	Mar	Ottawa	Fire	No	No	Unknown	
2012	Mar	Nepean	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Mar	Nepean	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Mar	Nepean	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Mar	Dunwich Township	Non-occupation	Yes	Yes	Human error	
2012	Mar	Burlington	Occupation	Yes	Yes	Unknown	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	CA12003	Worker was injured from arc blast when operating 600 V 30 A disconnect switch	Unknown	Injury	N/A
	WA12005	Near miss when extension cord was inserted into 230 kV power swing stage	No	None	N/A
	CA12004	Property damage from arc flash from contact between fish tape and conduit that led to electrical distribution panel	Yes	None	N/A
	EA12006	Near miss when underground conductors failed causing failure to panel board	No	None	N/A
	EA12005	Person was injured when unplugging a power cord from wall; paper clip had been untwisted and wrapped between two prongs on the plug of the cord	No	Injury	Yes
	WUA12006	Near miss from contact between excavator and underground powerline	No	None	N/A
	WUA12008	Near miss from contact between tractor and 44 kW overhead powerline	No	None	N/A
	WUA12005	Near miss from contact between saw and overhead powerline	No	None	N/A
	SA12003	Worker was injured when servicing a 400 W luminaire; metal housing was energized when fault occurred in the circuit	No	Injury	Unknown
	CA12001	Electrical worker was injured from arc flash when replacing disconnect switch; contact was made with an energized conductor	Yes	Injury	N/A
	EF12003	Property damage from fire originating from bathroom exhaust fan	Yes	None	Unknown
	EUA12001	Worker was electrocuted when guiding truck boom into energized overhead powerline	Unknown	Fatality	N/A
	EUA12001	Worker was injured when assisting coworker who had guided truck boom into energized overhead powerline	Unknown	Injury	N/A
	EUA12001	Worker was injured when assisting coworker who had guided truck boom into energized overhead powerline	Unknown	Injury	N/A
	WA12004	Near miss from contact from tree cutting and severed three phases of 4.8 kV overhead powerline	No	None	N/A
	WUA12004	Near miss from contact between excavator and 13.8 kV underground powerline	No	None	N/A

Year	Month	Location	Occupation/ Non-occupation	Powerline	Utility infrastructure	Cause of incident	
2012	Mar	Peterborough	Occupation	No	No	Improper installation	
2012	Mar	Burlington	Fire	No	No	Unknown	
2012	Mar	Puslinch	Fire	No	No	Unknown	
2012	Feb	Mississauga	Fire	No	No	Unknown	
2012	Feb	Etobicoke	Non-occupation	No	No	Improper installation	
2012	Feb	Ottawa	Fire	No	No	Unknown	
2012	Feb	Ayr	Occupation	No	No	Mechanical damage	
2012	Feb	Cambridge	Occupation	Yes	Yes	Human error	
2012	Feb	Beaverton	Occupation	No	No	Lack of training	
2012	Jan	Brantford	Occupation	Yes	Yes	Lack of hazard assessment	
2012	Jan	Milton	Fire	No	No	Equipment failure	
2012	Jan	Kanata	Occupation	No	No	Improper installation	
2012	Jan	Niagara Falls	Occupation	No	No	Improper procedure	
2012	Jan	Waterloo	Occupation	Yes	No	Human error	
2012	Jan	Belleville	Non-occupation	No	No	Equipment failure	
2012	Jan	Windsor	Occupation	No	No	Lack of awareness of hazard	
2012	Jan	Windsor	Occupation	No	No	Lack of awareness of hazard	

