OESR

2025 Ontario Electrical Safety Report

25 YEARS OF THE OESR

Electrical Safety Authority

Contents

A Message from the Electrical Safety Authority's President & CEO

Reducing harm begins with understanding it.

For 25 years, the Ontario Electrical Safety Report (OESR) has distinguished itself as the only publication in Canada to consistently track and publish detailed electrical safety data. Over that time, it has helped shape Ontario's collective understanding of electrical harm, providing the evidence needed to make better decisions, strengthen prevention efforts, and improve safety outcomes.

As we celebrate this milestone, we also recognize the knowledge that has grown alongside it. At the Electrical Safety Authority (ESA), our success is measured by our ability to reduce electrical harm. That begins with understanding how harm occurs, where risks are changing, and how we can focus our efforts where they will have the greatest impact. The OESR helps us do exactly that.

The report's value is measured not only by what it tells us, but by what it enables us to do. When it identified young men between the ages of 20 and 39 disproportionately represented in powerline contacts, it helped ESA shape a targeted awareness campaign designed to reach that audience where they live, work, and play. The same evidence-informed approach also shapes how we invest in partnerships, including our work with organizations like the Workplace Safety and Insurance Board of Ontario (WSIB) and Skilled Trades Ontario to strengthen electrical safety training and awareness for apprentices and workers in higher-risk trades.

As our economy and way of life become more electrified, the next 25 years will demand the same commitment to understanding emerging risks and harm. Ontario's electricity demand is projected to grow by 65% by 2050 as the province transforms how it generates, stores, transmits, and uses electricity. In a rapidly changing environment, it is importantto understand emerging risks by analyzing data. The OESR will continue to provide a fact-based foundation, helping ESA work alongside government, electricity sector partners — including generators, transmitters, distribution companies, utilities, and our licenced electrical contractor community — and industry to support a safe and reliable energy future.

Ontario recorded zero electrical fatalities during ESA's most recent fiscal year. It is an encouraging milestone. While our work is far from finished, it is a reminder of what is possible when better evidence leads to better decisions and sustained action to reduce harm.

The OESR is itself a product of collaboration. I want to thank the Office of the Chief Coroner, the Ontario Ministry of Labour, Immigration, Training and Skills Development, the Office of the Fire Marshal, the Canadian Institute of Health Information, WSIB, and the many other organizations that contribute data, expertise, and insight each year.

Together, we are ensuring that the knowledge captured in this report continues to shape the decisions that reduce electrical harm across Ontario.

Josie Erzetic
President and CEO, Electrical Safety Authority

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

This Ontario Electrical Safety Report (OESR) marks an important milestone: 25 years of tracking, analyzing, and sharing electrical safety data across Ontario. Over that time, the report has become more than just an annual snapshot of trends. It's evolved into a trusted resource that helps inform prevention efforts, guide decision-making, and support the work of keeping Ontarians safe.

As we reflect on 25 years of reporting, one theme stands out above all others: collaboration. Electrical safety doesn't happen in isolation. The progress reflected in this report is the result of the collective efforts of regulators, government agencies, utilities, licensed electrical contractors and master electricians, employers, standards committees, health and safety organizations, electric product manufacturers, and many others who share a commitment to reduce risk and prevent harm. Together, we have built a stronger understanding of electrical safety challenges and opportunities across Ontario.

This year's report includes an encouraging achievement: one of the lowest numbers of electrocution fatalities since the inception of the OESR, and a fiscal year with zero electrocution fatalities. While every injury and incident remains one too many, this milestone demonstrates the positive impact of sustained prevention efforts, increased awareness, and ongoing collaboration across the sector. It's also a reminder that maintaining and improving safety outcomes requires continued vigilance and commitment from all of us.

The OESR itself has evolved considerably over the past 25 years. What began primarily as a report based on internal data has become a comprehensive resource informed by multiple trusted sources. Today, information from key safety partners provides a more complete and reliable picture of the impact of safety efforts. This collaborative approach strengthens the quality of our analysis and improves our ability to identify risks, understand trends, and support meaningful action.

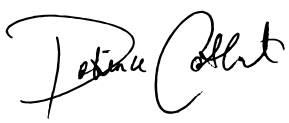
Among those partners are the Office of the Chief Coroner for Ontario, the Ontario Ministry of Labour, Immigration, Training and Skills Development, the Office of the Fire Marshal, the Canadian Institute for Health Information, and the Workplace Safety and Insurance Board of Ontario. Their data, expertise, and ongoing collaboration are essential for advancing electrical safety across the province and on behalf of everyone at the Electrical Safety Authority (ESA), I'd like to extend my sincere thanks for their input.

Beyond informing ESA's work, the report has also become a valuable resource for stakeholders across the province. Safety professionals, educators, industry partners, and public sector organizations use these insights to support training, awareness initiatives, and prevention programs. By sharing data and knowledge, we can better equip organizations to make informed decisions and focus their efforts where they can have the greatest impact.

We dedicate the 25th edition of the OESR to the families and individuals whose lives have been forever changed by electrocution, serious electrical injury, and property loss. Behind every incident is a personal story of heartbreak, courage, and resilience that deeply affects families, friends, and communities. We honour those whose lives were tragically lost, those who continue to move forward after life-altering injuries, and those who have found the strength to rebuild after the devastating loss of a cherished family home.

While nothing can undo these losses, each incident provides an opportunity to understand what happened and learn how to prevent similar tragedies in the future. By addressing the root causes of electrical incidents and continuously improving our systems, we move closer to a future where everyone can live, work, and play safely. This commitment to learning and prevention is a legacy of those affected, and we remember them with gratitude and respect.

A fiscal year free of fatalities is a significant milestone. We remain focused on the future by continuing to strengthen partnerships, improve data quality, and share insights, so we can better understand emerging risks and take informed action to continue to protect Ontarians. Together, we will drive meaningful progress and build a safer Ontario for generations to come.



Patience Cathcart
Public Safety Officer, Electrical Safety Authority

Electrical-related Fatalities and Incidents Over the Past Ten Years (2016–2025)

145 ELECTRICAL-RELATED FATALITIES

46 Electrocution Fatalities

99 Electrical Fire Fatalities*

Electrocution Fatalities

2016–2020 vs. 2021–2025 → **6%** rate decrease

Utility-related Deaths

Accounted for **52%** of all electrical-related fatalities in the past ten years

Deaths from Powerline Contact

2016–2020: **9**

2021–2025: **11**

Occupational Deaths

2015–2020: **13**

2021–2025: **9**

Non-occupational Deaths

The five-year rolling average rate of fatalities has increased from **0.14** per million (2016–2020) to **0.18** per million (2021–2025)

29% increase

Fire Fatalities and Events

2016–2020 vs. 2021–2025 → **2%** rate increase**

Product safety fires

Product safety fires have decreased 20% when comparing 2015-2019 and 2020-2024

Five-year average of product fires

2015-2019: **1,066**

2020-2024: **859**

20% increase

Electrical Distribution Fires

Number of Electrical Distribution Fires

2020: **397**

2024: **440**

11% increase

PRIORITY ISSUES

ESA's focus areas to reduce electrical injuries and fatalities fall into the following harm categories:

1. Occupational settings
2. Non-occupational settings
3. Powerline contact
4. Product safety
5. Aging infrastructure

**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."*

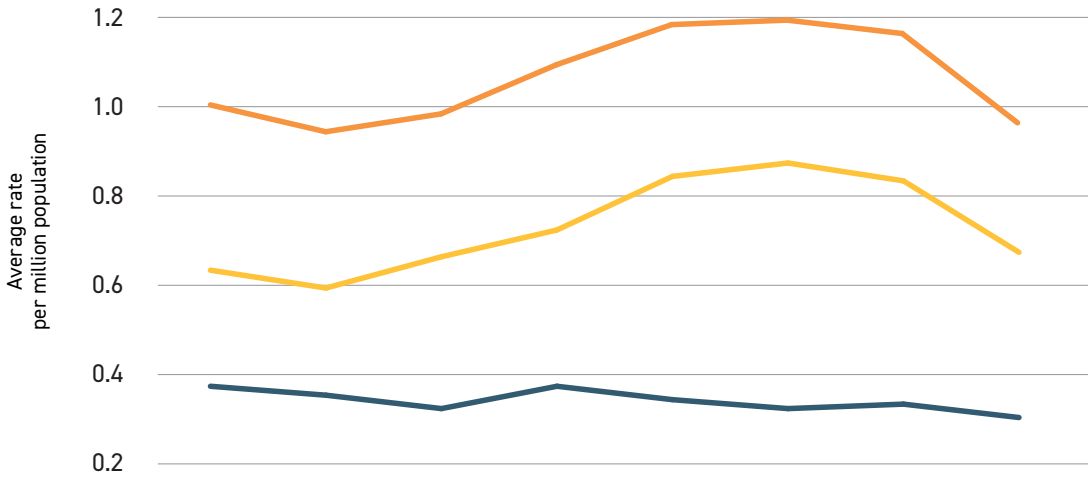
***Fire fatalities are preliminary and are subject to change, particularly for the most recent year.*

Executive Summary

This year marks the 25th anniversary of the Electrical Safety Authority's (ESA) Ontario Electrical Safety Report (OESR). Over the past 25 years, the report has remained the only publication of its kind in the world to provide an annual update on electrical fatalities, injuries, and incidents. Drawing on multiple data sources, investigations, and root-cause analyses, the report provides Ontario-specific insights that help ESA and its partners better understand the dynamics of electrical safety and support the development of initiatives to improve electrical safety across the province.

From 2001–2005, the five-year average rate of electrocution, burn fatalities, and electrical fire deaths where the ignition source was confirmed to be electrical was 1.72 per million population. Since 2012, this rate has remained close to one per million population. In 2025, there were two electrical fatalities, the lowest number since 2012. While this low incidence has been sustained, the causes and contexts of these incidents have shifted, underscoring the need for continued vigilance and targeted interventions.

FIVE-YEAR ROLLING AVERAGE RATE OF ALL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2014–2025



Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Electrical fire fatalities	0.63	0.59	0.66	0.72	0.84	0.87	0.83*	0.67*
Electrocution and burn fatalities	0.37	0.35	0.32	0.37	0.34	0.32	0.33	0.30
Total electrical-related fatalities	1.00	0.94	0.98	1.09	1.18	1.19	1.16*	0.97*

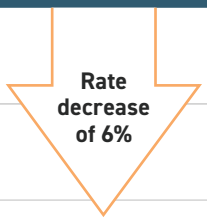
**Preliminary data subject to change*
Source: ESA, Office of the Chief Coroner, and Office of the Fire Marshal records

Electrical-related Fatalities

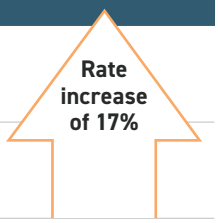
In the past ten years, there were 145 electrical fatalities in Ontario. From 2016 to 2025, 46 people died from electrocution (non-intentional death caused by contact with electricity) or by the effects of electrical burns, and 99 have died as a result of electrical fires (where the ignition fuel was identified as electricity and/or the ignition source was electrical distribution equipment). In comparison, in the previous ten-year period from 2015 to 2024, 50 deaths were caused by electrocution or electrical burns, and 93 by electrical fires. The trend rate of electrical-related fatalities continues to remain relatively consistent.

Electrocution and Electrical Burn Fatalities

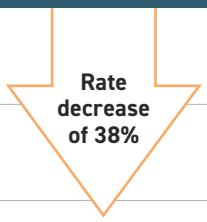
Below are the five-year rolling average rates of electrocution fatalities, comparing the two most recent five-year periods:

Five-year period of electrical-related fatalities		
2016–2020	• 23 electrical-related fatalities • Five-year rolling average of 0.32 per million population	
2021–2025	• 23 electrical-related fatalities • Five-year rolling average of 0.30 per million population	

Utility-related electrocutions have accounted for 52% of all electrical-related fatalities in the past ten years:

Five-year period of powerline fatalities		
2016–2020	• 39% of all electrical-related fatalities (9/23) were from powerline contact • Five-year rolling average of 0.12 per million population	
2021–2025	• 48% of all electrical-related fatalities (11/23) were from powerline contact • Five-year rolling average of 0.14 per million population	

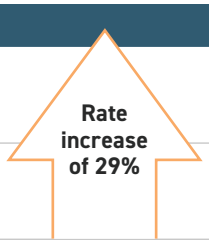
In the past ten years, the number of non-occupational electrical-related fatalities has been greater than the number of occupational electrical-related fatalities. Historically, previous ten-year periods have shown that occupational electrical-related fatalities were greater or equal to non-occupational electrical-related fatalities.

Five-year period of occupational electrical-related fatalities		
2016–2020	• 57% of electrical-related fatalities (13/23) were occupational • Five-year rolling average of 0.34 per million labour force	
2021–2025	• 39% of electrical-related fatalities (9/23) were occupational • Five-year rolling average of 0.21 per million labour force	

Electrical tradespeople (electricians and apprentice electricians) accounted for 26% of occupational electrical-related fatalities between 2016 and 2025 as they were fatally injured on the job when working energized. Between 2021 and 2025, there were 14 non-occupational electrical-related fatalities.

Fire Fatalities and Events

Five-year period of non-occupational electrical-related fatalities	
2016–2020	• 43% of electrical-related fatalities (10/23) were non-occupational • Five-year rolling average of 0.14 per million population
2021–2025	• 61% of electrical-related fatalities (14/23) were non-occupational • Five-year rolling average of 0.18 per million population



The rate of electrical fire fatalities (where the ignition fuel was identified as electricity and/or the ignition source was electrical distribution equipment) has increased by 2% when comparing the five-year rolling average in 2016-2020 and 2021-2025. Since the last report, the Ontario Office of the Fire Marshal (OFM) has advised that a number of electrical fire fatality investigations were closed, attributing to an increase of electrical fatalities up until 2023.

The number of structure-loss fires where electricity was identified as the fuel of the ignition source has decreased by 6% between 2020 and 2024.

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

- In 2020, there were 572 cooking equipment fires.
- In 2024, there were 608 cooking equipment fires, an increase of 6%.

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, appliance cords) with electricity as the fuel of the ignition source. This type of fire has decreased over the most recent five years:

- In 2020, there were 397 electrical distribution equipment fires.
- In 2024, there were 440 electrical distribution equipment fires, an increase of 11%

Priority Issues

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

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

- **Occupational powerline contacts** — Powerline contact while working accounted for 41% of all occupational electrical-related fatalities between 2016 and 2025.
- **Non-occupational powerline contacts** — Between 2016–2020 and 2021–2025, the rate of fatalities due to powerline contact while at home or in recreational settings has increased by 67%.
- **Electrical trade workers** — 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.
- **Electrical-related injuries** — From 2015 to 2014 (most currently available data), these injuries, identified from emergency department visits in Ontario have increased by 23%. The number of emergency department visits that were classified as critical visits has increased by 4% in the five-year rolling average between 2015–2019 and 2020–2024.
- **Product safety compliance** — Misuse of electrical products and unapproved or counterfeit products account for a significant number of safety reports.

ESA Initiatives

Based on the information collected from the OESR, ESA's strategic plan (Empowering Safety, Energizing Tomorrow) focuses on addressing those harms that represent many incidents and fatalities. ESA continues working to reduce the electrical fatality and critical injury rate between 2025 and 2030. It is also dedicated to increasing electrical safety awareness as an organizational priority.

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

To ensure that ESA is optimizing its efforts to act as an effective and efficient regulator, it has undertaken a risk-based prioritization of electrical harms for safety and manages harms from a life cycle perspective. The harm life cycle (HLC) uses data from internal and external sources (including those from this safety report) to manage harm reduction action.

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, now and into the future."

Purpose of This Report

When the Ontario Electrical Safety Report (OESR) was first introduced in 2001, its purpose was to identify electrical injuries, fatalities, and property damage; examine trends, areas of concern, and potential opportunities in Ontario's electrical safety infrastructure; and provide conclusions and recommendations to improve electrical safety across the province. In 2025, the report continues to build on that foundation while reflecting the evolution of Ontario's electrical safety system and the data now available to support it.

This 25th report on the state of electrical safety in Ontario summarizes electrical incidents, electrical-related fatalities identified by the Office of the Chief Coroner for Ontario, and injuries of an electrical nature. It also includes information on deaths, injuries, and damage caused by fire incidents identified by the Ontario Office of the Fire Marshal (OFM), 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.

Taken together, these updates show that while the report's core purpose remains consistent, that is, to inform, identify risk, and support improvements in electrical safety, its scope has expanded to provide stakeholders across the broader electrical safety system with a more comprehensive overview of electrical safety in Ontario.

Throughout this report, dedicated sections will highlight how collaboration with stakeholders has enhanced electrical safety and strengthened shared action. Electrical safety cannot be advanced in isolation or confined to one organization; it depends on partners working across occupational, non-occupational, utility, fire, and product safety spaces. These collaborations support a common understanding of risk, encourage coordinated action, and contribute to safer outcomes for people across Ontario.

By identifying key electrical safety risks, the report is intended to educate and inform members of the electrical safety system. Its findings can help develop and improve standards, identify areas for continued safety research, support workplace and community-based safety programs, and strengthen training, education, and communication initiatives.

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, ESA is responsible for administering regulation in five key areas:

- Ontario Electrical Safety Code (Regulation 164/99);
- Licensing of Electrical Contractors and Master Electricians (Regulation 570/05);
- Distribution Safety (Regulation 22/04);
- Product Safety (Regulation 438/07); and
- Administrative Penalties (Regulation 12/23).

ESA operates as a private, not-for-profit corporation. Funding derives from fees for electrical oversight, safety services, administering monetary penalties, 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 (HLC) approach;
- promoting awareness, education, and training on electrical safety;
- administering monetary penalties; and
- engaging with stakeholders to improve safety.

Electrocutions and Electrical Burn Fatalities

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

It takes very little electrical current to seriously injure or to kill a person. Direct contact with a circuit that can cause less than one amp of electricity (less than the current through a 100-Watt lightbulb) to pass through a human body can cause a person to stop breathing (fibrillation). Direct contact with a live 15-amp circuit, the equivalent to a standard household outlet, can result in death (Canadian Centre for Occupational Health and Safety, 2023).

Summary of Ontario data

Between 2016 and 2025, 46 electrical-related fatalities were reported in Ontario. This is less than the previous ten-year period, between 2015 and 2024, which saw 50 such fatalities.

By age group, individuals aged 20 to 39 years accounted for the largest proportion of fatal injuries (52%), followed by individuals 40 to 59 years of age (28%). Most electrical fatalities occurred between the months of June and September (57%).

