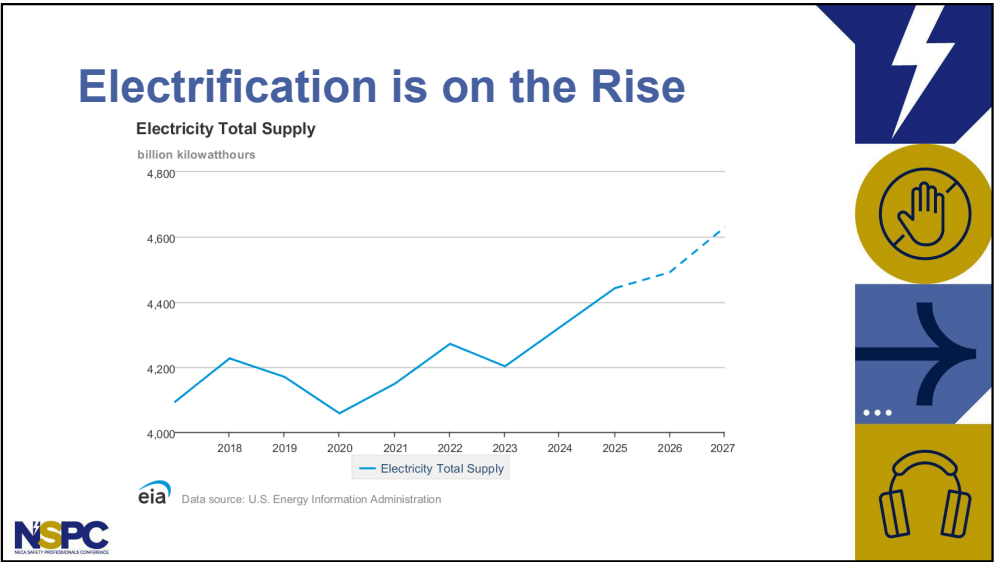


### Topics

- Workplace Electrical Fatality Trends: 2011 – 2024
- Which Industries Have the Most Electrical Fatalities
- Which Occupations are Have the Most in Electrical Incidents
- How to Prevent Electrical Fatalities in the Workplace
- Electrical Injuries, 2023 - 2024

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## Data Sources



## Data Sources

### Occupational Safety and Health Administration (OSHA)

ESFI reviewed all OSHA Accident Investigations (OSHA-170 form). Data includes reports from 120 OSHA area and State 18b plan offices.

#### Data limitations:

This dataset only covers employees that fall under OSHA's jurisdiction, some notable employees not covered:

- Self-employed
- Industries managed by other federal entities



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## Data Sources

**Bureau of Labor Statistics' (BLS) Census of Fatal Occupational Injuries (CFOI).** CFOI produces comprehensive, accurate, and timely counts of fatal work injuries. CFOI is a Federal-State cooperative program that has been implemented in all 50 States and the District of Columbia since 1992.

#### Data limitations:

- Fatality must have resulted from a traumatic injury
- The incident that led to the death must have occurred in the United States, its territories, or its territorial waters or airspace
- It must be related to work



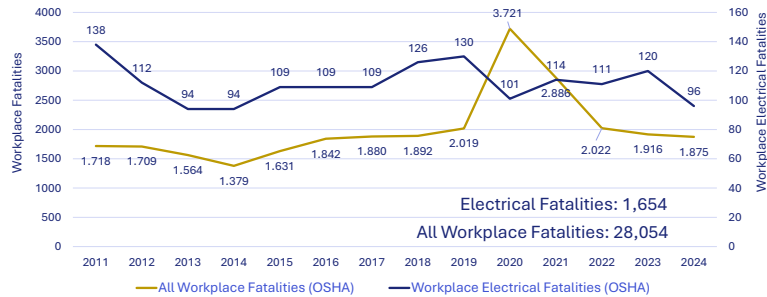
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## Workplace Electrical Fatality Trends



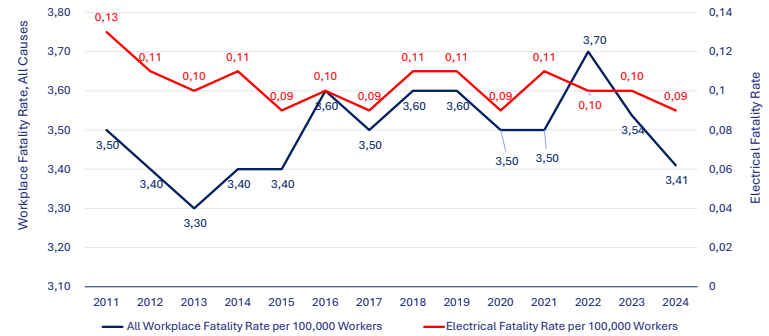
## Workplace Electrical Fatality Trends

All Workplace Fatalities and Workplace Electrical Fatalities, OSHA, 2011 - 2024



## Workplace Electrical Fatality Trends

Workplace Fatality Rate and Electrical Workplace Fatality Rate per 100,000 Workers, Bureau of Labor Statistics