	ESA #	Incident summary	Property damage	Electrical injuries/ fatalities to person	Consumer electrical product was unapproved
	EA12003	Near miss from arc flash when electrical worker drilled screws through the panel cover and into a 600 V breaker	No	None	N/A
	WF12002	Property damage from fire originating from attic	Yes	None	Unknown
	WF12003	Property damage from fire originating from overheated garage door opener	Yes	None	Unknown
	CF12001	Property damage from fire originating from service conductors inside a steel conduit	Yes	None	N/A
	CA12002	Person was injured when making contact with receptacle; receptacle was loose in outlet box and made contact with energized components in box	No	Injury	Unknown
	EF12002	Property damage from fire originating from behind a microwave	Yes	None	Unknown
	SA12001	Worker was injured from contact with metal portion of a portable conveyor; power cord was pinched	No	Injury	Unknown
	WUA12002	Near miss from contact between tree falling and 23 kV primary line	Yes	None	N/A
	EA13002	Worker was injured from arc flash when removing load side cable from disconnect switch; bonding conductor made contact with energized line side of switch	Unknown	Injury	N/A
	WUA12003	Near miss from contact between truck boom and overhead 27.6 kV powerline	No	None	N/A
	WF12001	Property damage from fire originating from overheated sump pump	Yes	None	N/A
	EA12002	Worker was injured when changing an energized ballast	Unknown	Injury	N/A
	SA12002	Near miss when a cable was cut from an energized disconnect switch	No	None	N/A
	WUA12001	Near miss from contact between boom truck and overhead secondary line	No	None	N/A
	EA11010	Person was injured from arc flash when cooking; stove top element had signs of arcing	Yes	Injury	Unknown
	WA12003	Worker was injured when putting out a fire in an energized home	Yes	Injury	Unknown
	WA12003	Worker was injured when putting out a fire in an energized home	Yes	Injury	Unknown



This document was prepared by the Regulatory Centre of Excellence of the Electrical Safety Authority.

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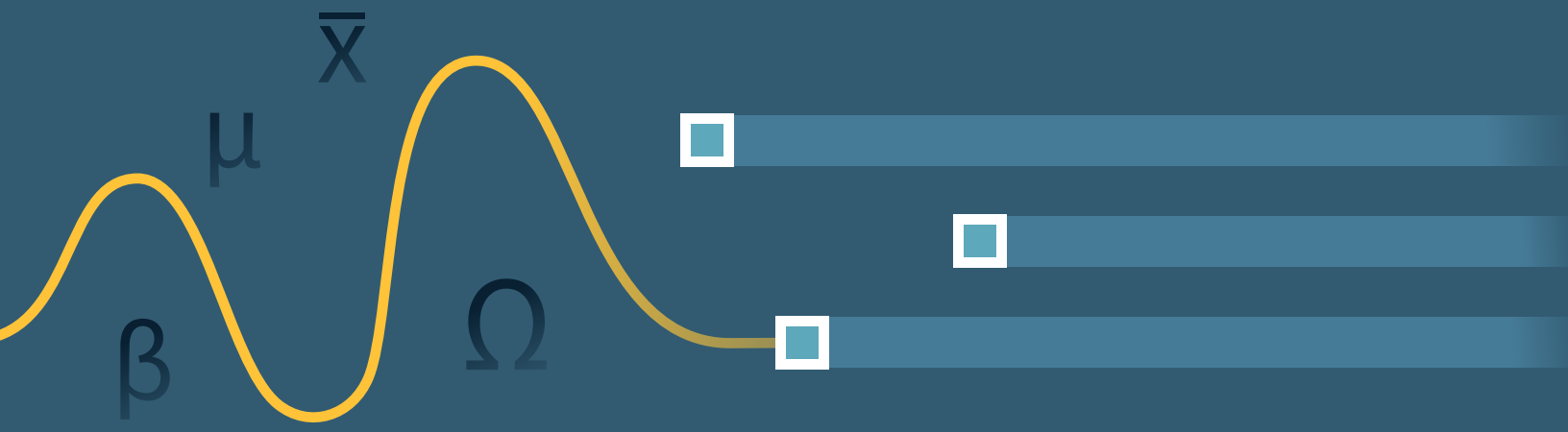

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