The five-year rolling average rate of electrical fatalities has decreased by 6% when comparing 2016–2020 (0.32 per million population) and 2021–2025 (0.30 per million population). The rate of powerline fatalities has slightly increased when comparing the same time periods (0.12 and 0.14 per million population).

Residential (35%), and industrial (17%) settings were the most common places for electrical-related fatalities between 2021–2025.

The five-year rolling average of occupational electrical-related fatalities per labour force has decreased 38% when comparing 2016–2020 (0.34 fatalities per million) to 2021–2025 (0.21 fatalities per million). The five-year rolling average rate of non-occupational electrical-related fatalities per million population has increased by 29% between the same time periods (0.14 fatalities per million to 0.18 fatalities per million).

1 NUMBER OF ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2016–2025

There were **two** electrical-related fatalities in Ontario in 2025.

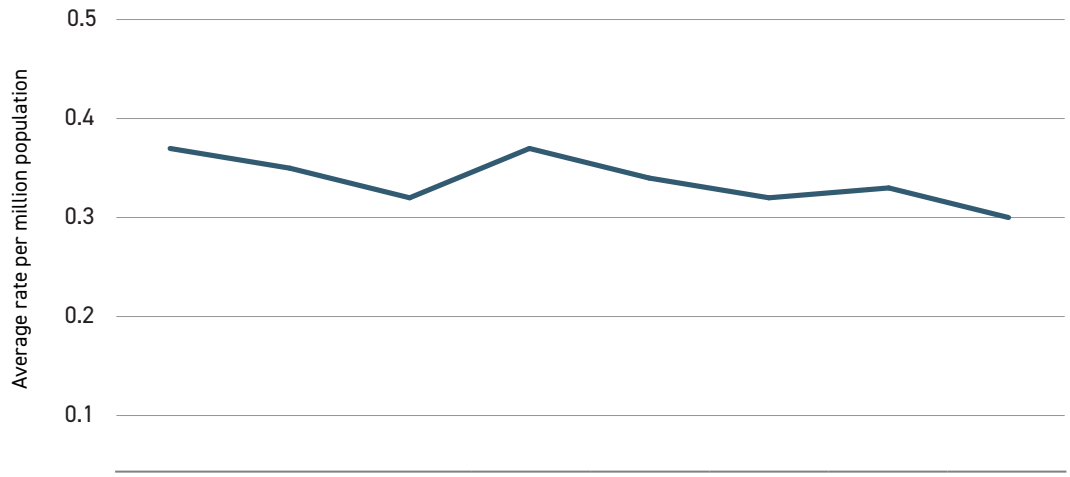
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Electrical-related fatalities	3	5	6	5	4	7	3	5	6	2

Source: ESA and Coroner records

Conclusion

In 2025, two fatalities occurred. This is the lowest number of fatalities since 2012.

2 FIVE-YEAR ROLLING AVERAGE RATE OF ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2014–2025



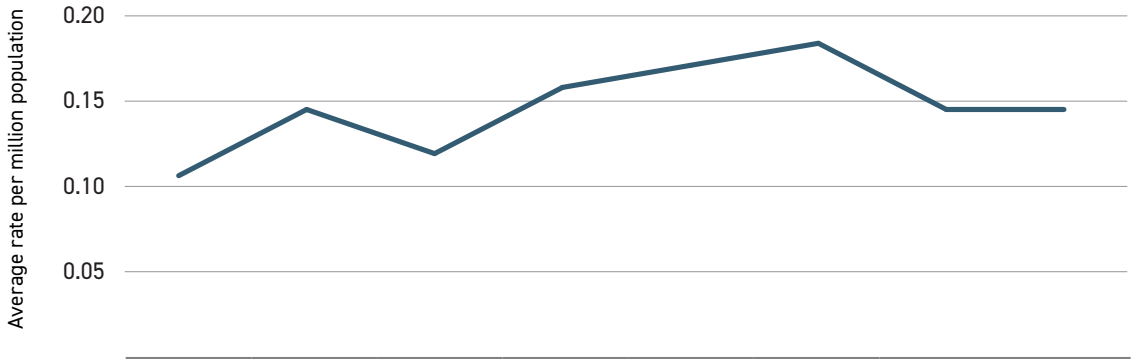
Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Electrocution and burn fatalities	0.37	0.35	0.32	0.37	0.34	0.32	0.33	0.30

Source: ESA and Coroner records

Conclusion

There has been a 6% decrease in the average rate of electrical-related fatalities when comparing 2016–2020 and 2021–2025.

3 FIVE-YEAR ROLLING AVERAGE RATE OF POWERLINE FATALITIES IN ONTARIO, 2014–2025



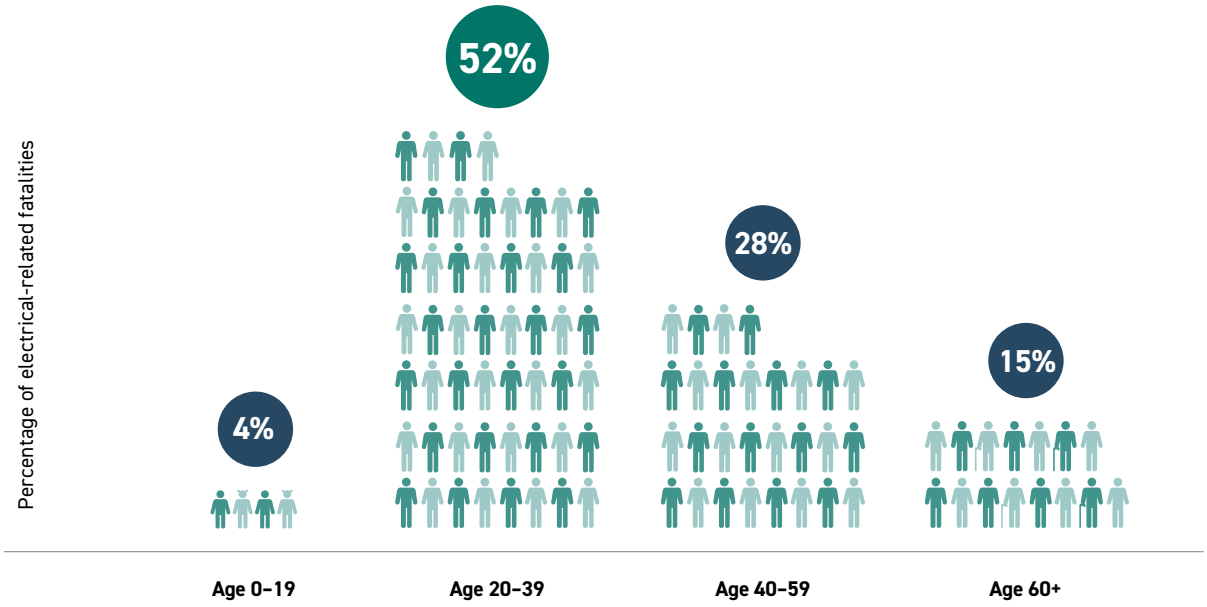
Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Powerline fatalities	0.11	0.14	0.12	0.15	0.16	0.17	0.14	0.14

Source: ESA and Coroner records

Conclusion

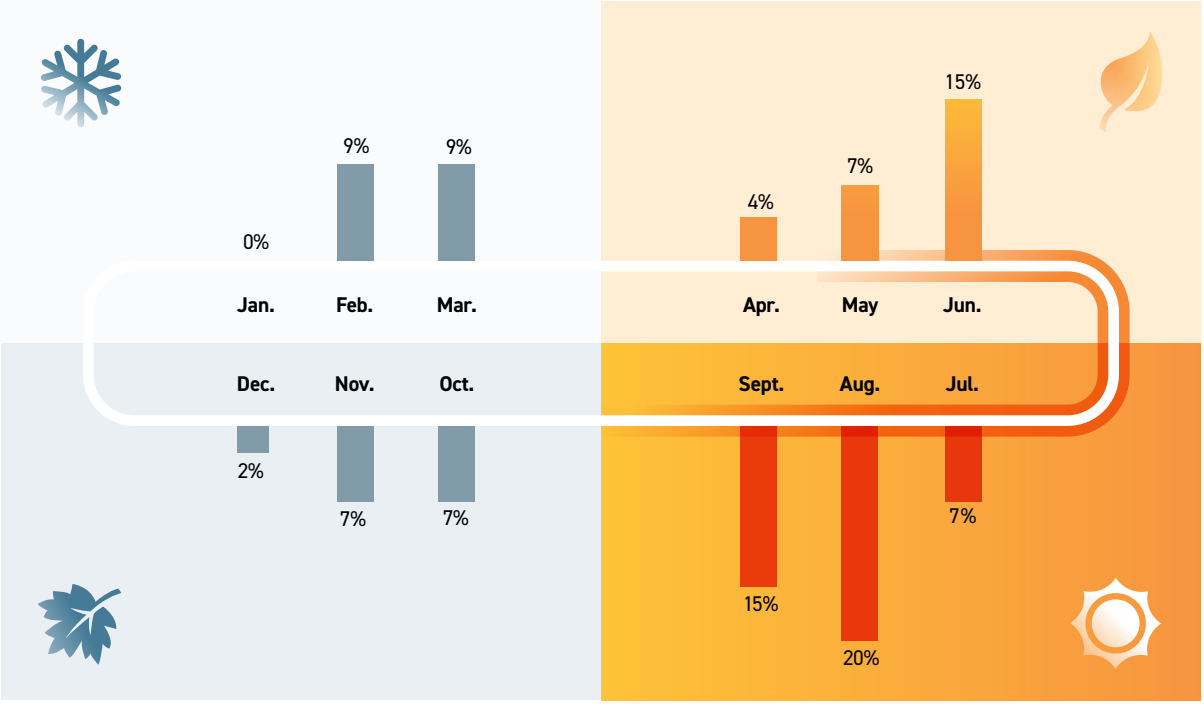
The rate of powerline fatalities remain under 0.15 per million population, but has increased by 17% when comparing the rate between 2016–2020 and 2021–2025.

4 PERCENTAGE OF ELECTRICAL-RELATED FATALITIES BY AGE GROUP IN ONTARIO, 2016–2025



Source: ESA and Coroner records

5 PERCENTAGE OF ELECTRICAL-RELATED FATALITIES BY MONTH IN ONTARIO, 2016–2025



Source: ESA and Coroner records

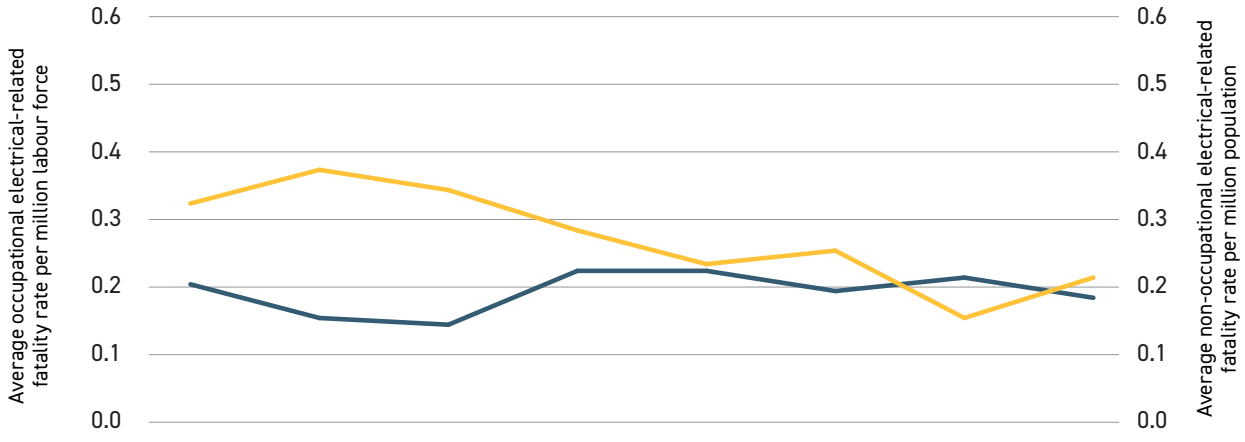
6 PERCENTAGE OF ELECTRICAL-RELATED FATALITIES BY FACILITY TYPE IN ONTARIO, 2016–2020 AND 2021–2025

Residential, **commercial,** and **industrial** were the most common settings where electrical fatalities occurred from 2016-2025.

Time period	Residential	Commercial	Industrial
2016–2020	32%	11%	11%
2021–2025	35%	9%	17%

Source: ESA and Coroner records

7 FIVE-YEAR ROLLING AVERAGE RATE OF OCCUPATIONAL AND NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2014–2025



Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Occupational	0.32	0.37	0.34	0.28	0.23	0.25	0.15	0.21
Non-occupational	0.20	0.15	0.14	0.22	0.22	0.19	0.21	0.18

Source: ESA and Coroner records

Conclusion

The five-year rolling average rate of occupational electrical-related fatalities per million labour force has decreased 28% when comparing 2016–2020 to 2021–2025. The five-year rolling average rate of non-occupational electrical-related fatalities per million population has increased by 29% between the same time periods.

Occupational Electrical-related Fatalities and Electrical Injuries

Occupational electrical-related fatalities are a particular hazard to those who routinely work near electrical sources. In the United States, contact with or exposure to electricity continues to be one of the leading causes of workplace fatalities and injuries. According to the U.S. Bureau of Labor Statistics, electrical-related fatality rates per 100,000 workers have remained steady between 2011 and 2024. Seventy percent of workplace electrical-related fatalities occurred in non-electrical occupations. According to the Electrical Safety Foundation International (ESFI, 2026), leading fatality causes include:

- overhead powerline contact (49%);
- unexpected contact with energy (20%);
- nearby energized equipment contact (12%);
- working on energized parts (4%);
- ground faults (4%);
- damaged wiring or equipment (3%); and
- arc-flash (%)

ESFI reported that tree trimming occupations and heavy truck drivers were the occupations with a growing number of fatalities between 2011 and 2024.

Electrical-related fatalities are more common among workers who are younger than the average age of occupational deaths overall. Non-fatal electrical injuries were the highest among workers aged 25–34, when comparing 2021–2022 and 2023–2024 (ESFI, 2026).

For those who survive electrical injury, the immediate consequences are usually obvious and often require extensive medical intervention. But symptoms may not appear until days or years later and they may present as pervasive, with less well-defined consequences. 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 and worsen (Yiannopoulou et al., 2021). A study found that patients experiencing an electrical injury had substantial acute and long-term neuropsychological and social outcomes; these 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. A survey of 600 people in 2020 who worked directly with electricity asked questions about their experience with electrical shock hazards. Seventy-eight percent of respondents said they had been shocked while on the job, where 37% were shocked by less than 221 V. Interestingly, respondents (85%) 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.

Most recently, Obediat et al. (2026) studied 188 self-employed electricians to examine the occupational and psychological stressors experienced by skilled trade workers in Ontario. Apprentices, electricians with less experience, and women showed higher psychological distress compared to experienced electricians and men in the electrical industry. Poor mental health and well-being were shown to directly and indirectly increase the risk of cognitive errors, which could lead to workplace accidents, injuries, and fatalities.

Summary of Ontario data

Between 2016 and 2025, there were 22 occupational electrical-related fatalities in Ontario. In the previous ten-year period (2014–2023), there were 23 occupational fatalities. In 2025, two occupational electrical-related fatalities were reported.

The five-year rolling average number of fatalities and critical injuries among workers (overall occupational safety) has remained the same when comparing 2016-2020 and 2021-2025. The five-year rolling average number of fatalities and critical injuries among electrical trade workers has decreased slightly when comparing these two time periods.

When comparing the five-year rolling average rate, occupational electrical-related fatalities have decreased from 0.34 per million labour force population in 2016-2020 to 0.21 per million labour force population in 2021-2025. This is a decrease of 38%.

In the 2021-2025 time period, industrial settings (44%) were the most common places for occupational electrical-related fatalities. Repair and maintenance, landscaping, and construction were the most common types of work being done when these fatalities occurred. Between 2016 and 2025, the most commonly cited cause of death was improper procedure (14%) when excluding unknown causes.

Between 2016 and 2025, electrical tradespeople accounted for 26% of all occupational electrical-related fatalities. In the previous ten-year period (2016-2025), electrical tradespeople accounted for 23% of all occupational electrical-related fatalities.

A review of data provided by the Workplace Safety and Insurance Board of Ontario (WSIB) from 2016 to 2025 shows that male workers continue to outnumber female workers with respect to occupational electrical injury. Workers in the construction and services sectors contribute to the highest number of WSIB lost time injury claims. Machine tools, electric parts, and other sources were the most common sources of injury. Between 2016-2020 and 2021-2025, the total number of claims for electrical injuries increased by 16%, while those for electrocutions increased by 25%.

COLLABORATING WITH OCCUPATIONAL SAFETY PARTNERS

ESA's stakeholders in the occupational safety space include electrical contractors who install, repair, and maintain electrical wiring, installations, and products in homes, workplaces, and public spaces across Ontario. ESA is the regulatory and licensing body for master electricians in Ontario. These electrical contractors play an important role in supporting ESA's understanding of electrical safety by reporting incidents and fatalities under the Ontario Electrical Safety Code. This information enables ESA to record, analyze, and gain insight into events that may have resulted in near misses, injuries, or fatalities.

ESA also has a close relationship with Ontario's Ministry of Labour, Immigration, Training and Skills Development. Whether through joint incident investigations or the development of policies that affect workers who interact with electricity, this key relationship is essential for preventing electrical harm. Ontario's sector-specific health and safety associations, including Infrastructure Health and Safety Association and Workplace Safety and Prevention Services, support ongoing dialogue on safety and help deliver awareness and education to the workforce.

ESA works with academic and commercial organizations focused on safety research and development to examine specific populations, time periods, and emerging data sources. These partnerships help provide a deeper understanding of electrical safety risks and contributing factors.

ESA also partners with health care providers, workplace and community-based safety organizations, and education and training institutions, including colleges, to support public communication and strengthen hazard-mitigation skills and awareness.

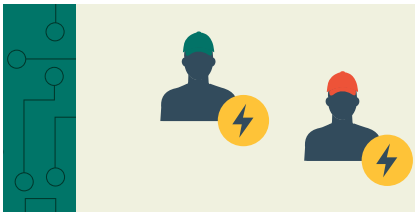
Statistics Directly Related to ESA's Harm Reduction Priorities

WORKER SAFETY

Five-year Rolling Average Comparison
Number of occupational electrical-related fatalities and critical injuries based on data reported by the Ministry of Labour, Immigration, Training and Skills Development, incidents investigated by ESA, and confirmed by the Office of the Chief Coroner.