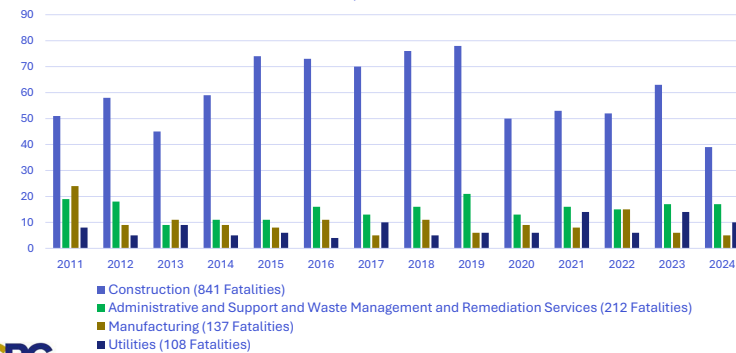


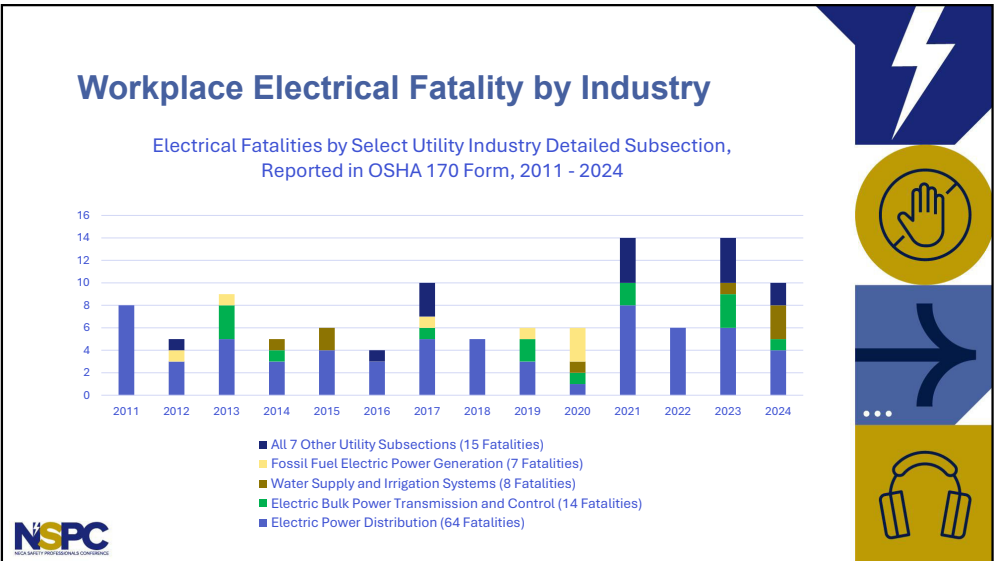
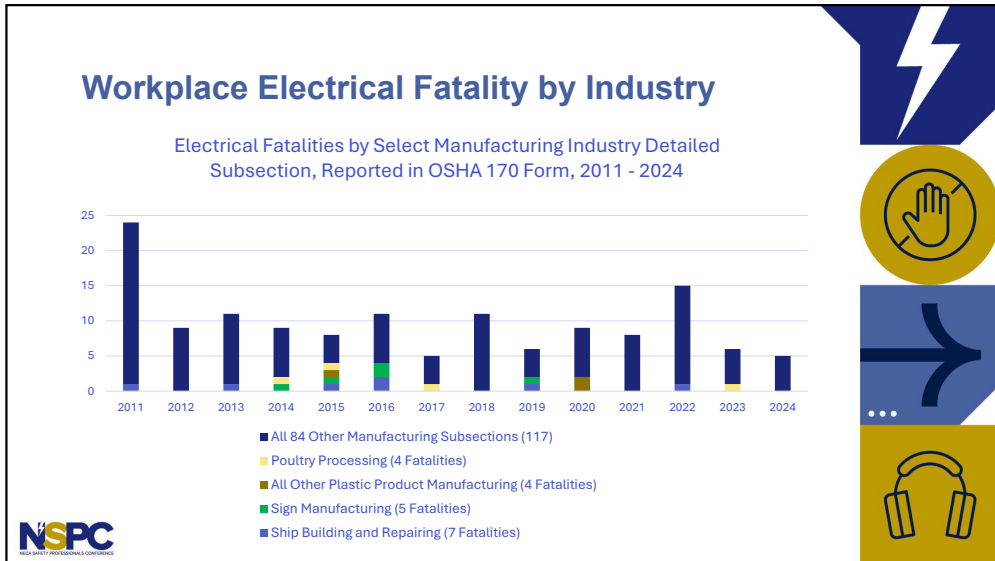
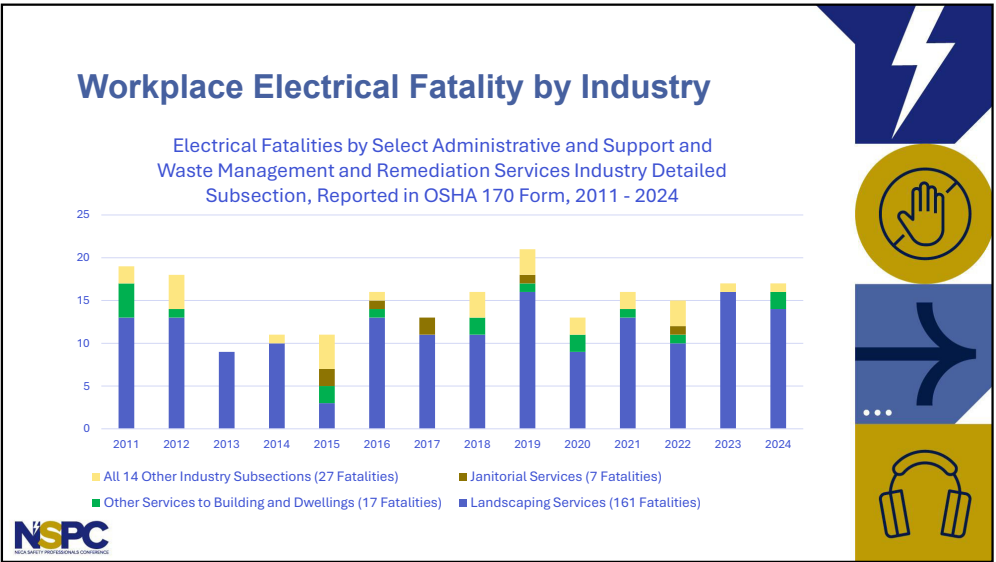
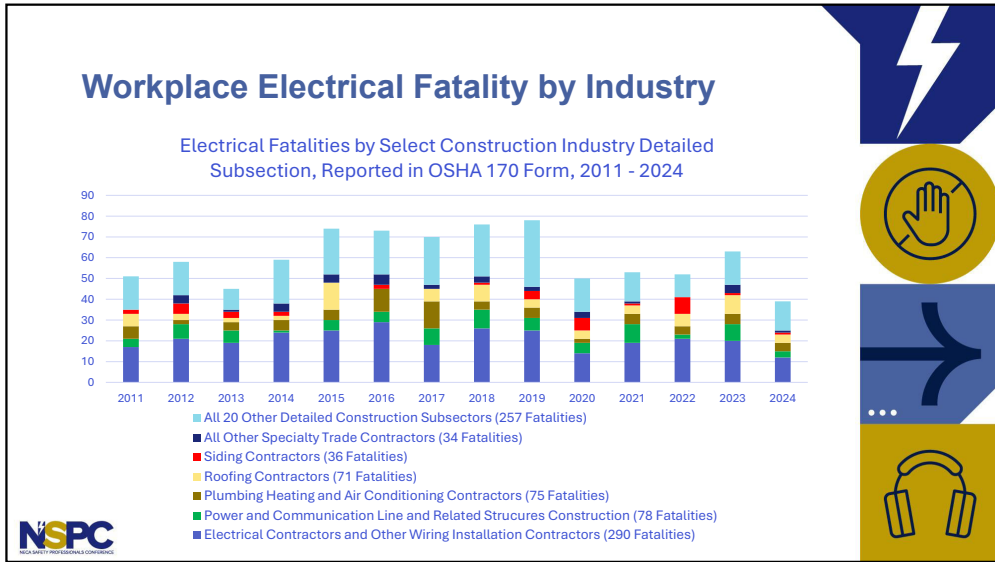
## Workplace Electrical Fatality by Industry

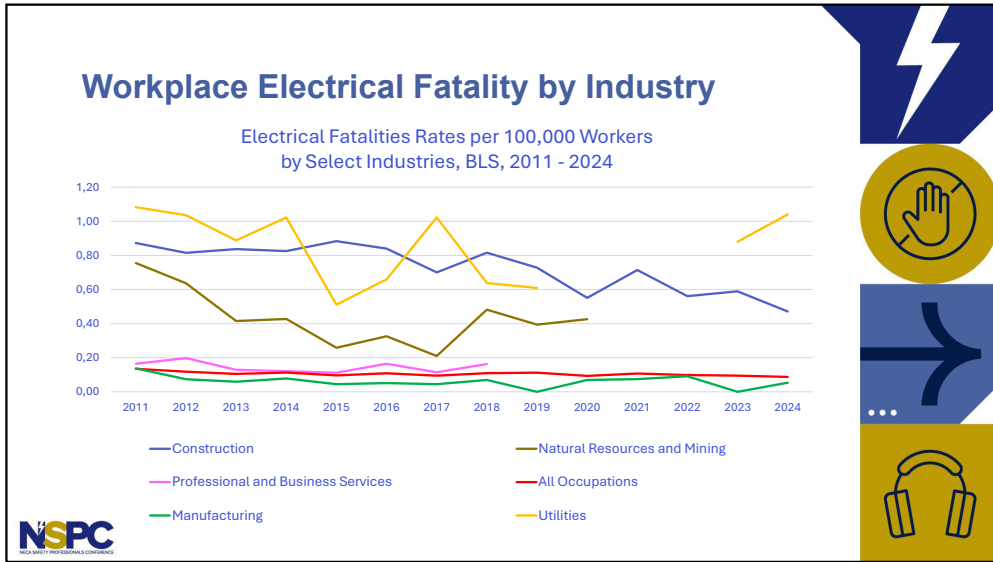


## Workplace Electrical Fatality by Industry

Electrical Fatalities by Select Industry, Reported in OSHA 170 Form, 2011 - 2024







## Workplace Electrical Fatality by Occupations

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### Workplace Electrical Fatality by Occupation

ELECTRICAL OCCUPATIONS	
Electrical and electronic engineers	Electrical & electronic equipment assemblers
Electrical & electronic technicians	Electric power installers & repairers
Electricians	Electricians' apprentices
Electronic repairers, communications, & industrial equipment	Supervisors in these fields
OSHA 1910.332(C): Typical Occupational Categories of Employees Facing a Higher-Than-Normal Risk of Electrical Accident	
Blue collar supervisors*	Electricians
Electrical & electronic engineers*	Industrial machine operators*
Electrical & electronic equipment assemblers*	Materials handling equipment operations*
Electrical & electronic technicians*	Mechanics & repairers*
Painters*	Riggers and roustabouts*
Stationary engineers*	Welders*