The worker safety five-year rolling average decreased 6% when comparing 2016–2020 and 2021–2025.

1 NUMBER OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2016–2025

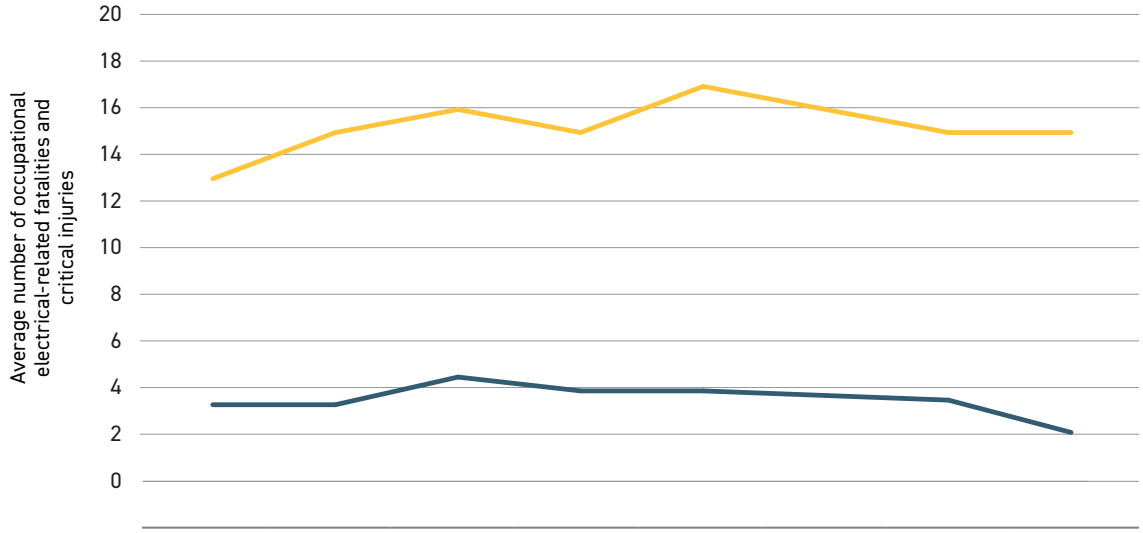


There were **two** occupational fatalities in Ontario in 2025.

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Number of occupational electrical-related fatalities	3	2	2	4	2	1	0	3	3	2

Source: ESA and Coroner records

2 FIVE-YEAR ROLLING AVERAGE NUMBER OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES AND CRITICAL INJURIES IN ONTARIO, 2014–2025

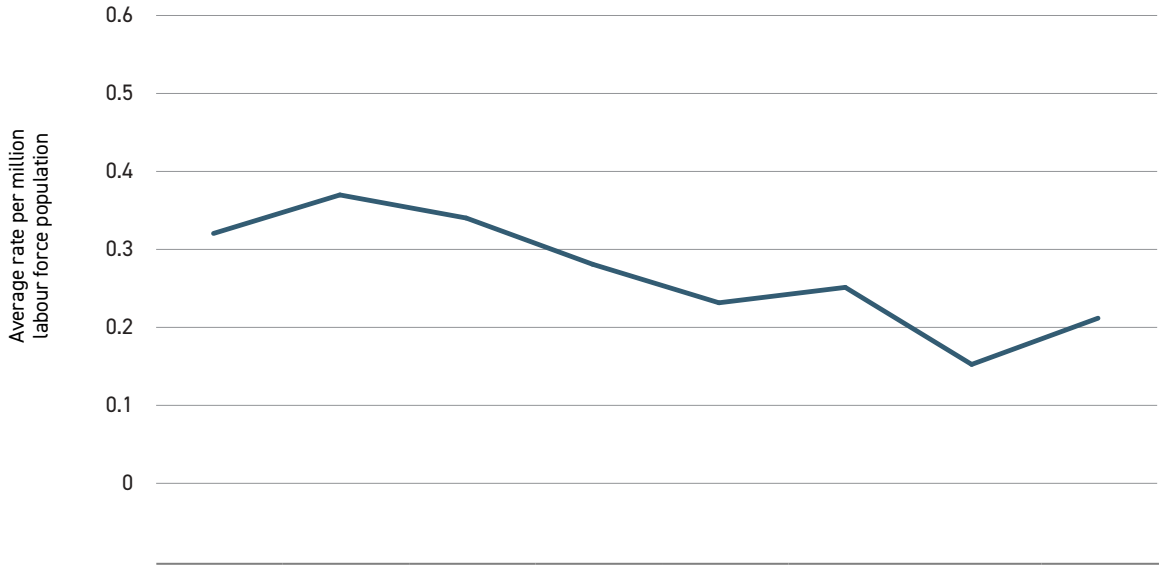


Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Workers and Electrical Trade Workers	13	15	16	15	17	16	15	15
Electrical trade	3.2	3.2	4.4	3.8	3.8	3.6	3.4	2.0

Conclusion

The worker safety five-year rolling average decreased 6% when comparing 2016-2020 and 2021-2025. Among electrical trade workers, this number has decreased when comparing the same time period.

3 FIVE-YEAR ROLLING AVERAGE RATE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2014–2025



Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Occupational electrical-related fatalities	0.32	0.37	0.34	0.28	0.23	0.25	0.15	0.21

Source: ESA and Coroner records

Conclusion

The rate of occupational electrical-related fatalities has decreased by 38% when comparing 2016–2020 and 2021–2025.

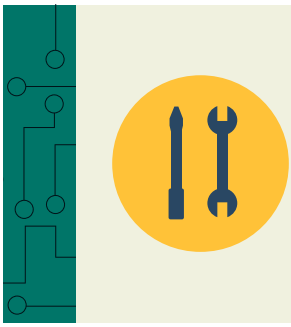
4 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY FACILITY TYPE IN ONTARIO, 2016–2020 AND 2021–2025

	Percentage of occupational electrical-related fatalities	
Facility Type	**2016–2020**	**2021–2025**
Commercial	15%	0%
Farm	15%	0%
Industrial	**23%**	**44%**
Residential	15%	33%
Unknown	15%	11%
Utility	15%	11%

The industrial setting is the most common type of facility where occupational related fatalities have occurred.

Source: ESA and Coroner records

5 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY TYPE OF WORK IN ONTARIO, 2016–2020 AND 2021–2025

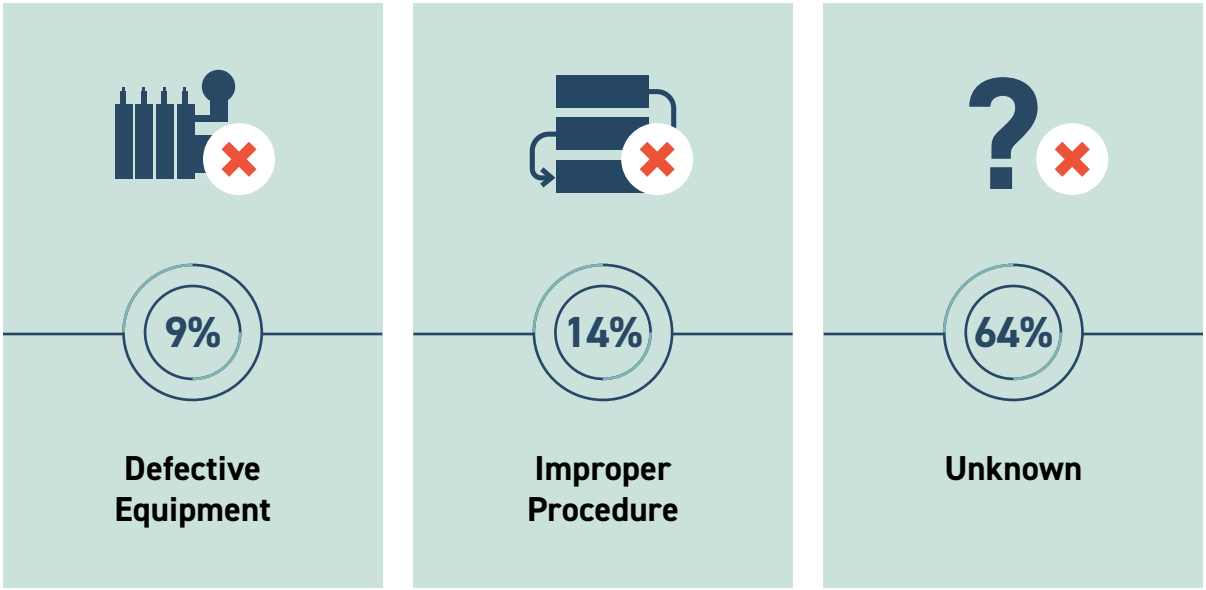


Between 2016 and 2025, **repair/maintenance activities** were the most common types of work being done when occupational electrical-related fatalities occurred.

	Work type	Construction	Excavation	Inspection	Installation	Other	Landscaping	Repair / maintenance	Cleaning	Unknown
Occupational electrical-related fatalities	2016–2020	8%	8%	7%	0%	7%	8%	57%	0%	0%
	2021–2025	0%	11%	0%	22%	0%	11%	11%	11%	33%

Source: ESA and Coroner records

6 PERCENTAGE OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY PROBABLE CAUSE IN ONTARIO, 2016–2025

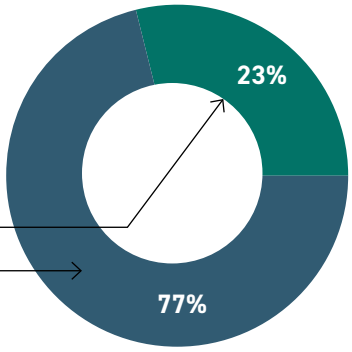


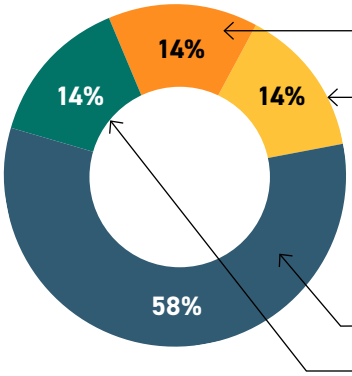
Conclusion

Improper procedure and lack of training were cited as probable causes for occupational electrical-related fatalities.

7 NUMBER OF OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY OCCUPATION IN ONTARIO, 2016–2025

Electrical trades make up 23% of occupational electrical-related fatalities





Electrician fatalities account for the majority of fatalities among electrical tradespersons

Apprentice electrician
Power linesperson
Electrician
Linesperson apprentice

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Apprentice electrician	0	0	0	1	0	0	0	0	0	0
Electrician	1	0	0	0	0	1	0	1	1	0
Power linesperson	0	0	0	0	0	0	0	0	0	1
Linesperson apprentice	0	0	0	0	1	0	0	0	0	0
Total electrical	1	0	0	1	1	1	0	1	1	1
Other trades	2	2	2	3	1	0	0	2	2	1
All occupational fatalities	3	2	2	4	2	1	0	3	3	2

Source: ESA and Coroner records

8 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY SEX IN ONTARIO, 2016–2025

3X

Between 2016 and 2025, the number of WSIB claims related to electrical injury among **males** was almost **three times greater** than that among females.

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Male	44	47	54	64	46	56	58	69	63	68
Female	21	24	15	22	16	11	21	22	23	31
Unknown	–	–	–	–	–	–	–	<5	–	–

Source: WSIB

9 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY SECTOR IN ONTARIO, 2016–2025

Construction
188

Services
178

Manufacturing
125

Schedule 2*
107

Health care
56

Electrical
38

Transportation
19

Food
25

Education
5

Automotive
8

Other industry sectors
25

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

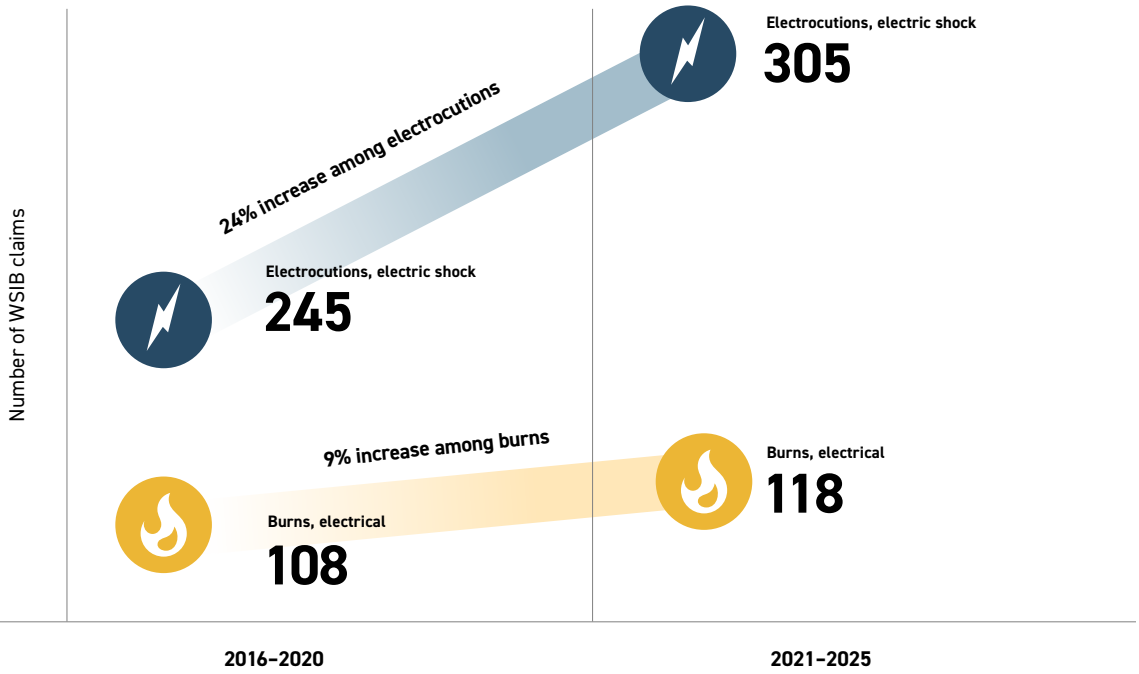
Source: WSIB

10 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY THE TOP TEN SOURCES OF INJURY IN ONTARIO, 2016–2025

Source	Number of WSIB lost time claims	
Machine tools and electric parts	**410**	
Heating, cooling, and cleaning machinery	**96**	
Other sources	**89**	
Miscellaneous machinery (e.g., audio, video, televisions, telephones, snowblowers)	**33**	
Special process machinery (e.g., food slicers, paper printing, wrapping, sewing, pumps)	**26**	
Hand tools, powered	**24**	
Other tools, instruments, equipment, unspecified not elsewhere classified	**23**	
Office and business machines	**23**	
Metal woodworking and plastic, rubber concrete, and other processing	**21**	
Furniture and fixtures	**16**	
Vehicle and mobile equipment parts	**15**	

Source: WSIB

11 NUMBER OF ALLOWED WSIB LOST TIME ELECTRICAL INJURY CLAIMS BY NATURE OF INJURY IN ONTARIO, 2016–2020 AND 2021–2025



Note: Electrocutions and electric shock, as provided by the WSIB, include injuries only.

Source: WSIB

Non-occupational Electrical-related Fatalities and Injuries

Ontario's ESA monitors non-occupational electrical fatalities and injuries to reduce the risk of shock and burns. Many of these incidents are predictable and, with appropriate prevention efforts, can be avoided.

Summary of Ontario data

In 2025, there were zero non-occupational electrical-related fatalities. In the previous year, there were three non-occupational electrical-related fatalities. The five-year rolling average rate between 2016–2020 and 2021–2025 has increased by 29% from 0.14 to 0.18 per million population.

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

Examples of non-occupational electrical-related fatalities include working on Lichtenberg generators, copper theft, or coming into contact with powerlines while fishing or camping.

COLLABORATING WITH NON-OCCUPATIONAL SAFETY PARTNERS

ESA works with a range of partners to enhance non-occupational electrical safety in homes, recreational settings, and communities. These partners include regulators, enforcement agencies, and all levels of government that develop policies and regulations to protect public safety. This can influence organizational and consumer behaviour to reduce risk.

ESA also collaborates with emergency management partners to proactively advocate for electrical safety and support safe power reconnection following outages caused by storms, floods, and other emergencies. In addition, ESA works with injury prevention organizations, such as Parachute Canada, to promote electrical safety among children and the general public. Through data-driven insights, the ESA develops targeted safety messages for homeowners and the public to address risky electrical behaviours and help prevent electrical harm.

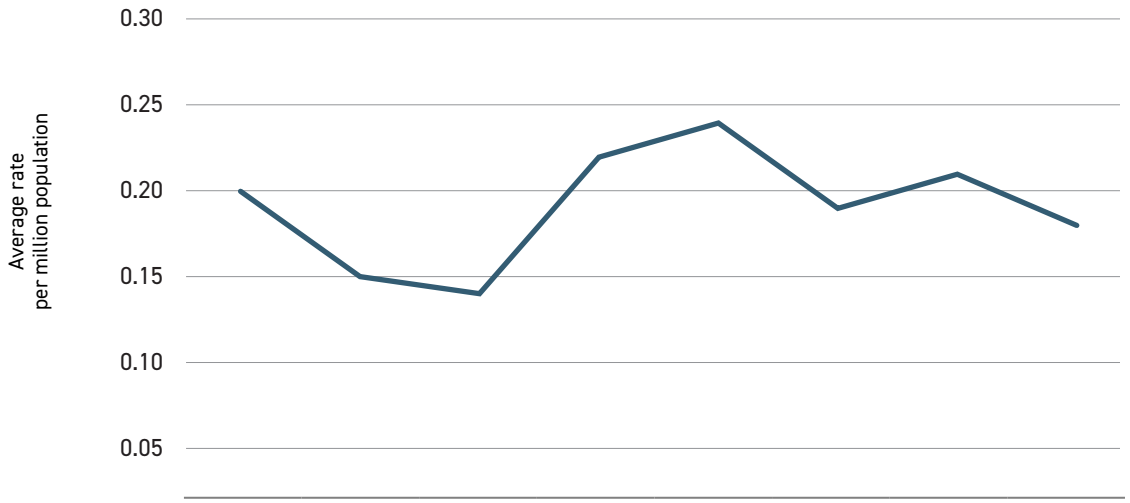
1 NUMBER OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2016–2025

There were **no** non-occupational electrical-related fatalities in 2025.