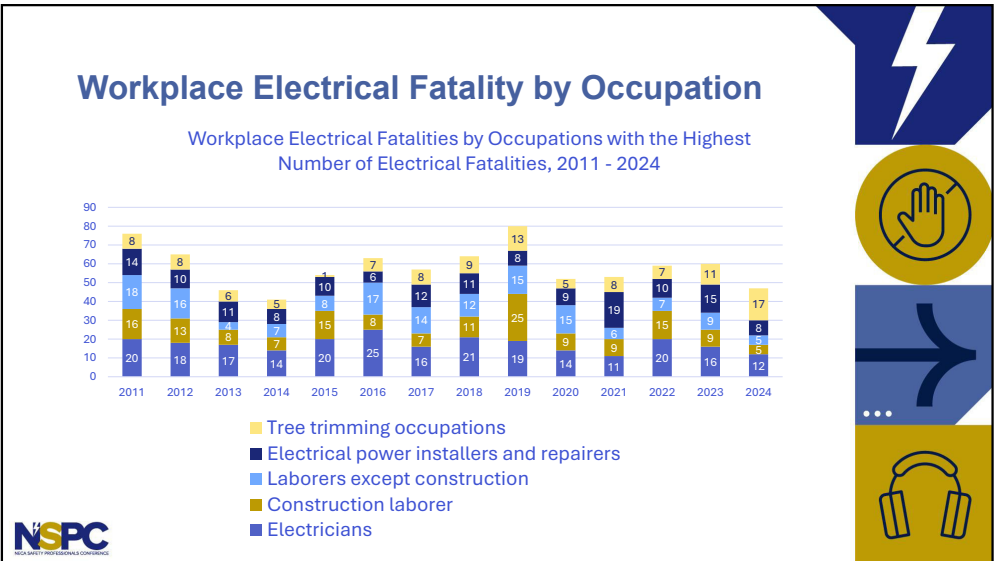
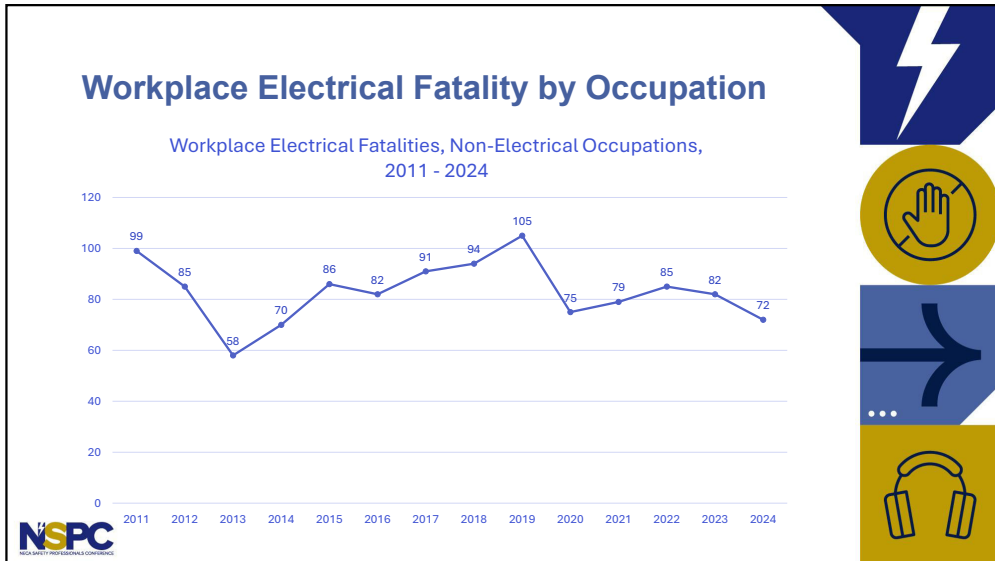
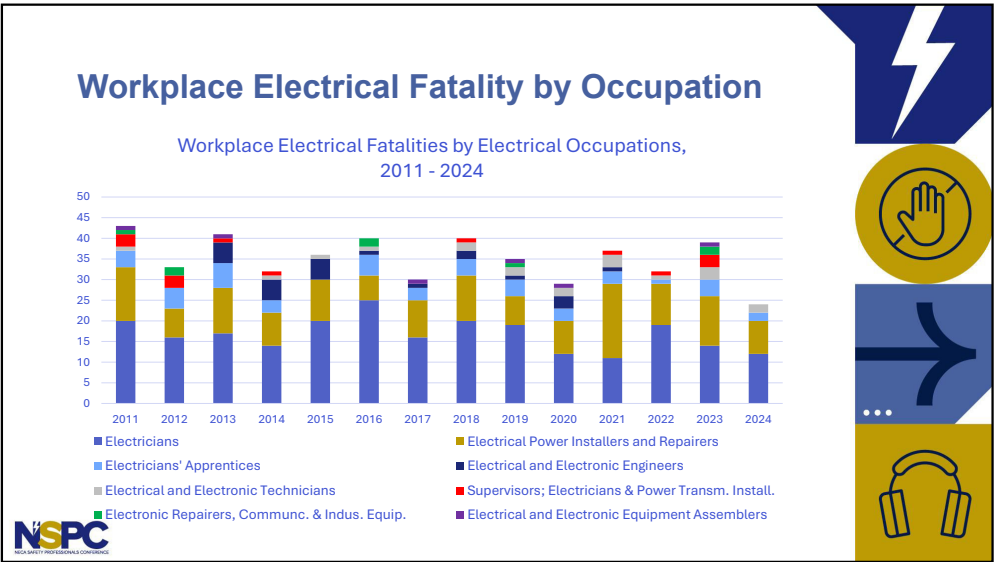
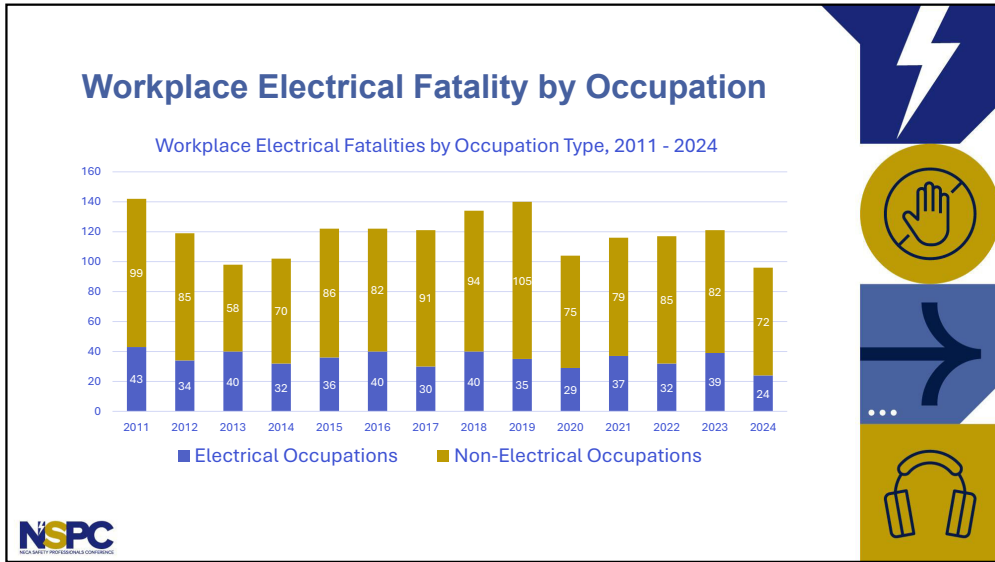
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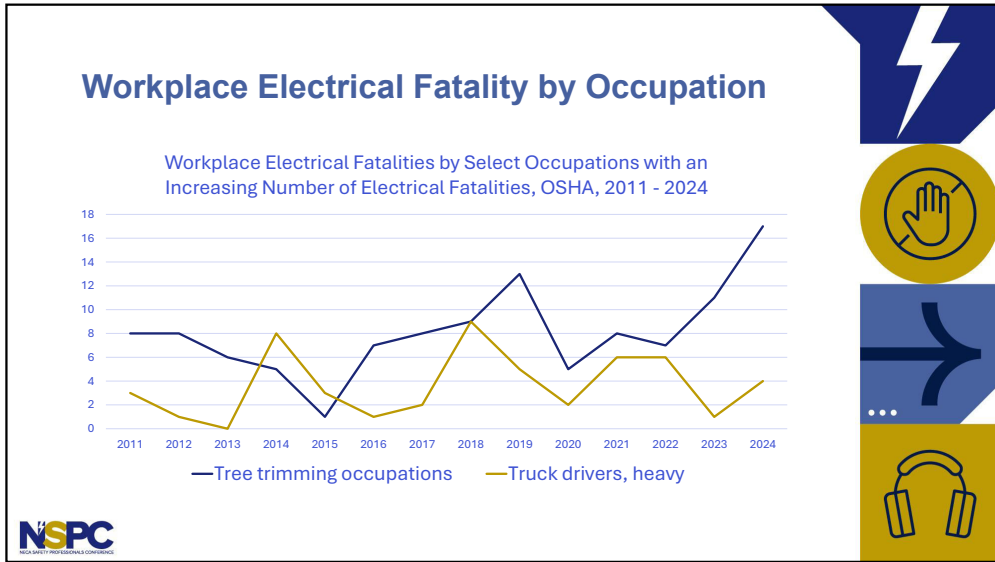
### Workplace Electrical Fatality by Occupation

OSHA 170 form categorizes occupations into one of 573 recognized occupations, including occupations listed as “not applicable,” “occupation not reported,” or “occupation not listed.”

- A total of 130 occupations were involved in electrical fatalities
- 30% of fatalities were in electrical occupations
- 70% of fatalities were in non-electrical occupations

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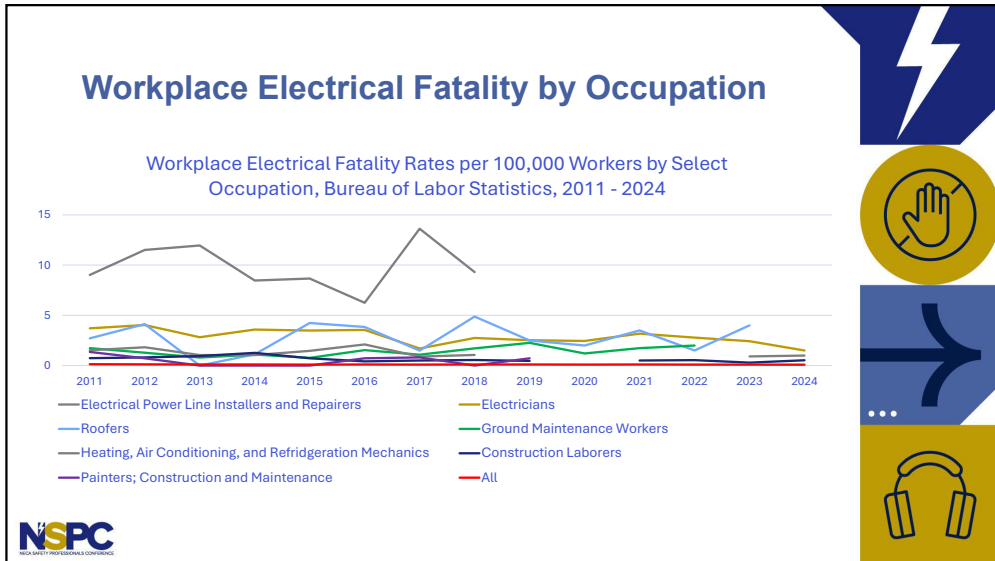