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Non-occupational electrical-related fatalities	0	3	4	1	2	6	3	2	3	0

Source: ESA and Coroner records

2 FIVE-YEAR ROLLING AVERAGE RATE OF NON-OCCUPATIONAL ELECTRICAL FATALITIES IN ONTARIO, 2014–2025



Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Non-occupational electrical-related fatalities	0.20	0.15	0.14	0.22	0.24	0.19	0.21	0.18

Source: ESA and Coroner records

Conclusion

The five-year rolling average rate of non-occupational electrical-related fatalities has increased by 29% when comparing 2016–2020 and 2021–2025.

3 PERCENTAGE OF NON-OCCUPATIONAL ELECTRICAL FATALITIES BY FACILITY TYPE IN ONTARIO, 2016–2025

From 2016 to 2025, **residential setting** was the most common place where **non-occupational electrical-related fatalities occurred.**

Non-occupational electrical-related fatalities	Facility type	Commercial	Public right of way	Residential	Unknown	Utility
	2016–2020	0%	10%	50%	10%	30%
	2021–2025	14%	7%	36%	29%	0%

Source: ESA and Coroner records

4 PERCENTAGE OF NON-OCCUPATIONAL ELECTRICAL-RELATED FATALITIES BY POTENTIAL CAUSE IN ONTARIO, 2016–2025

21% Human error

17% Unknown

21% Misuse

21% Theft

Source: ESA and Coroner records

Electrical Injury and Emergency Department Visits in Ontario

Electrical injuries can occur as a result of low-voltage or high voltage contact, or lightning, and are often associated with high morbidity and mortality. Almost all electrical injuries are accidental and preventable (Zemaitis et al., 2023).

Exposure to electricity can result in four main types of injuries: flash, flame, lightning, and true injuries. Flash injuries are caused by an arc flash and are typically associated with superficial burns. Flame injuries occur when an arc flash ignites an individual's clothing, and electrical current may pass through the skin. Lightning injuries are associated with an electrical current flowing through the individual's entire body. True electrical injuries involve an individual becoming part of an electrical circuit, where an entrance and exit site can be found (Zemaitis et al, 2023).

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).

In the United States, approximately 10,000 patients present in emergency departments with electrical burns or electric shock per year. An estimated 4% of burn centre admissions are due to electrical burns. Most electrical injuries are due to household or occupational exposures. Young children are affected most by household current, adolescent males by high-risk behaviour, and adult males by occupational exposure (Gentges and Schleche, 2018).

Summary of Ontario data

From 2015 to 2024, 9,821 visits to Ontario hospitals' emergency departments (EDs) were due to electrical injury. The total number of ED visits for electrical injury has increased by 23% when comparing 2015 and 2024. The trend of males outnumbering females in electrical injuries is also observed in ED visits, with 78% of ED visits from males. The age group with the largest number of ED visits was 25–30 years old for males and for females.

Using the Canadian Triage and Acuity Scale (CTAS), the severity of electrical injury is assessed upon each ED visit. Between 2015 and 2024, 89% 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 (CTAS levels 1–3).

In 61% of all ED visits, the principal diagnosis was identified as electrical current, while burns were the principal diagnosis in 15% of cases.

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

Statistics Directly Related to ESA's Harm Reduction Priorities

NON-OCCUPATIONAL ELECTRICAL SAFETY

Five-year Rolling Average Comparison
Number of emergency department visits due to critical electrical injuries (CTAS levels 1–3) reported to the Canadian Institute of Health Information (CIHI).

The number of emergency department visits that were classified as critical visits has increased by 4% in the five-year rolling average between 2015–2019 and 2020–2024.

1 NUMBER OF ED VISITS FOR ELECTRICAL INJURY BY SEX IN ONTARIO, 2015–2024

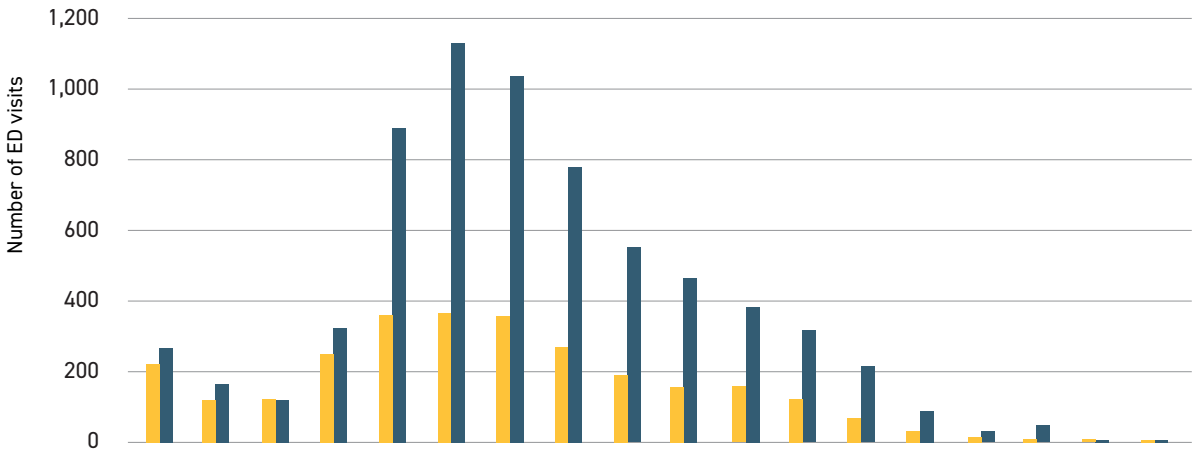
In the past ten years, on average, there were **982 ED** visits per year related to electrical injury.

The number of visits from **males** was more than **twice** the number of visits from females.

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Female	265	305	304	279	295	196	276	280	321	354
Male	673	716	690	722	644	509	720	719	753	800
Total	938	1,021	994	1,001	939	705	996	999	1,074	1,154

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

2 NUMBER OF ED VISITS FOR ELECTRICAL INJURY BY AGE AND SEX IN ONTARIO, 2015–2024



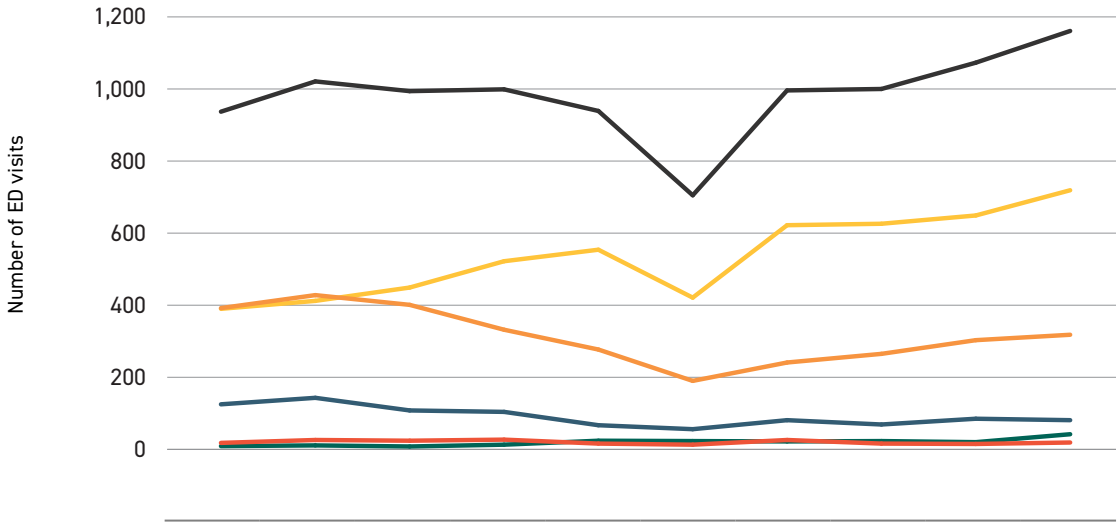
Age	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+
Female	225	121	123	253	365	370	362	273	193	159	160	124	69	33	16	9	8	7
Male	271	166	122	327	900	1,143	1,047	787	557	471	388	320	217	90	31	48	13	7

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. The age group with the largest number of ED visits was 25–30 years old for males and 20–24 years old for females.

3 NUMBER OF ED VISITS FOR ELECTRICAL INJURY BY CTAS LEVEL IN ONTARIO, 2015–2024



Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Resuscitation/ life threatening (level 1)	18	26	24	27	16	13	26	16	15	19
Emergent/potentially life threatening (level 2)	392	428	401	332	277	190	241	265	303	318
Urgent/potentially serious (level 3)	390	412	449	522	554	421	622	626	649	719
Less-urgent/ semi-urgent (level 4)	125	143	108	104	67	56	81	69	85	81
Non-urgent (level 5)	9	11	8	13	24	23	22	23	20	24
Total	937	1,021	994	999	939	705	996	1,000	1,073	1,161

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

Conclusion

Eighty-nine percent of ED visits for electrical injury were classified on the CTAS at levels 1–3 (Resuscitation, Emergent, Urgent) between 2015 and 2024.

4 LOCATION OF BURNS ASSOCIATED WITH ELECTRICAL INJURY IN ONTARIO, 2015–2024

The majority of burns associated with electrical injury were found on the **wrist and hand.**

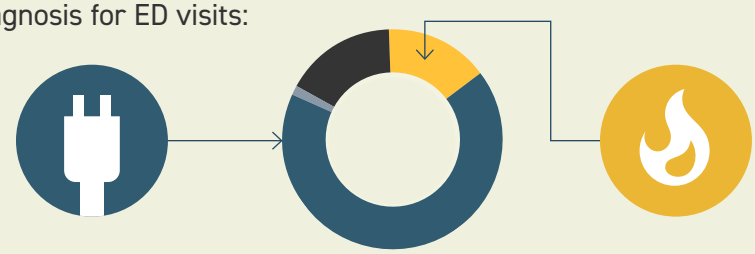
Location of burns	Head and neck	Trunk	Shoulder and upper limb, except wrist and hand	Wrist and hand	Hip and lower limb, except ankle and foot	Ankle and foot	Eye and adnexa	Respiratory tract	Other internal organs	Multiple body regions	Unspecified body areas	Unknown
Total	154	85	152	1,329	60	49	32	1	15	56	11	996

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

5 NUMBER OF ED VISITS FOR ELECTRICAL INJURY BY PRIMARY DIAGNOSIS IN ONTARIO, 2015–2024

Primary diagnosis for ED visits:

Electric Current **67%**

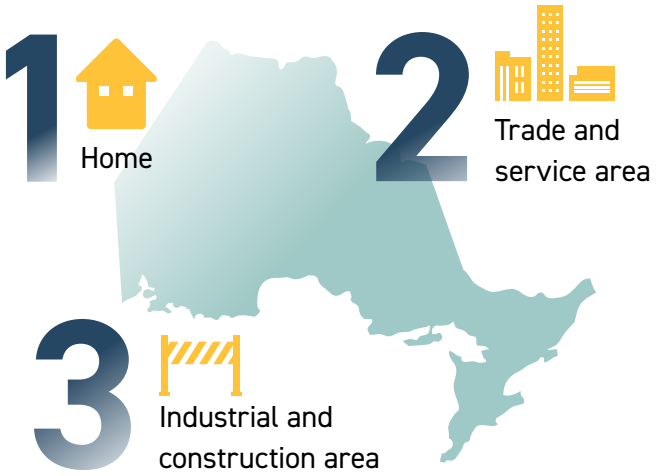


Burns **16%**

Primary diagnosis	Effects of electric current (T75.4)	Effects of lightning (T75.0)	Burns (T20–T31)	Other diagnoses
ED visits	6,585	134	1,601	1,476

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

6 NUMBER OF ELECTRICAL INJURIES BY PLACE IN ONTARIO, 2015–2024



Home, trade and service areas, and **industrial and construction areas** are the locations where injuries are most commonly reported.

Location	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
Electrical injuries	49	1,967	914	75	345	17	48	953	757	4,639

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

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 exposure to electric shock hazards.

In 2025, BC Hydro published the results of a worker survey and their work practices near powerlines and electrical infrastructure. Their data showed that one-third of respondents have been injured or shocked by electricity or knew someone who was injured or shocked on the job. More than 20% stated that these incidents involved workers who were new to the job or had received insufficient training. Seasonal workers in construction, tree trimming, painting, and window washing are at higher risk of electrical injuries, particularly in the spring and summer months (BC Hydro, 2025). This trend is consistent with Ontario data, where we have seen incidents involved with extended-reach apparatus in maintenance and construction.

Summary of Ontario data

From 2016 to 2025, there were 24 electrical-related fatalities associated with utility-related equipment, which accounted for 52% of the total electrical fatalities in Ontario. This number is similar when compared to the previous ten-year period of 2015–2024 at 48%.

Contact specifically with powerlines accounted for 20 of the electrical-related fatalities in the most recent ten-year period, which contributed to 83% of utility-related equipment fatalities. The five-year rolling average rate for powerline electrocutions has increased by 17% from 0.12 per million to 0.14 per million when comparing 2015–2019 and 2020–2024.

Overhead powerline contact remains the leading cause of utility-related electrical incidents every year. In 2025, fewer than five such incidents among LDC workers (as a subset of the utility sector) were reported.

Reported injuries associated with of utility-related equipment have decreased over the past ten years, although property damage has been increasingly reported in the most recent five years.

COLLABORATING WITH UTILITY PARTNERS

ESA demonstrates a strong commitment to electrical safety through its extensive collaboration with various utility partners, which include organizations dedicated to generating, transmitting, and distributing electricity. A cornerstone of this collaborative effort is ESA's active engagement with the Utility Advisory Council (UAC). Together, they work closely to define and produce clear guidelines pertaining to the Electrical Distribution Safety Regulation (22/04). This partnership is essential for developing best practice guidelines that ensure safe electrical installations and help to clarify complex regulatory and technical issues for industry professionals.

Beyond establishing foundational safety guidelines, ESA acts as a key conduit for vital information within the sector. When emerging trends or urgent safety topics arise, ESA proactively brings these issues to the forefront. By fostering open lines of communication, it ensures that new and critical information is shared with electrical distribution companies and other partners within the electrical educational materials. Recognizing the shared responsibility of public safety, ESA equips its utility partners with occupational and homeowner safety resources. These resources are designed to educate Ontarians about the serious dangers associated with powerlines, how to stay safe around them, and the correct actions to take in an emergency.

Finally, ESA's collaborative efforts extend beyond industry professionals directly to the public through the provision of essential educational materials. Recognizing the shared responsibility of public safety, ESA equips its utility partners with occupational and homeowner safety resources. These resources are designed to educate Ontarians about the serious dangers associated with powerlines, how to stay safe around them, and the correct actions to take in an emergency. By providing these tools, ESA and its utility partners work together to promote a comprehensive culture of safety that protects both workers on the job and residents in their communities.

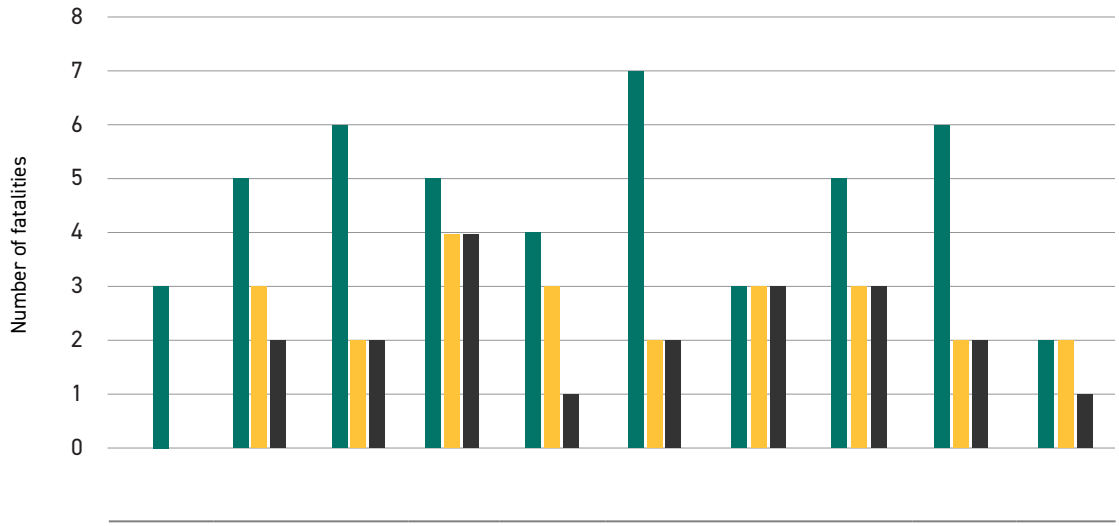
Statistics Directly Related to ESA's Harm Reduction Priorities

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 ESA.

The overhead powerline safety incident five-year rolling average has increased by 21% between 2016–2020 and 2021–2025.

1 NUMBER OF ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2016–2025



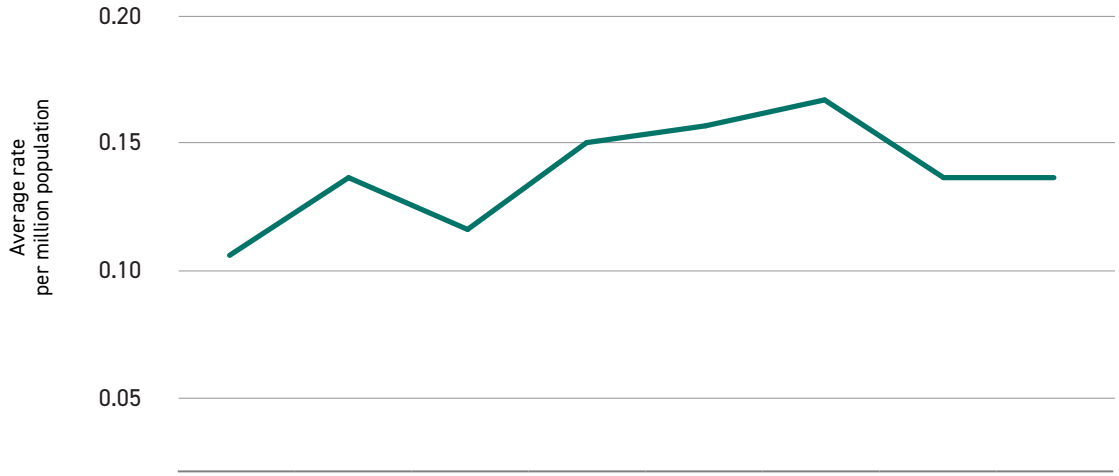
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Electrical-related fatalities	3	5	6	5	4	7	3	5	6	2
Utility equipment electrical-related fatalities	0	3	2	4	3	2	3	3	2	2
Powerline electrical-related fatalities	0	2	2	4	1	2	3	3	2	1

Source: ESA and Coroner records

Conclusion

From 2016 to 2025, up to four utility equipment electrical-related fatalities have been reported per year. In 2025, two such fatalities were reported, one of which was from powerline contact.