### Workplace Electrical Fatality by Occupation

Occupations with 10 or More Fatalities, OSHA, 2011 – 2024

Occupation	Fats.	Occupation	Fats.
Electricians	243	Electrical & Electronic Engineers	25
Construction Laborer	157	Installers & Repairers	25
Laborers, Except Construction	153	Welders and Cutters	20
Electrical Power Installers and Repairers	151	Electrical & Electronic Technicians	19
Tree Trimming Occupations	113	Technicians n.e.c.	18
Roofers, Roof Repairers, and Helpers	58	Supervisors; Electr. & Transm. Install	14
Truck Drivers; Heavy	51	Farm Workers	14
HVAC Mechanics	49	Helpers, Construction Trades	13
Electricians' Apprentices	47	Plumbers, Pipefitters & Steamfitter Apprentices	12
Telecomm: Line Installers & Repairers	37	Construction Trades n.e.c	12
Painters, Construction & Maintenance	36	Plumbers, Pipefitters & Steamfitters	11
Machinery Maintenance Occ.	30	Drillers; Oil Well	10
Carpenters	25		



### Workplace Electrical Fatality by Occupation

Workplace Electrical Fatality Rates by Select Occupation, Bureau of Labor Statistics, 2011 - 2024

Occupation	Avg. Fatality Rate
Electrical Power Line Installers & Repairers	6.01
Electricians	2.89
Roofers	2.56
Ground Maintenance Workers	1.34
Heating, Air Conditioning, and Refridg. Mechanics	0.98
Construction Laborers	0.59
Painters; Construction and Maintenance	0.35
All	0.11

### WORKPLACE SAFETY

**KNOW WHEN TO SAY WHEN – KNOW WHEN TO STOP WORK**

While qualified electrical line workers and electricians are often willing to go above and beyond the call, some jobs require specific knowledge and experience. That's why it's important to stop and reassess a situation if there is ever doubt about a job's task or a procedure's requirements. As a qualified electrical worker, it is our job to ensure all trades are aware of danger related to unqualified electrical work.

**ALWAYS ASK YOURSELF:**

- 1 Have I been properly trained to safely complete this job task?
- 2 Have I worked on this task before, and do I have the right training and experience?
- 3 Do I have the proper tools for this job?
- 4 Is the hierarchy of risk controls being followed to ensure that preventive and protective risk controls are being implemented?
- 5 Has a proper risk assessment been performed?
- 6 Are all conductors and circuit parts in an electrically safe working condition?
- 7 Are these parts properly guarded to reduce the likelihood of electrical contact or arcing fault?
- 8 Are all applicable procedures and job planning procedures completed?
- 9 Am I confident about completing this job without risk or putting others at risk?

**KNOW WHEN TO SAY WHEN – IT CAN SAVE YOUR LIFE, AND THE LIVES OF THOSE WORKING WITH YOU.**

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### ALWAYS LOOK UP ALWAYS

It's no surprise that a construction job site can be an incredibly dangerous workplace. With so many safety protocols and procedures to follow, it can seem overwhelming. But the truth is, most accidents involving electricity are caused by non-electrical workers inadvertently contacting power lines.

**KEEP THE FOLLOWING DISTANCE FROM OVERHEAD POWER LINES:**

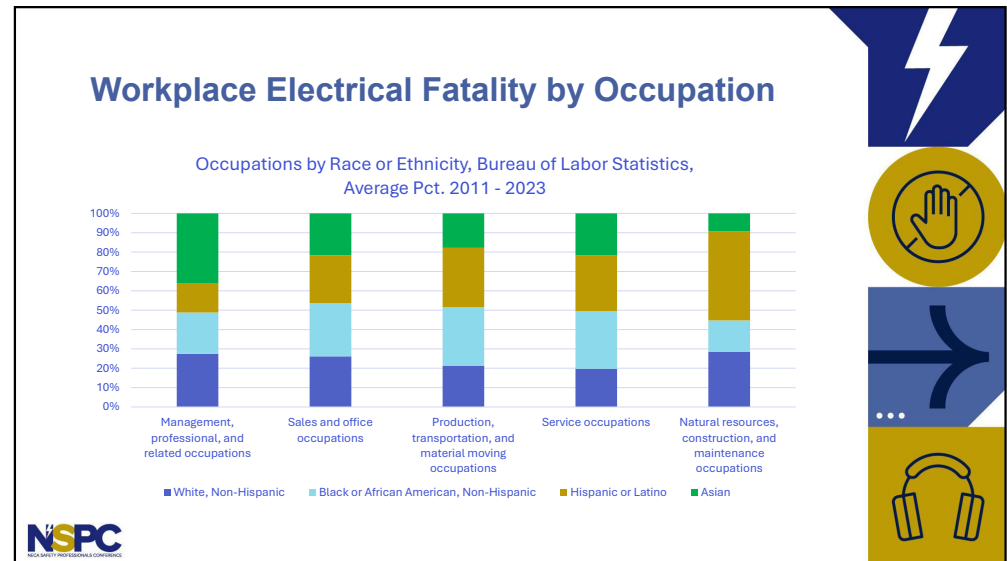
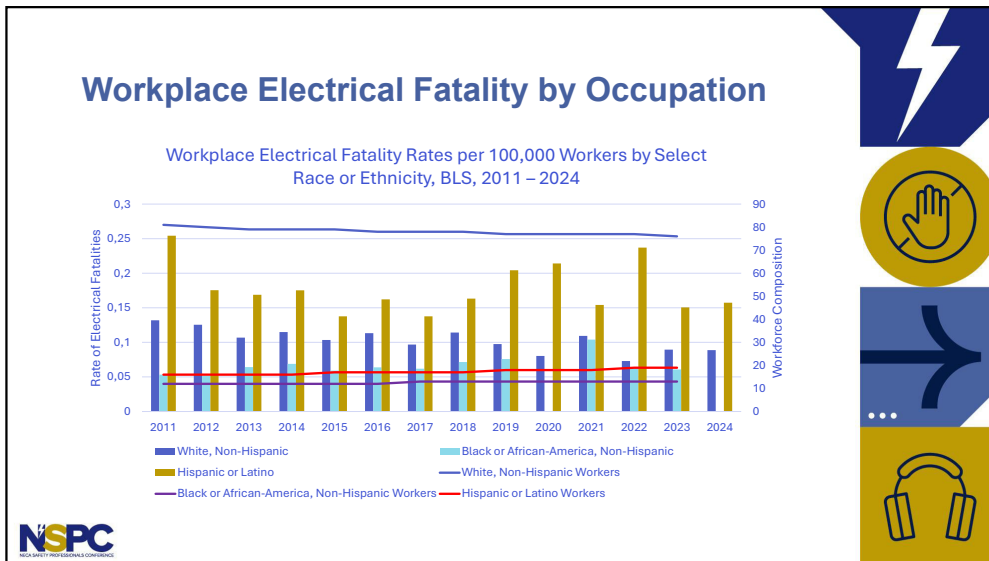
19-24 FT Limited Approach Boundary	VOLTAGE	SAFE DISTANCE
13-16 FT Restricted Approach Boundary	500 v - 550 v	19 FT (5.8 M)
	765 v - 800 v	23 FT 9 IN (7.2 M)
10-12 FT General Approach Boundary	230 v - 242 v	13 FT (4 M)
	345 v - 362 v	15 FT 4 IN (4.7 M)
10 FT General Approach Boundary	480 v	10 FT (3 M)
	50 v - 150 v	10 FT (3 M)
	151 v - 750 v	10 FT (3 M)
	751 v - 15 v	10 FT (3 M)
	151 v - 38 v	10 FT (3 M)
	361 v - 48 v	10 FT (3 M)

**SO WHEN YOU ARE ON THE JOB SITE REMEMBER TO ALWAYS LOOK UP ALWAYS. IT COULD SAVE YOUR LIFE AND THE LIVES OF THOSE AROUND YOU.**

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# Causes of Electrical Fatalities

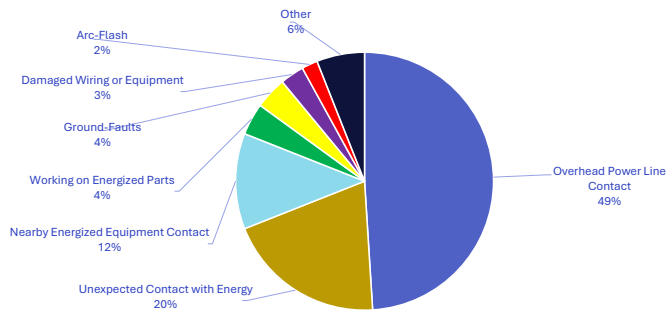


## Causes of Electrical Fatalities

Cause	Description
Overhead Power Line Contact	The fatal injury occurred from contact with overhead power lines. This excludes contact with other energized equipment or wires. This also includes arc flashes caused by overhead power lines.
Unexpected Contact with Energy	The worker's action led to contact with energized equipment or parts while working on that specific equipment or part.
Nearby Energized Equipment Contact	The fatality occurred when a worker's tool or body came in contact with energized equipment near to where they were working.
Working on Energized Parts	The fatality occurred while a worker was working on known energized parts.
Ground-Faults	Fatality report stated that the fatality was caused by a ground fault. Includes ground faults caused by extension cords and tools.
Damaged Equipment or Wiring	The fatality was directly caused by damaged wiring or electrical equipment.
Arc-Flash	The fatal injury occurred due to a reported arc-flash. Excludes overhead power line related incidents.
Other	Includes: troubleshooting/testing; worker mistake; underground power line contact; lockout/tagout procedure failure; backfeed; electrical fire; improper installation.