2 FIVE-YEAR ROLLING AVERAGE OF POWERLINE ELECTRICAL-RELATED FATALITIES IN ONTARIO, 2014–2025



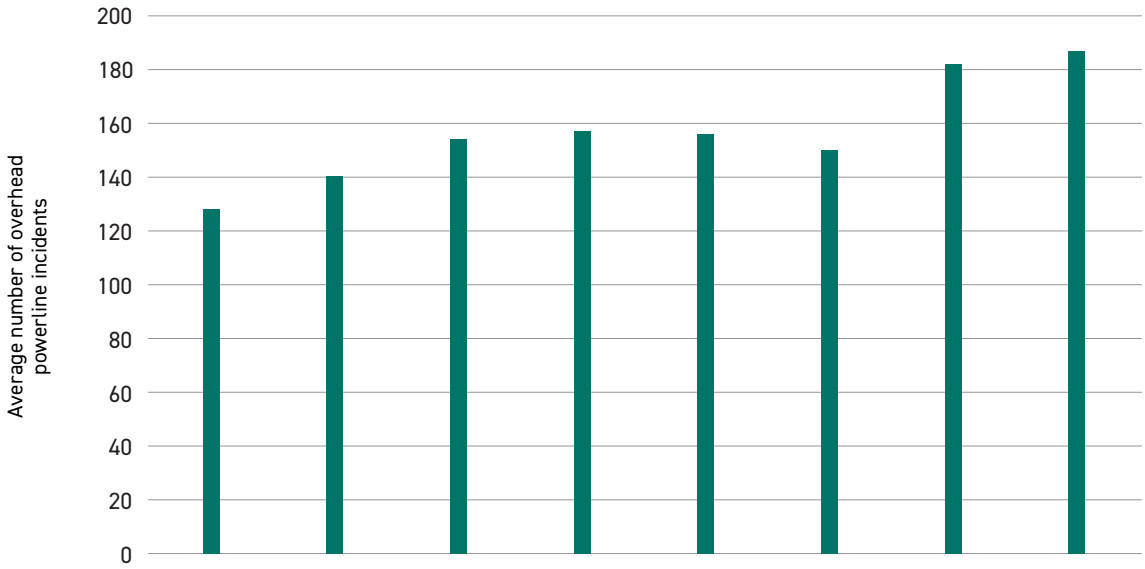
Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Powerline electrical-related fatalities	0.11	0.14	0.12	0.15	0.16	0.17	0.14	0.14

Source: ESA and Coroner records

Conclusion

The rate of powerline electrical-related fatalities has increased by 17% when comparing 2016–2020 and 2021–2025.

3 FIVE-YEAR ROLLING AVERAGE NUMBER OF OVERHEAD POWERLINE INCIDENTS IN ONTARIO, 2014–2025



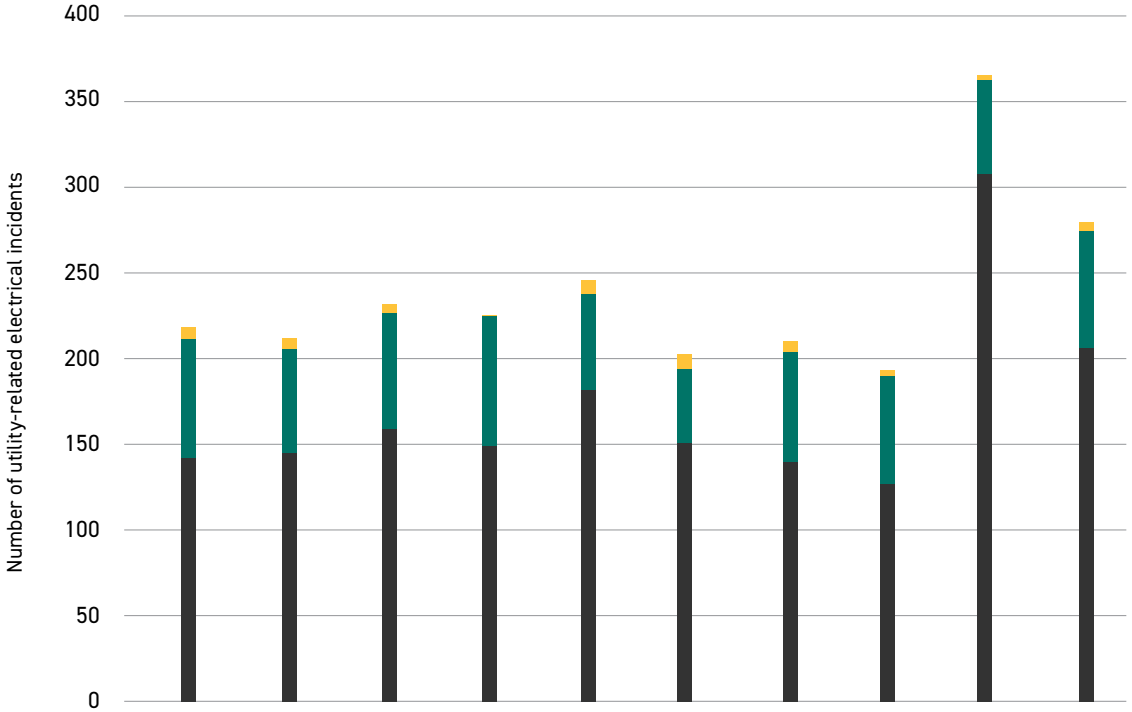
Five-year period	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024	2021–2025
Overhead powerline incidents	129	141	155	158	157	151	183	188

Source: ESA records

Conclusion

The five-year rolling average number of overhead powerline incidents has increased by 21% when comparing 2016–2020 and 2021–2025.

4 NUMBER OF UTILITY-RELATED ELECTRICAL INCIDENTS BY CONTACT TYPE IN ONTARIO, 2016–2025



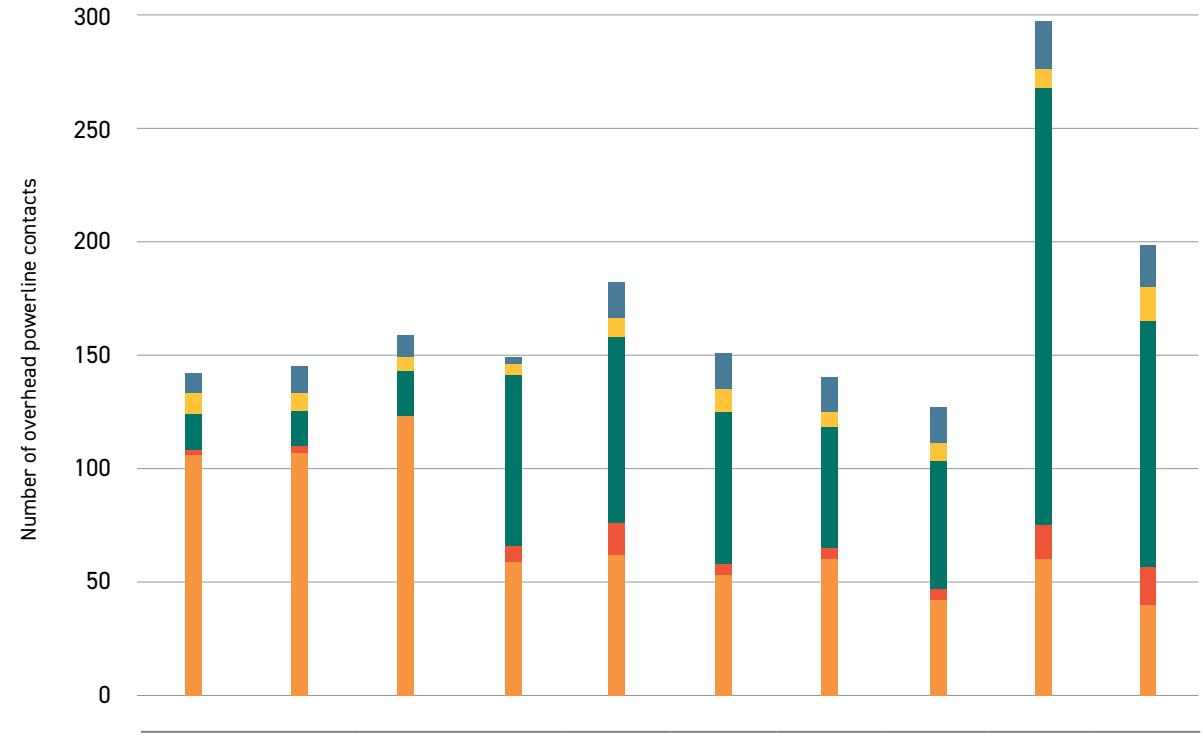
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Vaults, substations, and padmounts	7	6	5	1	8	9	7	4	3	5
Underground powerline contact	70	61	68	76	56	43	64	63	56	68
Overhead powerline contact	142	145	159	149	182	151	140	127	307	207

Source: ESA records

Conclusion

Overhead powerline contact remains the leading cause in utility-related electrical incidents between 2016 and 2025.

5 NUMBER OF OVERHEAD POWERLINE CONTACTS BY SECTOR IN ONTARIO, 2016–2025



Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Utility	9	12	10	3	16	16	15	16	22	19
Transport	9	8	6	5	8	10	7	8	11	16
Public	16	15	20	75	82	67	53	56	197	113
Farm	2	3	0	7	14	5	5	5	18	17
Construction	106	107	123	59	62	53	60	42	62	42

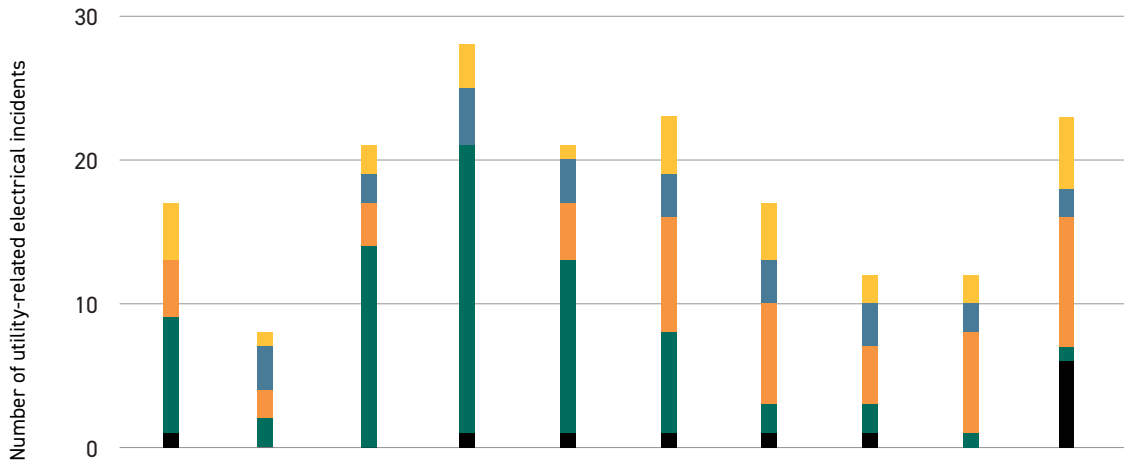
Source: ESA records

Conclusion

Historically, construction has been the leading sector in which overhead powerline contacts occur; however, in the past five years, incidents reported in public settings have increased. In 2024 and 2025, public settings have seen a notable number of tree-related incidents reported to ESA, often with limited contextual information. The underlying causes behind this surge are currently undetermined.

In 2025, there were fewer than five reported incidents involving LDC workers and overhead powerline contact.

6 NUMBER OF UTILITY-RELATED ELECTRICAL INCIDENTS BY OUTCOME IN ONTARIO, 2016–2025



Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Critical injury	4	1	2	3	1	4	4	2	2	5
Fatality	0	3	2	4	3	3	3	3	2	2
Non-critical injury	4	2	3	0	4	8	7	4	7	9
Property damage	8	2	14	20	12	7	2	2	1	1
Unknown	1	0	0	1	1	1	1	1	0	6

Conclusion

The number of critical injuries and the number of fatalities reported from utility-related incidents have remained at five or under, between 2016 and 2025.

Overview of All Fires in Ontario

Fire remains a significant threat to life and property in urban and rural areas. Structural fires, particularly residential fires, remain a critical concern. 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). This chapter will provide an overview of all fires and fire fatalities in Ontario, with electrical fires and fatalities described in later sections.

Summary of Ontario data

Ontario reported 33,113 structure-loss fires (fires resulting in an injury, fatality, or dollars lost that occur in structures as opposed to vehicles or the outdoors) between 2020 and 2024. Residential-loss fires (26,417) account for 79% of structure-loss fires in the same period. Stove-top fires (with electricity fuel only) account for 5% of structure-loss fires and 6% of residential-loss fires. Since 2020, there has been a 18% increase in total loss fires, a 10% increase in structure-loss fires, and a 5% increase in residential-loss fires.

For the period between 2015 and 2024, the OFM identified the following as the most common ignition sources for structure-loss fires:

- cooking (16%);
- electrical distribution – wiring (8%);
- miscellaneous (includes fires — natural causes and chemical reactions) (8%);
- cigarettes (7%);
- heating and cooling equipment (7%);
- other electrical, mechanical (5%); and
- appliances (4%).

When comparing 2015–2019 and 2020–2024, the average number of structure-loss fires per year by ignition source decreased 12% for cooking, 9% for electrical wiring, 15% for heating/cooling equipment, and 9% for appliances.

Between 2020 and 2024, 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 (35%);
- electrical distribution equipment – wiring (34%); and
- appliances (10%).

COLLABORATION WITH FIRE SAFETY PARTNERS

ESA collaborates with Ontario fire departments to identify, respond to, and reduce electrical fire risks. Fire services may involve ESA during emergencies, such as live wires or active electrical fires, or refer non-urgent code concerns for inspection and corrective action. These processes support timely hazard mitigation and help prevent future incidents.

ESA also works with fire authorities, manufacturers, and standards organizations to address leading residential fire risks, including unattended cooking fires. This collaboration contributed to updated standards requiring new electric coil stoves to include temperature-limiting elements that reduce ignition risks from overheated cooking oils.

To support emergency responders, ESA provides tools such as a renewable energy installation portal and the *Electrical Safety Handbook for Emergency Responders*. It also works with partners through media releases, Fire Prevention Week campaigns, technical bulletins, product safety alerts, and data-sharing initiatives. Together, these efforts strengthen public warnings, improve responder safety, identify emerging trends, and support stronger electrical safety requirements across Ontario.

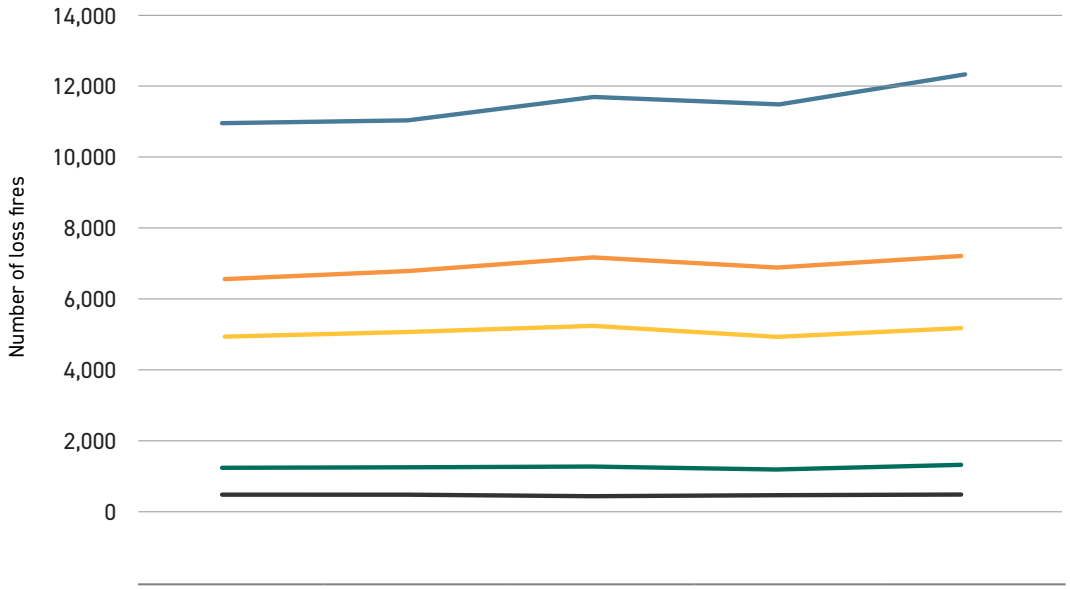
Statistics Directly Related to ESA's Harm Reduction Priorities

PRODUCT SAFETY

Number of electrical product-related fires: a product loss fire is defined as a fire associated with appliances, cooking equipment, lighting equipment, and other electrical, mechanical or processing equipment as classified by the Office of the Fire Marshal.

The five-year rolling average of product safety fires has decreased by 20% between 2015–2019 and 2020–2024.

1 NUMBER OF LOSS FIRES IN ONTARIO, 2020–2024



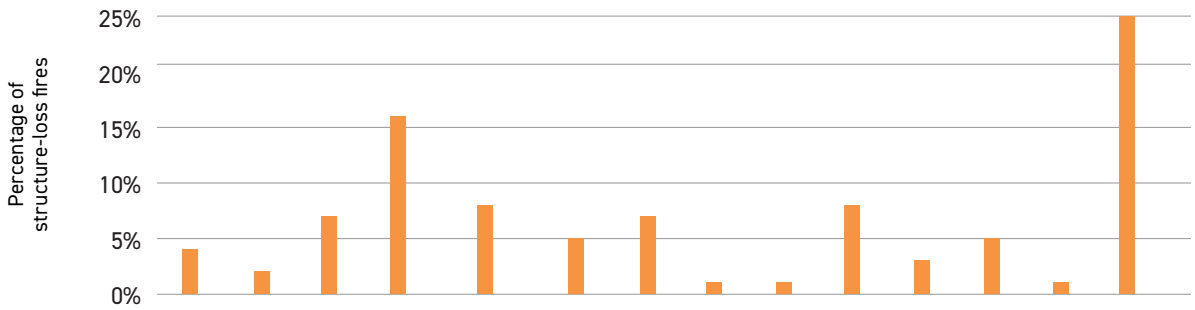
Year	2020	2021	2022	2023	2024
Total number of loss fires	10,600	10,708	11,598	11,315	12,458
Structure-loss fires	6,842	7,081	7,482	7,183	7,524
Residential-loss fires	5,143	5,281	5,461	5,136	5,395
OBC structure-loss fires where electricity fuelled the ignition source	1,354	1,371	1,398	1,293	1,459
Stove-top structure-loss fires	401	400	346	382	405

Source: OFM records

Conclusion

The number of total loss, structure-loss, and residential-loss fires has increased between 2020 and 2024. Likewise, the number of OBC structure-loss fires where electricity fuelled the ignition source has increased by 8% when comparing 2020 and 2024.

2 PERCENTAGE OF STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2015–2024



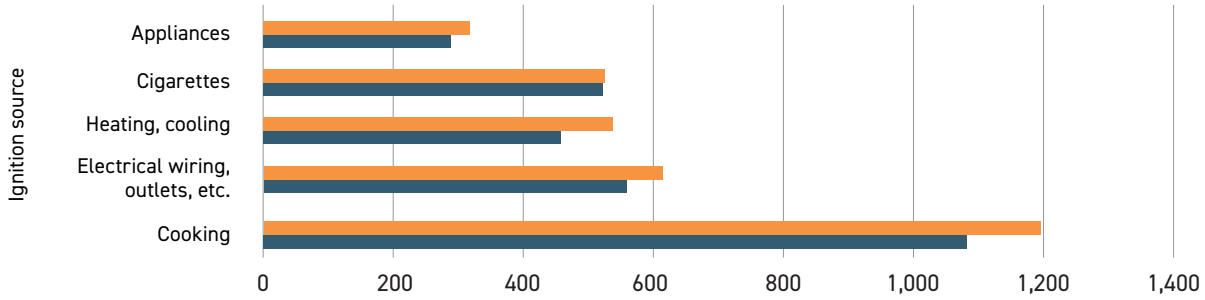
Ignition source	Appliances	Candles	Cigarettes	Cooking	Electrical Distribution Equipment - Wiring	Exposure	Heating, cooling	Lighting	Matches, lighters	Miscellaneous	Other open flame tools	Other electrical, mechanical	Processing equipment	Undetermined
2015–2024	4%	2%	7%	16%	8%	5%	7%	1%	1%	8%	3%	5%	1%	25%

Source: OFM records

Conclusion

When excluding undetermined and miscellaneous sources, cooking (16%) and electrical distribution – wiring (9%) were the most common ignition sources for structure-loss fires between 2015 and 2024.

3 FIVE-YEAR AVERAGE NUMBER OF STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2015–2019 AND 2020–2024



Ignition source		Cooking	Electrical wiring, outlets, etc.	Heating, cooling	Cigarettes	Appliances
Structure-loss fires	2015–2019	1,195	614	537	525	318
	2020–2024	1,052	558	457	520	289

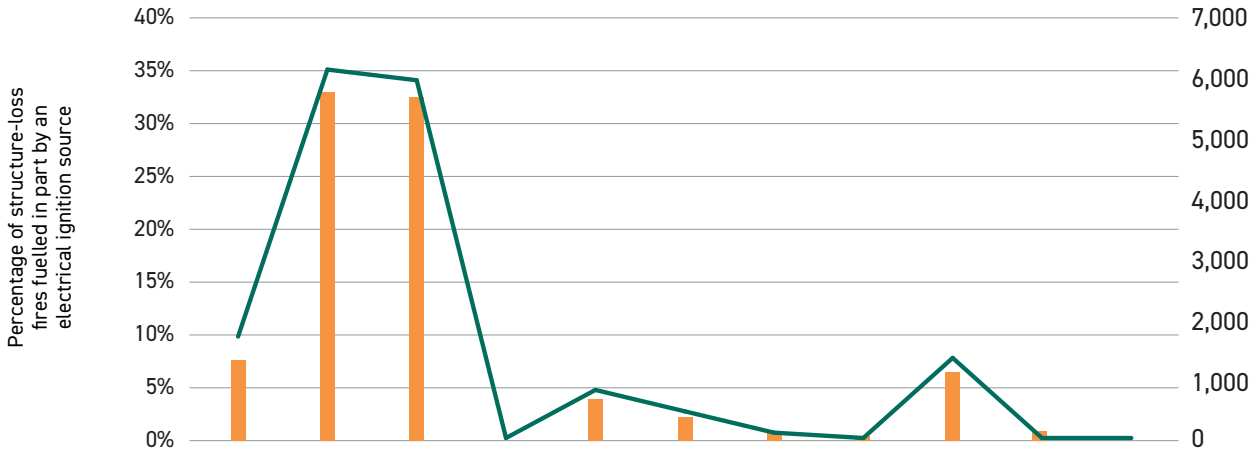
Source: OFM records

Conclusion

Cooking equipment remained the most common ignition source in 2015–2019 and 2020–2024, although the average number of structure-loss fires among cooking equipment, heating/cooling, electrical wiring, and appliances has decreased in the most recent period.

Please note that this chart excludes arson and fires for which the ignition source is undetermined.

4 PERCENTAGE AND NUMBER OF STRUCTURE-LOSS FIRES FUELLED IN PART BY AN ELECTRICAL IGNITION SOURCE IN ONTARIO, 2015–2024 (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	10%	35%	34%	<1%	5%	3%	1%	<1%	8%	<1%	<1%
Number of structure-loss fires	1,688	5,687	5,484	8	780	543	210	129	1,305	209	5

Source: OFM records

Conclusion

When the fire is from ignition sources that use electricity, cooking equipment (35%), electrical distribution equipment – wiring (34%), and appliances (10%) were the most common ignition sources between 2020 and 2024.

5 PERCENTAGE OF ELECTRICAL STRUCTURE-LOSS FIRES IN ONTARIO BY TIME OF DAY, 2015–2024 (OBC STRUCTURES ONLY)

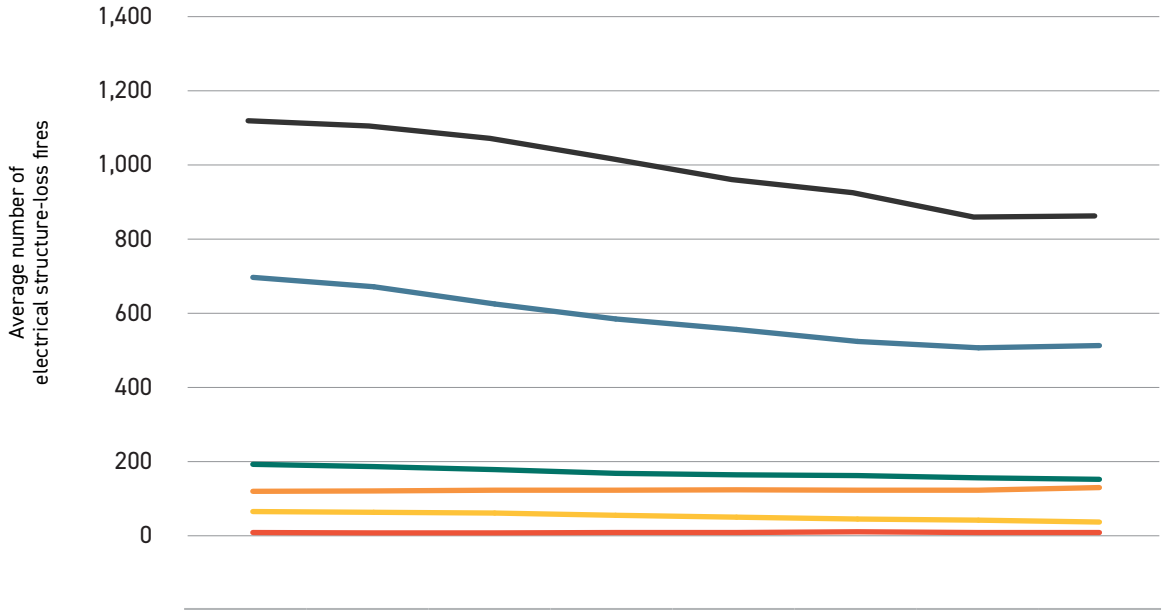
Time	Midnight–8 a.m.	8 a.m.–4 p.m.	4 p.m.–Midnight
Electrical structure-loss fires	20%	42%	38%

Source: OFM records

Conclusion

Between 2015 and 2024, most of the electrical-related structure-loss fires occurred in the period from 8 a.m.–4 p.m.

6 FIVE-YEAR ROLLING AVERAGE NUMBER OF ELECTRICAL STRUCTURE-LOSS FIRES BY PRODUCTS IN ONTARIO, 2013–2024 (OBC STRUCTURES ONLY)



Five-year period	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024
Appliances	196	190	182	172	168	166	160	156
Cooking equipment	695	670	624	584	556	524	507	513
Lighting	70	68	66	60	55	50	47	42
Other electrical, mechanical	124	125	127	127	128	127	127	134
Processing equipment	14	13	13	14	14	16	14	14
All products	1,113	1,099	1,066	1,012	956	921	856	859

Source: OFM records

Conclusion

Between 2015–2019 and 2020–2024, the five-year rolling average number of fires related to product safety has decreased by 20%.

Fires Resulting in Fatalities

Beaulieu et al. (2020) examined the geographic and demographic distribution of residential fires and related casualties in Canadian provinces. Between 2005 and 2015, 145,252 residential fires were reported from the provinces of British Columbia, Alberta, Manitoba, and Ontario, in which 5.5% resulted in casualties. Death rates per population decreased significantly between 2005 and 2015, while casualties per 1,000 house fires did not change. Death rates per house fire incidents were generally higher in urban areas than in remote areas but tended to increase as distance from city centres increased and moved closer to suburban areas. Fire-related deaths were more likely to involve males, and older residents were disproportionately affected (Clare et al., 2017). The vast majority of fire-related deaths are classified as unintentional (accidents) (Statistics Canada, 2022).

Summary of Ontario data

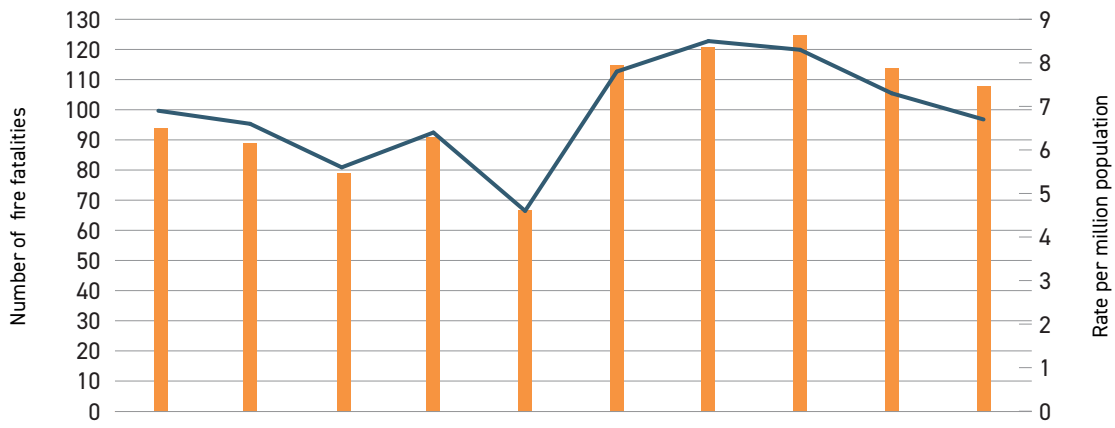
Ontario reported 1,003 deaths due to fires between 2015 and 2025. This number excludes fire deaths in vehicle collisions, or any fire deaths on federal or First Nations property. This number is higher than 2014 and 2023, where 975 deaths were reported. The OFM reported that in 2024, the fire death rate was 6.7 deaths per million population, which is a 3% decrease when compared to the fire death rate in 2014 which was 6.9 deaths per million population.

Structure-loss fires are fires that result in an injury, fatality, and/or financial loss that occur in structures (as opposed to vehicles or the outdoors). In Ontario, there were 914 fire fatalities from structure-loss fires from 2015 to 2024. The OFM reported that in 2024, the structure-loss fire death rate was 6.2 per million population, which is the same when compared to the structure-loss fire death rate in 2015.

The OFM data identified 99 structure fire deaths between 2015 and 2024 (excluding those on First Nations property) where electricity was the fuel of the ignition source or were from electrical distribution equipment. Since 2015, the death rate from this type of fire has decreased by 47% from 0.58 deaths per million population to 0.31 deaths per million population.

In these types of fires in which the investigations were considered closed, 96% were considered accidental between 2015 and 2024. Stove or range-top burners accounted for 36% of fire fatalities fuelled by electricity in the last ten years.

1 NUMBER AND RATE OF ALL FIRE FATALITIES IN ONTARIO, 2015–2024



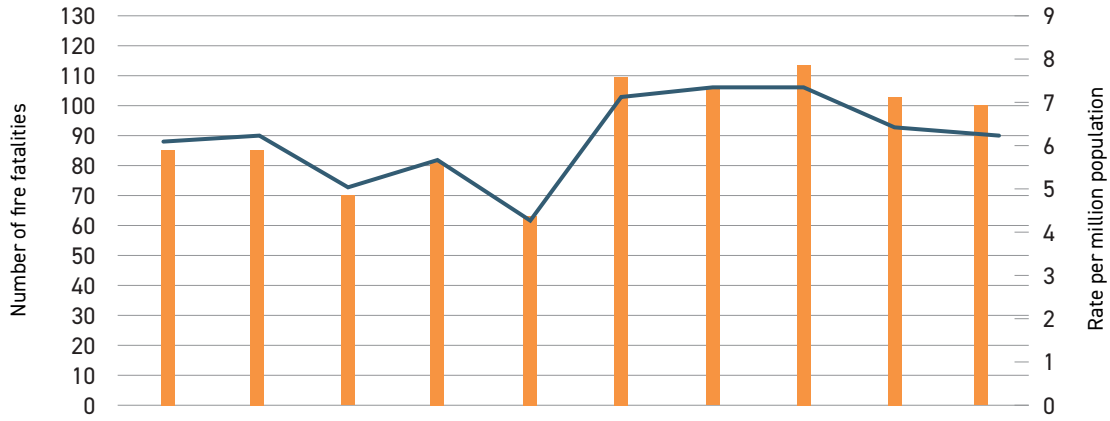
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of all fire fatalities	94	89	79	91	67	115	121	125	114	108
Ontario population in millions	13.7	13.4	14.1	14.3	14.5	14.7	14.2	15.1	15.6	16.2
Rate of all fire fatalities	6.9	6.6	5.6	6.4	4.6	7.8	8.5	8.3	7.3	6.7

Source: OFM records

Conclusion

The number of fire fatalities has increased when comparing 2015 and 2024; however, the fire death rate has decreased when comparing the same time period.

2 NUMBER AND RATE OF FIRE FATALITIES FROM STRUCTURE FIRES IN ONTARIO, 2015–2024



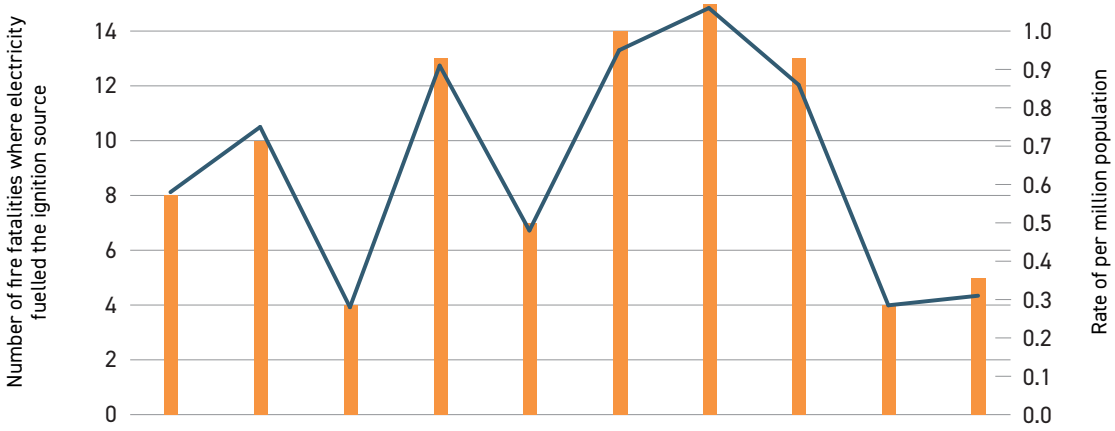
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of fire fatalities from structure fires	85	86	70	81	63	109	106	113	101	100
Ontario population in millions	13.7	13.4	14.1	14.3	14.5	14.7	14.2	15.1	15.6	16.2
Rate of fire fatalities from structure fires	6.2	6.4	5	5.7	4.3	7.4	7.5	7.5	6.5	6.2

Source: OFM records

Conclusion

While the number of fire fatalities from structure fires have increased when comparing 2015 to 2024, the fire fatality rate has remained the same.

3 NUMBER AND RATE OF STRUCTURE FIRE FATALITIES WHERE ELECTRICITY WAS THE FUEL OF THE IGNITION SOURCE OR FROM ELECTRICAL DISTRIBUTION EQUIPMENT IN ONTARIO, 2015–2024



Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of fatalities where electricity fuelled the ignition source	8	10	4	13	7	14	15	13	4	5*
Ontario population in millions	13.7	13.4	14.1	14.3	14.5	14.7	14.2	15.1	15.6	16.2
Rate of fatalities where electricity fuelled the ignition source	0.58	0.75	0.28	0.91	0.48	0.95	1.06	0.86	0.26	0.31

Source: OFM records

**Fatalities for 2024 remain under investigation and numbers are preliminary.*

Conclusion

Electrical fire fatalities (in which electricity fuelled the ignition source or where the fires were from electrical distribution equipment in Ontario) have decreased 47% when comparing 2015 to 2024.