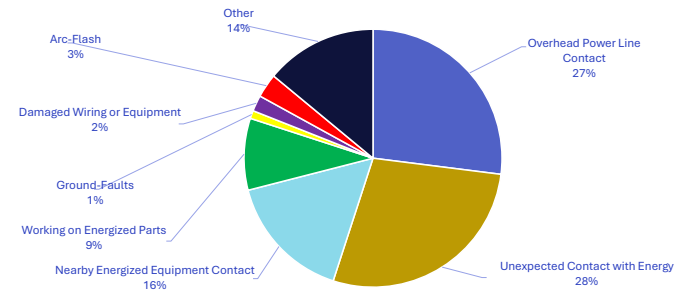
## Causes of Electrical Fatalities

Electrical Fatality Causes, All Occupations, OSHA, 2011 - 2024



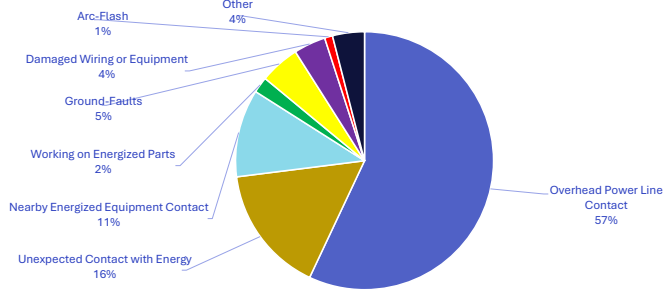
## Causes of Electrical Fatalities

Electrical Fatality Causes, Electrical Occupations, OSHA, 2011 - 2024



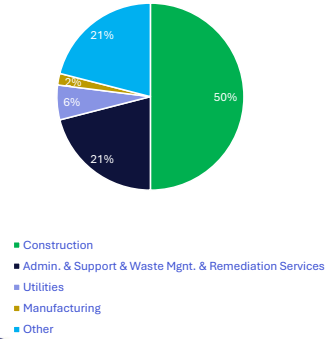
## Causes of Electrical Fatalities

Electrical Fatality Causes, Non-Electrical Occupations, OSHA, 2011 - 2024

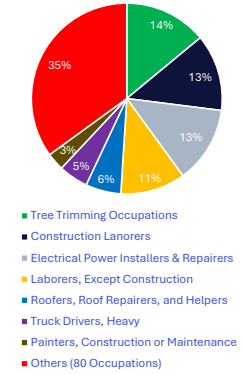


## Causes of Electrical Fatalities – Overhead Power Lines

Fatalities by Industry

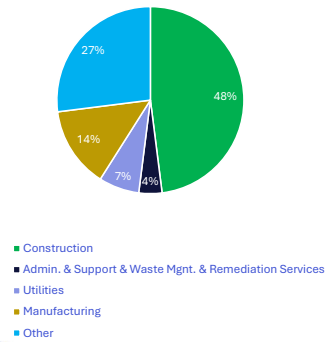


Fatalities by Occupation

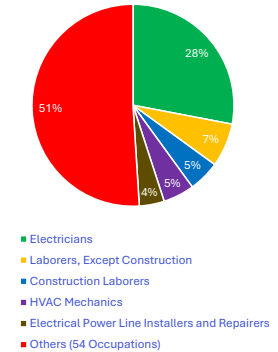


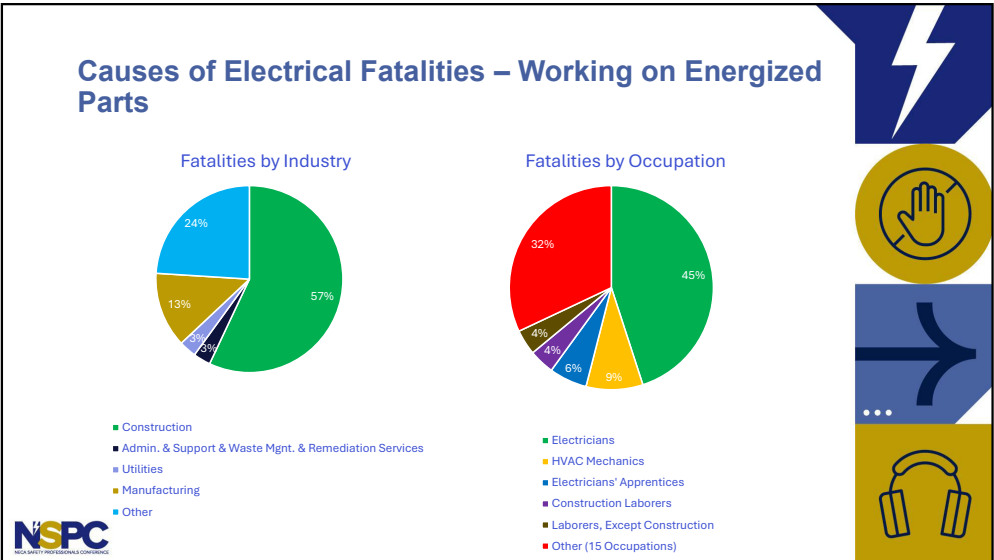
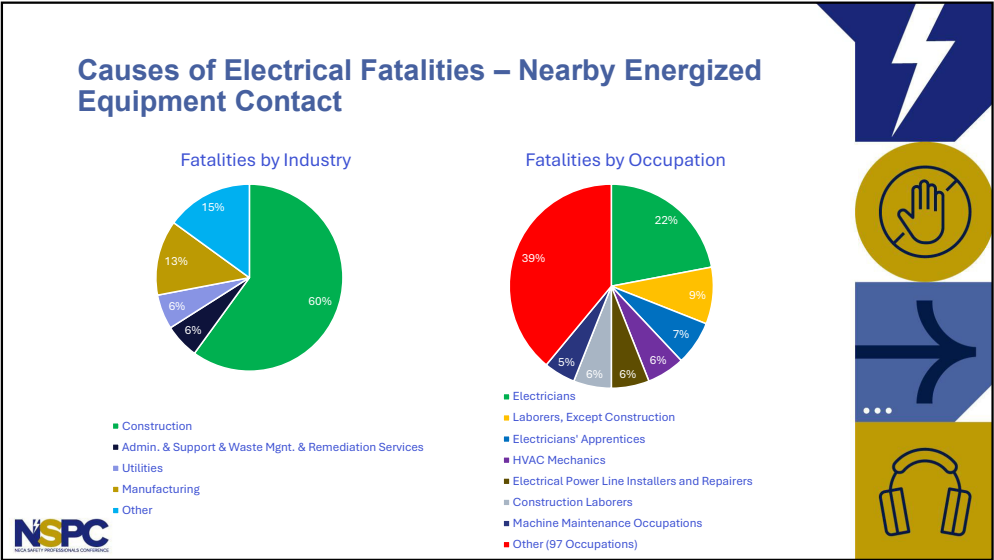
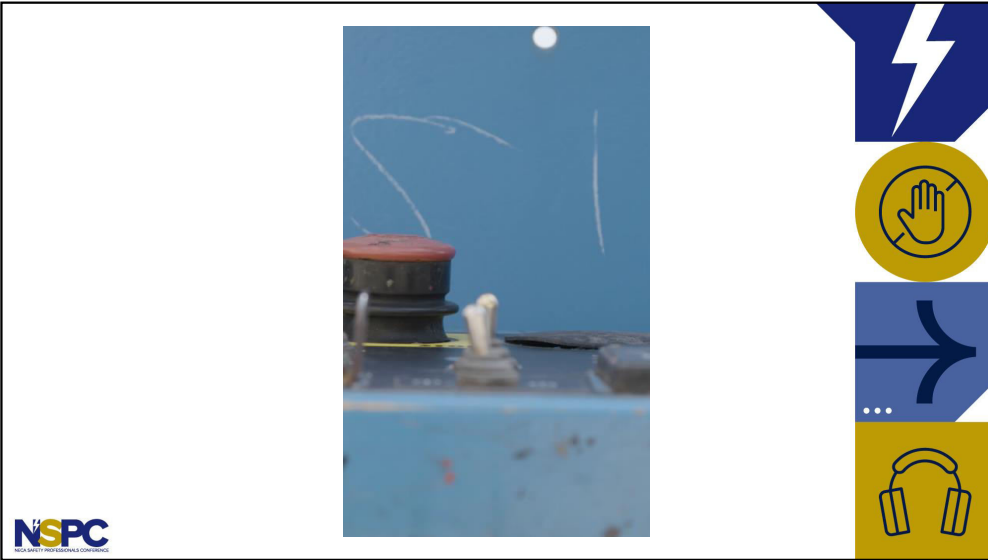
## Causes of Electrical Fatalities – Unexpected Contact with Energy