4 PERCENTAGE OF STRUCTURE FIRE FATALITIES WHERE ELECTRICITY IS THE FUEL OF THE IGNITION SOURCE OR FROM ELECTRICAL DISTRIBUTION EQUIPMENT BY CAUSE CLASSIFICATION IN ONTARIO, 2015–2024 (CLOSED FIRE INVESTIGATIONS ONLY)

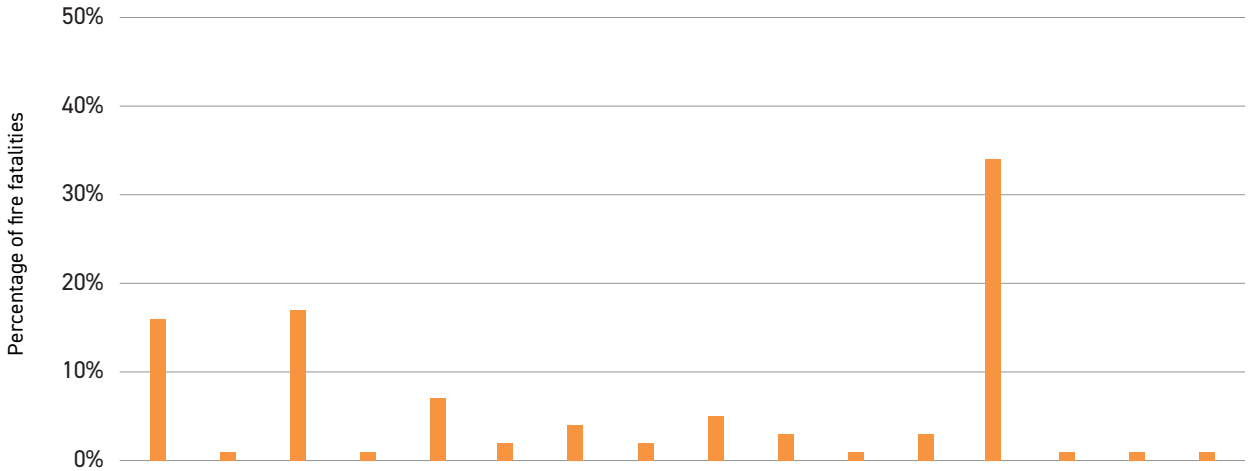
Cause classification	Accidental	Undetermined	Intentional
2013–2022	96%	3%	1%

Source: OFM 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, 2015–2024 (CLOSED FIRE INVESTIGATIONS ONLY)



Ignition source	Percentage
Circuit wiring — copper	16%
Christmas lights, decorative lighting	1%
Cord, cable for appliance, electrical articles	17%
Distribution equipment (panel boards, fuses, circuits)	1%
Extension cord, temporary wiring	7%
Incandescent lamp	2%
Multiple competent ignition sources	4%
Other cooking items (e.g., toaster, kettle)	2%
Other electrical	5%
Other electrical distribution items	3%
Oven	1%
Space heater — portable	3%
Stove, range-top burner	34%
Vehicle - electrical decorative lighting	1%
Undetermined	1%
Other appliances	1%

Source: OFM records

Conclusion

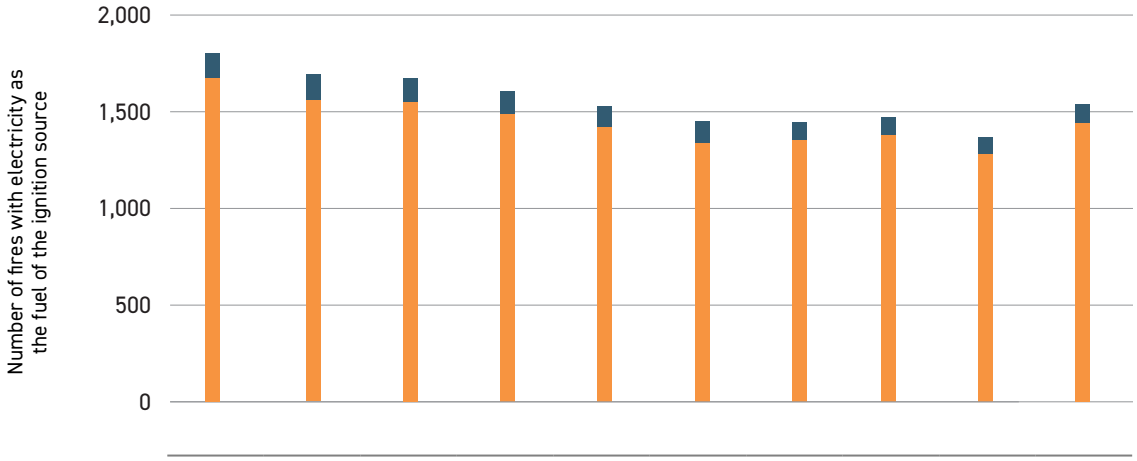
The stove (34%) remains the most common ignition source when examining structure fire fatalities, where electricity fuelled the ignition source in the most recent ten-year period.

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 14,670 loss fires and 1,118 no-loss fires for a total of 15,788 structure fires from 2015 to 2024. Over the same time period, there was a 16% decrease in structure-loss fires and a 15% decrease in total structure fires.

Between 2015 and 2024, 82% of structure fires occurred in the residential setting. Cooking equipment (39%), electrical distribution equipment (27%), and appliances (11%) remained the most common ignition sources in these fires. Since 2018, temperature-limiting controls on Canadian stoves have been introduced to prevent stove-top fires by preventing heating elements from reaching temperatures high enough to ignite cooking oil. Some devices may work by having a sensor to prevent overheating by automatically turning off the burner if a pan gets too hot, or a fire prevention device to monitor unattended cooking and shut off the stove after a set period of inactivity.

1 NUMBER OF STRUCTURE FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE IN ONTARIO, 2015–2024 (OBC STRUCTURES ONLY)



Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2025
Number of fires with no loss	129	137	124	120	108	118	96	93	91	101
Number of fires with loss	1,696	1,578	1,571	1,508	1,440	1,354	1,371	1,398	1,295	1,459
Total fires with electricity as the fuel of the ignition source	1,825	1,715	1,695	1,628	1,548	1,472	1,467	1,491	1,386	1,560

Source: OFM records

Conclusion

In 2024, the total number of structure fires where electricity was the fuel of the ignition source decreased by 15% when compared to 2015.

2 NUMBER OF FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY STRUCTURE CLASSIFICATION IN ONTARIO, 2020–2024 (OBC STRUCTURES ONLY)

Structure Classification	Number of Fires	
Assembly	**253**	
Business and personal services	**176**	
Care and detention	**129**	
Industrial	**488**	
Mercantile	**224**	
Residential	**6,107**	

Source: OFM records

Conclusion

Residential structures were the most common structures (83%) for fires where electricity was the fuel of the ignition source between 2020 and 2024.

3 PERCENTAGE OF RESIDENTIAL FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY IGNITION SOURCE IN ONTARIO, 2020–2024

The leading sources in residential fires when electricity fuelled the ignition source included:

Cooking equipment
38%

Electrical distribution equipment
27%

Appliances
11%

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	11%	38%	27%	<1%	6%	3%	2%	1%	10%	1%	2%

Source: OFM records

Conclusion

Cooking equipment (38%) and electrical distribution equipment (27%) were the leading sources in residential fires where electricity fuelled the ignition source.

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).

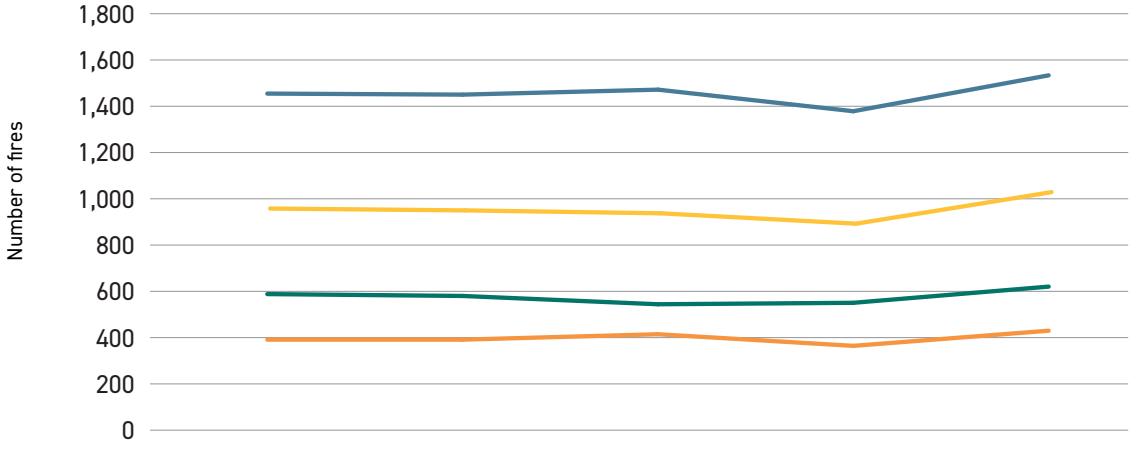
The most common cause of residential fires is cooking fires. Cooking fires have led to major injuries and fatalities, as well as significant financial losses. In most cooking fires, the ignition occurred due to the presence of cooking oil, which is highly ignitable and can contribute to spreading the fire (Hamida et al., 2019). Electricity is frequently used to ignite these stoves.

Summary of Ontario data

From 2020 to 2024, there were 2,796 structure fires in Ontario where the ignition source was cooking equipment fuelled by electricity, of which 95% occurred in homes. From 2019 to 2024, there has been a 5% increase in this type of residential fire. Stoves 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 OFM 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 71 injuries among civilians and 3.5 fatalities between 2020 and 2024. In this period, stoves and range-top burners were the leading ignition source in fires where electricity fuelled the ignition source.

1 NUMBER OF COOKING EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FIRES IN ONTARIO, 2020–2024 (OBC STRUCTURES ONLY)



Year	2020	2021	2022	2023	2024
Cooking equipment fires	572	563	523	530	608
Electrical distribution equipment fires	397	397	423	367	440
Total cooking equipment and electrical distribution equipment fires	969	960	946	896	1,048
Total fires with electricity as the fuel of the ignition source	1,472	1,467	1,491	1,387	1,560

Source: OFM 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 2024 has increased by 8% when compared to 2020.

2 NUMBER OF COOKING EQUIPMENT FIRES WITH ELECTRICITY AS THE FUEL OF THE IGNITION SOURCE BY SOURCE IN ONTARIO, 2020–2024 (OBC STRUCTURES ONLY)

Stoves and **range-top burners** were the leading sources (74%) of cooking equipment fires between 2020 and 2024.

Year	2020	2021	2022	2023	2023
Stove, range-top burner	428	428	379	407	434
Range hood	9	5	7	7	4
Oven	78	76	70	73	102
Other cooking items	26	34	46	28	45
Open fired barbeque — fixed or portable	1	0	1	1	3
Microwave	20	12	10	12	16
Deep fat fryer	10	8	10	2	4

Source: OFM records

Conclusion

Stoves and range-top burners were the leading sources (74%) of cooking equipment fires between 2020 and 2024.

Other cooking items include toasters, kettles, and electric frying pans.

3 NUMBER OF STOVE-TOP FIRES VS. COOKING EQUIPMENT FIRES BY POSSIBLE CAUSE IN ONTARIO, 2019–2023 (OBC STRUCTURES ONLY)

Leaving equipment unattended was the most common possible cause of electrical fires for both cooking equipment and stove-top fires between 2020 and 2024.

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	Suspected vandalism	Suspected youth and vandalism (ages 12–17)	Unattended	Undetermined	Unintentional, cause undetermined	Unknown, not reported	Used for purpose not intended	Used or placed too close to combustibles
Stove-top fires	3	9	36	203	37	8	1	1	66	291	0	37	15	4	2	1,065	55	102	2	7	125
Cooking equipment fires	7	26	158	236	70	10	21	1	101	376	1	92	21	5	2	1,236	98	138	4	26	160

Source: OFM records

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

The OFM 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 LDCs.

Among OBC structures, in the five-year period between 2020 and 2024, the OFM identified 2,024 fires as electrical distribution equipment fires with electricity as the fuel of the ignition source, of which 95% were identified as loss fires. The five-year rolling average of electrical distribution equipment loss structure fires has decreased by 7% between 2015–2019 and 2020–2024.

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 16% when comparing 2015–2019 and 2020–2024. Electrical failure was 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 United States. These 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 zproperty damage per year (Campbell, 2019).

Electrical distribution and lighting equipment remain one of the leading causes for home fires and fire casualties in the United States (Hall, 2023). It is also the leading cause of home fire property damage. Electrical wiring and cable insulation accounted for 5% of all home fires and 4% of all home fire deaths. Cords or plugs were involved in only 1% of fires, but 6% of deaths. Extension cords dominated the cord or plug category. Electrical failures or malfunctions can occur in any type of equipment powered by electricity. Between 2016 and 2020, Hall (2023) reported that half of these fires involved electrical distribution or lighting equipment.

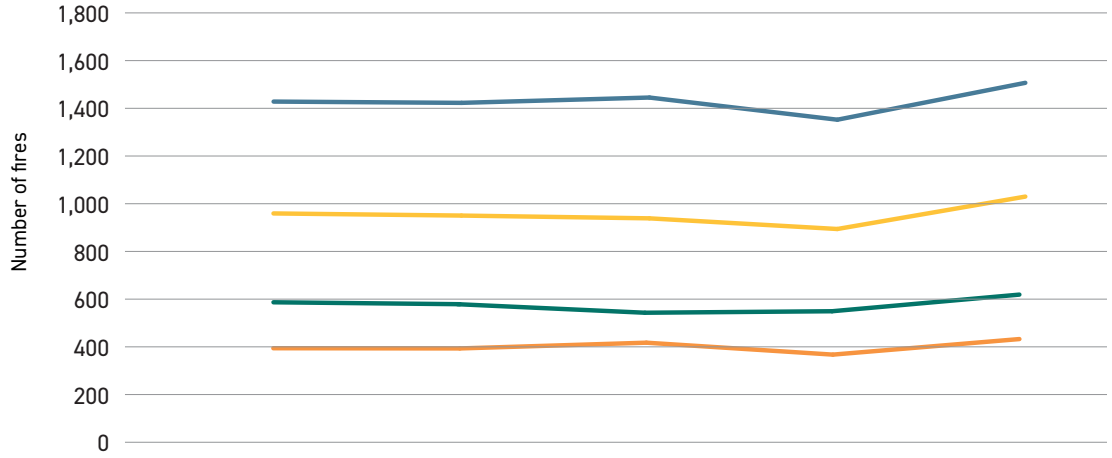
Statistics Directly Related to ESA's Harm Reduction Priorities

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 OFM as electrical distribution equipment.

The five-year rolling average for electrical distribution equipment structure-loss fires related to aging infrastructure has decreased by 7% between 2015–2019 and 2020–2024.

1 NUMBER OF COOKING EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FIRES IN ONTARIO, 2020–2024 (OBC STRUCTURES ONLY)



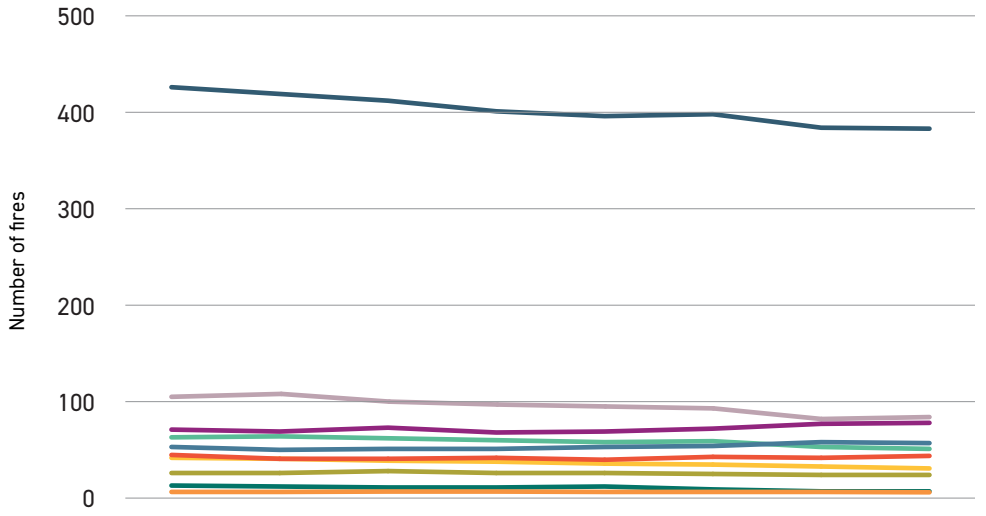
Year	2020	2021	2022	2023	2024
Cooking equipment fires	572	563	523	530	608
Electrical distribution equipment fires	397	396	423	367	440
Total cooking equipment and electrical distribution equipment fires	969	959	946	896	1,048
Total fires with electricity as the fuel of the ignition source	1,472	1,466	1,491	1,387	1,560

Source: OFM records

Conclusion

The number of electrical distribution equipment structure fires has increased 11% since 2020.

2 FIVE-YEAR AVERAGE NUMBER OF ELECTRICAL DISTRIBUTION EQUIPMENT STRUCTURE-LOSS FIRES BY IGNITION SOURCE IN ONTARIO, 2013–2024 (OBC STRUCTURES ONLY)



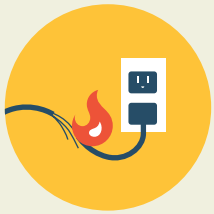
Five-year period	2013–2017	2014–2018	2015–2019	2016–2020	2017–2021	2018–2022	2019–2023	2020–2024
Circuit wiring — Al, Cu (includes conductors)	105	108	100	97	95	93	82	84
Cord, cable for appliance, electrical articles	71	69	73	68	69	72	77	78
Distribution equipment (includes panel boards, fuses, circuits)	63	64	62	60	58	59	53	51
Extension cord, temporary wiring	45	41	41	42	40	43	42	44
Meter	7	7	8	8	7	7	7	6
Other electrical distribution item	53	50	51	51	53	54	58	57
Service/utility lines (includes power/hydro transmission lines)	26	26	28	26	26	25	24	24
Terminations — Al, Cu (includes receptacles, switches, lights)	42	41	39	38	36	35	33	31
Transformer	13	12	11	11	12	9	7	7
Total	425	418	413	401	396	397	383	382

Source: OFM records

Conclusion

Circuit wiring — aluminum and copper remained the leading ignition source in electrical distribution equipment fires between 2013 and 2024. The five-year rolling average of electrical distribution equipment structure-loss fires shows an 7% decrease between 2015–2019 and 2020–2024.

3 NUMBER OF ELECTRICAL DISTRIBUTION EQUIPMENT FIRES BY POSSIBLE CAUSE IN ONTARIO, 2020–2024



The leading possible causes in electrical distribution equipment fires between 2020 and 2024 were:

Electrical failure and **design/construction/installation/maintenance deficiency.**

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	Mechanical failure	Natural cause	Other misuse of ignition source/material ignited	Other unintentional cause, not classified	Rekindled	Routine maintenance deficiency (e.g., creosote, lint, grease buildup)	Suspected arson	Suspected vandalism	Unattended	Undetermined	Unintentional, cause undetermined	Unknown, not reported	Used for purpose not intended	Used or placed too close to combustibles	Vehicle collision
Number of electrical distribution fires	1	152	1,980	21	14	34	15	29	133	1	13	7	3	6	195	126	5	17	25	6

Source: OFM records

Conclusion

Electrical failure was the leading cause of electrical distribution structure fires between 2020 and 2024.

Product Safety

Ontario Regulation 438/07 Product Safety enables ESA to address the safety of electrical products and equipment. ESA has oversight for product safety related to the approval of electrical products, including consumer electrical products, before they are sold, used, offered, advertised, or displayed in Ontario. ESA also responds to unsafe industrial and commercial products and publicizes product safety notices (including recalls) to protect end users.

O. Reg 438/07 authorizes ESA to protect the public against potentially unsafe electrical products. ESA utilizes a risk-based oversight model to:

- Respond to product safety incident reports (cases).
- Remove reported potentially unsafe, counterfeit, and unapproved electrical products from sale.
- Provide education to the public and retailers on their obligation to uphold electrical safety.

The *Canada Consumer Product Act* was enacted in 2011 and provides product safety oversight for consumer electrical products, including mandatory reporting obligations to Health Canada. On an ongoing basis, ESA works with Health Canada to remove the sale of unapproved consumer electrical products, including removing listings by online retailers. All incidents involving consumer electrical products are required to be reported to Health Canada.

In 2025, Health Canada received 2,571 product incident reports nation-wide, of which of which 449 reports were related to electric ranges or ovens. The products that were most commonly associated with electrical hazards were electric ranges or ovens, battery chargers/adapters, and computers. No fatalities were reported; however, minor injuries, including electrical shocks and burns, were identified (Health Canada, 2025).

In 2025, 640 cases were reported to ESA, representing a 12% increase from 2024.

At ESA, product safety reports are deemed high, medium, or low risk by a risk assessment tool based on specific parameters. These include but are not limited to:

- estimating the likelihood of the product being or becoming defective by evaluating factors such as product certification, use environment, history of compliance or previous product issues, ability to detect defect prior to product use, and pattern of incidents;
- estimating the likelihood of serious negative effects by evaluating factors such as exposure characteristics, human/device interaction, undetected overheating, and impact of warnings; and
- assessing severity of the potential impact by evaluating the loss severity as major, moderate, minor, or significant.

A product safety case is initiated by ESA from voluntary reporting and are assigned a priority based on risk profile. Of the 640 cases received in 2025, 541 were classified as Priority 2, indicating a medium-level risk.

In 2025, 90% of product safety cases involved unapproved products, defined as products that have not been tested and evaluated against the applicable Canadian Safety Standards and may not be safe to use. A smaller percentage of product safety cases (8%) involved certified products, defined as products that were properly certified but reported to present an actual or perceived safety issue.

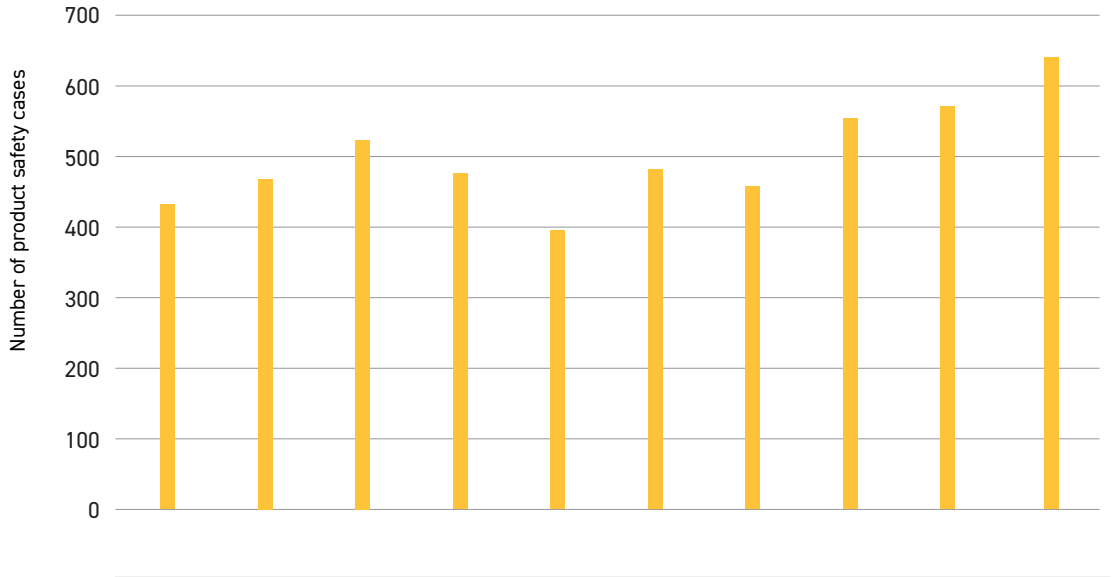
COLLABORATING WITH PRODUCT SAFETY PARTNERS

ESA works with Health Canada, manufacturers, retailers, distributors, and industry partners to identify and address unsafe or unapproved electrical products in Ontario. Health Canada leads national consumer product recalls, while ESA monitors provincial compliance, tracks Ontario distribution, issues local safety alerts, and supports removal of non-compliant products from stores and online marketplaces.

ESA also promotes product safety before items reach consumers by helping industry partners understand provincial requirements, approval standards, and recall responsibilities. When defects are identified, ESA supports voluntary recalls, repair or replacement remedies, and public communications through tools such as its Product Recalls & Safety Alerts portal. These coordinated efforts help ensure that contractors, homeowners, retailers, and consumers receive timely information about electrical hazards.

Online marketplaces have created new enforcement challenges by allowing third-party sellers to market uncertified or dangerous products directly to Ontario consumers. In response, ESA monitors platforms such as Amazon, Kijiji, and Etsy and works to remove unsafe listings, including high-risk products such as Lichtenberg wood burning machines. ESA also supports consumer education through online safety guidance that helps buyers recognize certification marks, avoid misleading claims, and report uncertified electrical products.

1 NUMBER OF PRODUCT SAFETY CASES SUBMITTED TO ESA IN ONTARIO, 2016–2025



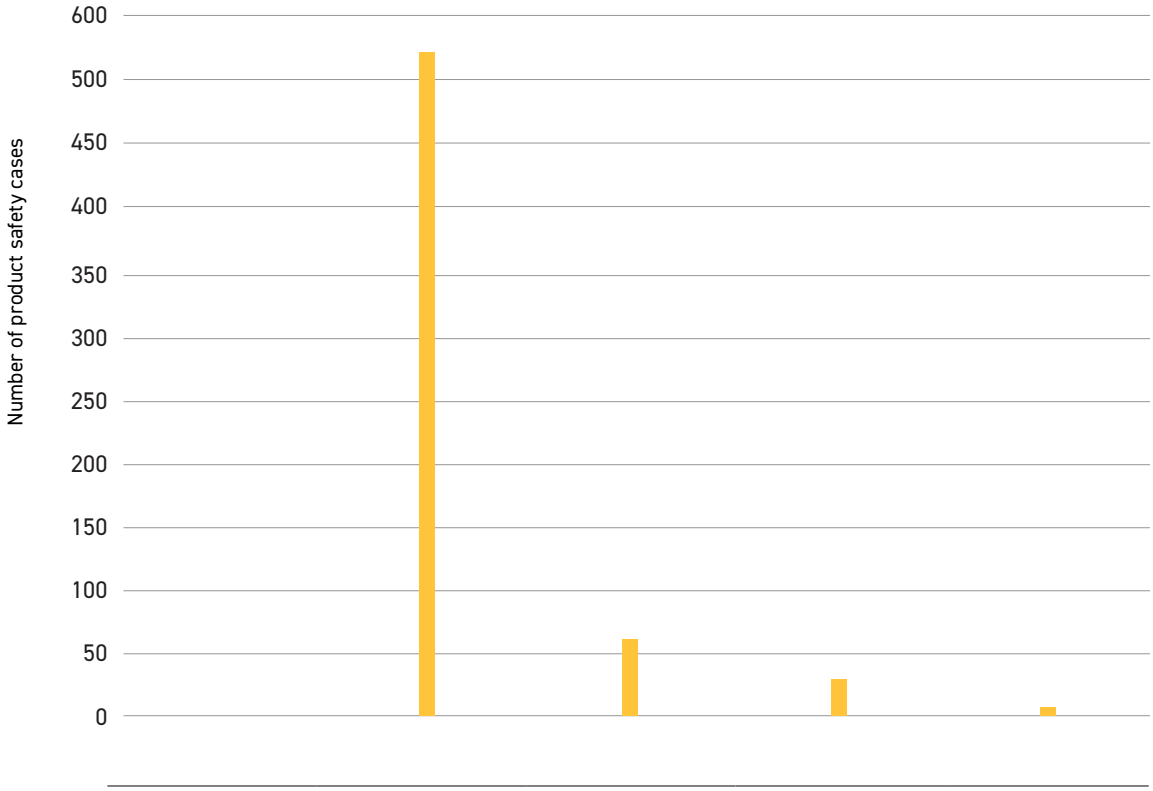
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Number of product safety cases	432	468	524	475	394	481	458	553	572	640

Source: ESA records

Conclusion

Between 2016 and 2025, there has been a 48% increase in product safety cases.

2 NUMBER OF PRODUCT SAFETY CASES BY PRIORITY LEVEL IN ONTARIO, 2025



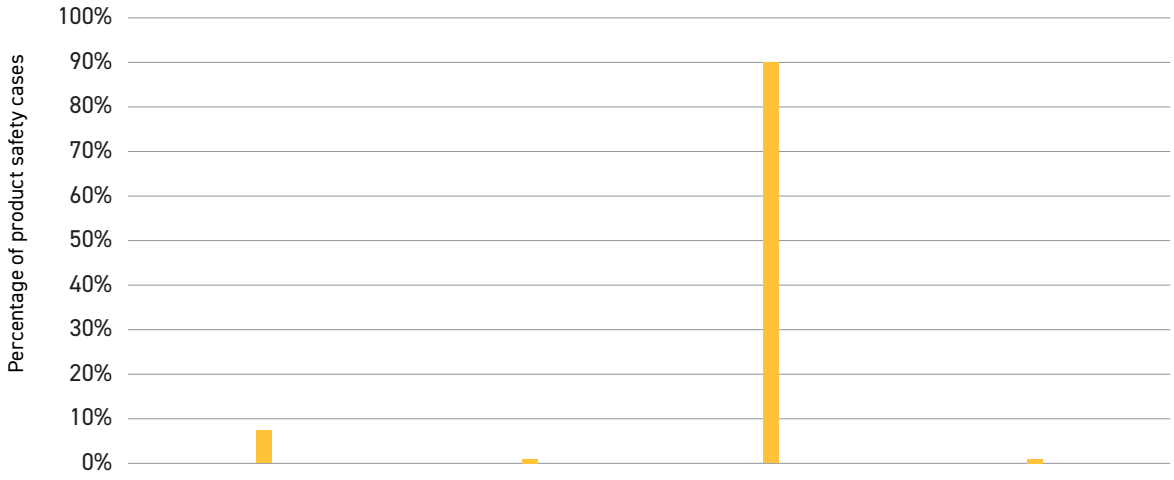
Priority level	Priority 1 (High risk — most important)	Priority 2 (Medium risk)	Priority 3 (Low risk)	Priority 4 (Lowest risk)	Triaged by Health Canada
Number of product safety cases	0	541	62	30	7

Source: ESA records

Conclusion

In 2025, Priority 2 cases represented 85% of all product cases submitted to ESA (541 of 640 reports). Upwards of 85% of Priority 2 cases have been resolved and the remaining cases are under active investigation.

3 PERCENTAGE OF PRODUCT SAFETY CASES BY TYPE IN ONTARIO, 2025



Investigation type	Certified	Product with a counterfeit label	Unapproved	Product requires a corrective action
Percentage of product safety cases	8%	1%	90%	1%

Source: ESA records

Conclusion

In 2025, 90% of cases submitted to ESA were from unapproved electrical products (573 of 640 cases).

6.0 Electrical Incident Review

ESA collects information about reported electrical incidents to identify possible mitigation opportunities. This allows ESA to understand the current and potential electrical risks, and to assess compliance with applicable legislative and regulatory requirements. An incident review may be conducted for reported 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.
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 summarizes what types of incidents are reported to ESA's electrical incident database:

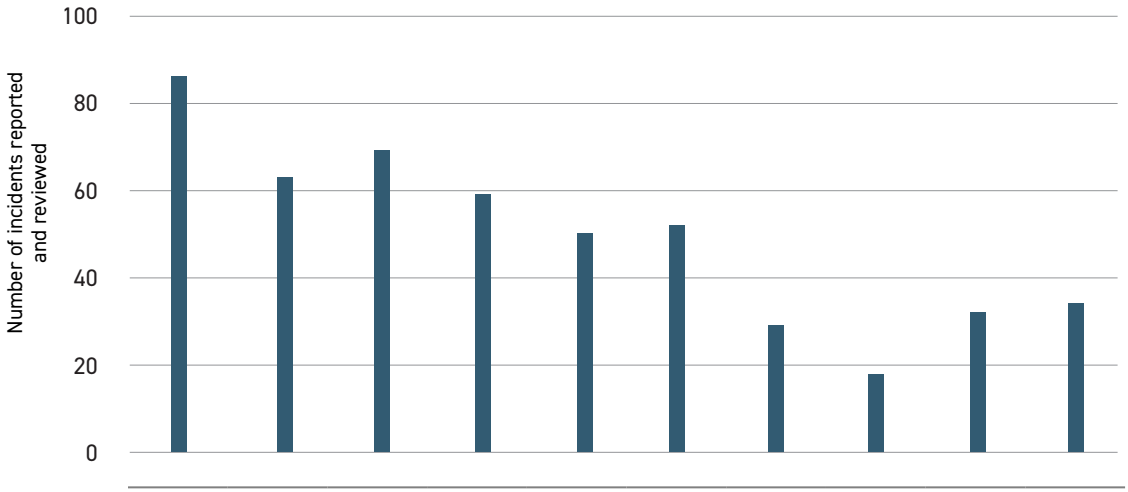
1. General incidents, which are serious or non-serious electrical incidents, where the cause and conditions leading to the incident are apparent and straightforward, and do not require an in-depth fact-finding inquiry.
2. Root cause incidents, which are conducted for serious or non-serious electrical 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 it requires an in-depth fact-finding inquiry.

Between 2016 and 2025, 479 electrical incidents were reported to and reviewed by ESA. Six fatalities and three injuries related to unapproved consumer electrical products were reported during this time.

In 2025, 34 incidents were reported to and reviewed by ESA, representing a six percent increase from 2024. Of these incidents, 21% involved utility infrastructure, and 18% were associated with powerlines. Occupational incidents accounted for 54% of all reported cases. The most common cause of these incidents is unknown.

A list of incidents reviewed from 2016–2025 can be viewed online at esasafe.com/ontario-electrical-safety-report.

1 NUMBER OF INCIDENTS REPORTED TO AND REVIEWED BY ESA, 2016–2025



Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Incidents reported and reviewed	86	63	69	59	50	52	29	18	32	34

Source: ESA records

Conclusion

In 2025, 34 incidents were reported and reviewed by ESA; this is a 6% increase from 2024.

Acknowledgements

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

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

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.

The development of this report was led by a team from ESA, including Freda Lam, Anna Turkalj, Patrick Falzon, Sean Burger, Aateff Hussaini, and Patience Cathcart with assistance from staff of the ESA's Utility Regulations, Product Safety, and Communications departments.

Methodology

ESA receives data from various resources to compile this report. These include the Office of the Chief Coroner, MLITSD, the OFM, and WSIB. ESA then cross-references these data with the coroners' reports, the OFM's reports, and ESA's incident review data to ensure accuracy and understanding of the incidents. Data on non-serious incidents are taken as provided.

The Electrical Safety Authority's Data

ESA uses Ontario population estimates and projections from Ontario's Ministry of Finance (Population Projections Scenarios for Ontario by Age and Sex, 2022–2046) to determine electrocution and death by fire as rate per population, and Statistics Canada labour force characteristics (Table 14-10-0017-01) to determine occupational injury rates.

The 2016 to 2025 electrocution statistics are based on Ontario coroners' reports, ESA records, and MLITSD reports. At time of writing, OFM 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

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 June 4, 2026 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 CIHI. Emergency department separation data used in this report are classified according to CIHI, 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 ESA as of July 2026. Parts of this material are based on data and information provided by the CIHI, and are current as of July 5, 2026. However, the analyses, conclusions, opinions, and statements expressed herein are those of the author, and not necessarily those of CIHI. 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 accurate at the time of publication, the author does not warrant that it is free from errors or omission. 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 OFM reports its data by calendar year. Data collection and verification for the year has a one-year lag in reporting in the OESR. The OFM 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 OFM data for 2025 is unavailable and data for 2024 is presented instead. The number of fire incidents and fire fatalities are current as of February 2026 and are the most accurate at this point in time.

The following data issues were noted by the OFM for 2024 data:

1. OFM Fire Investigations Services has introduced new CAUSE codes for 2021–2023 going forward.
2. A number of fire departments encountered cyber security issues and loss of data. Some municipalities have not been able to submit any data-specific time periods, which may lead to differences when compared to past years.
3. Some municipalities have used a different format for time stamps in reporting, so data may be affected when looking at "time of day" analysis.

The OFM 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.

ESA reports fire incidents based on data provided by the OFM to 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 OFM where the ignition source was reported as "electrical distribution equipment" or the fuel of the ignition source was reported as "electricity."

In addition, ESA conducts its own investigation of fires when called by the local fire department to assist or when jointly investigating fire incidents with the OFM. ESA presents data that are consistent with the reporting convention of the OFM. 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 identified as having either electrical distribution equipment or electricity as the fuel of the ignition source by the fire departments or the OFM, electricity was not the primary fuel associated with the fire.

These situations are illustrated below.

In the OESR, these fires are 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 OFM labels these fires as cooking fires rather than electrical fires. In addition, the OFM 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 that 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 OFM as distribution equipment. Please note that the definition of distribution equipment in the fire section of the report is quite different than the distribution equipment in the powerline section.

   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, ESA displays data as it is calculated by the OFM, 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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This document was prepared by the Regulatory Centre of Excellence of the Electrical Safety Authority.

For queries and additional information, please contact ESA at: freda.lam@electricalsafety.on.ca

Electrical Safety Authority

ISSN 2369-4572 (Print)
ISSN 2369-4580 (Online)