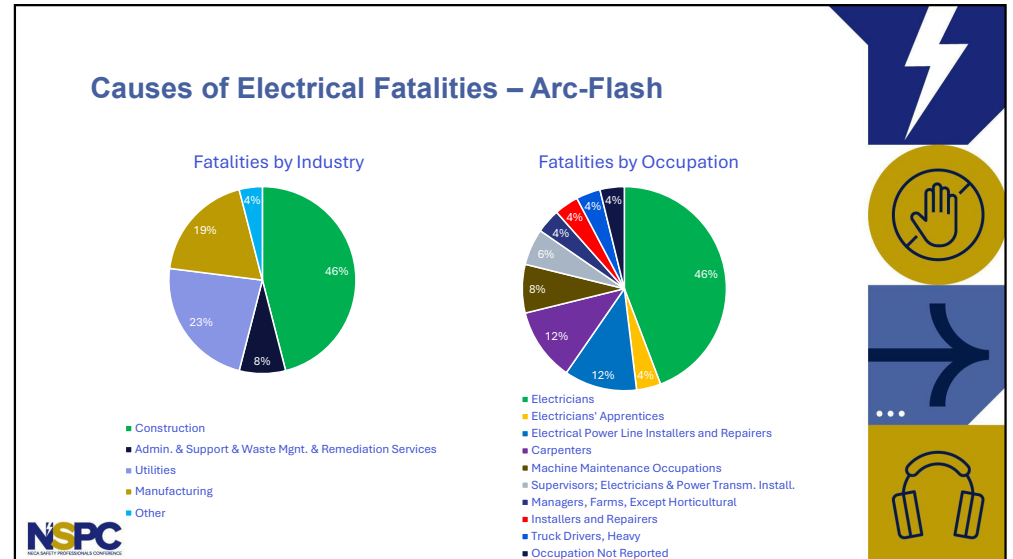
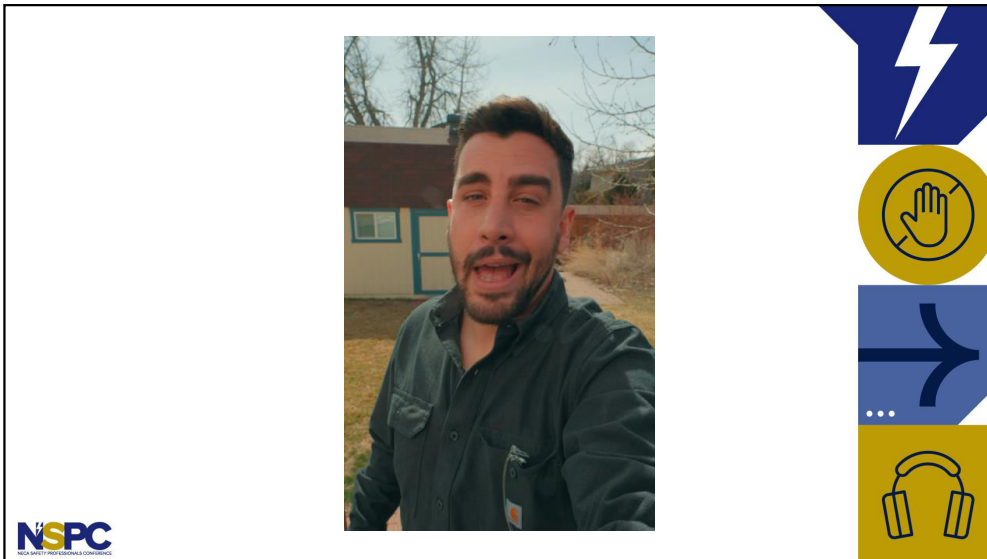
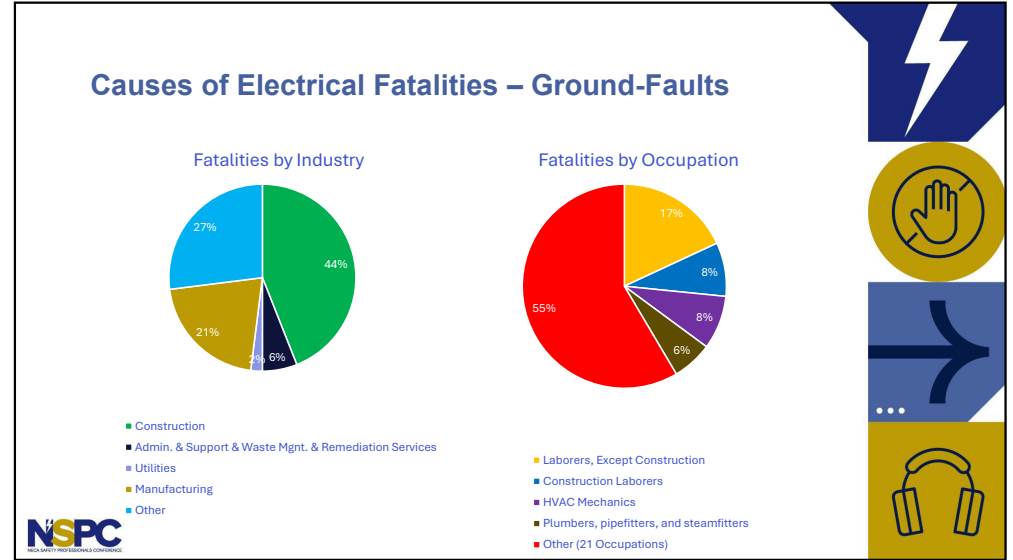
Fatalities by Industry



Fatalities by Occupation







# Workplace Electrical Injuries

## 2021 – 2022 & 2023 – 2024



## Non-Fatal Electrical Injuries

The Bureau of Labor Statistics releases a biennial report of non-fatal electrical injuries that involved days away from work. The 2023 – 2024 report is the latest data set as of 2026.

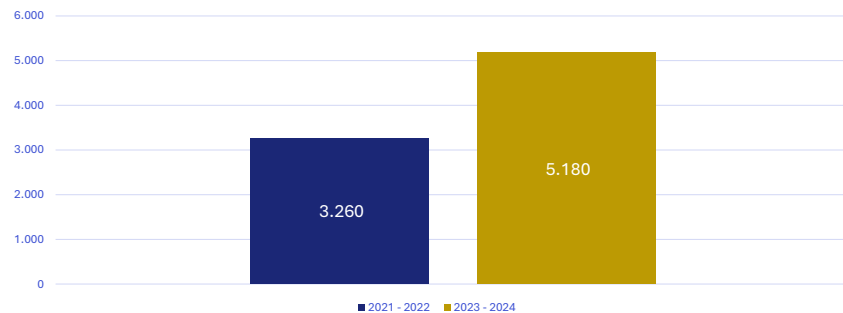
- There were 5,180 non-fatal electrical injuries involving days away from work in 2023 and 2024 (combined). This was a 59% increase from the previous two years.
- 0.23% of all nonfatal injuries resulting in days away from work could be attributed to electricity in 2023 and 2024.



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## Non-Fatal Workplace Electrical Injuries

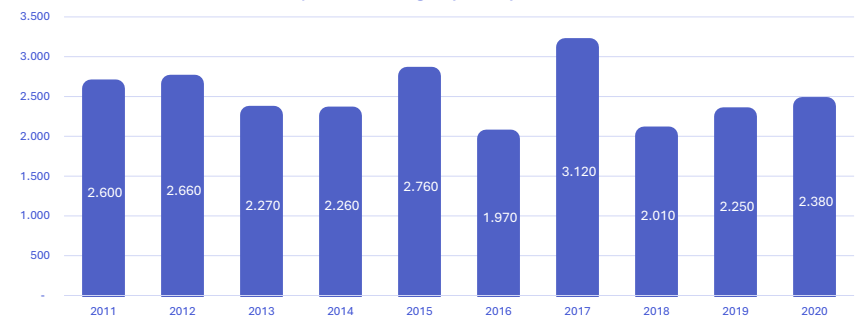
Non-Fatal Electrical Injuries Involving Days Away from Work, BLS



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## Non-Fatal Workplace Electrical Injuries

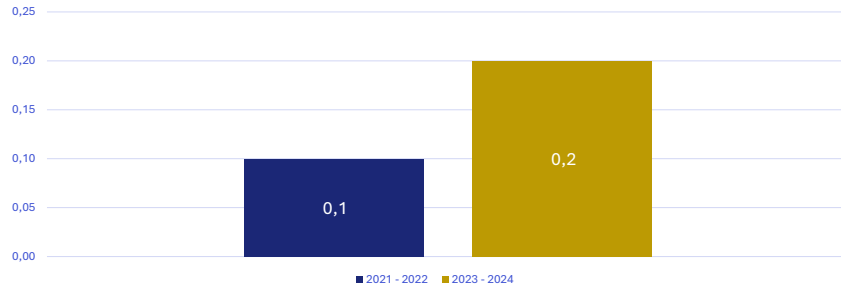
Non-Fatal Electrical Injuries Involving Days Away from Work, 2011 – 2020, BLS



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## Non-Fatal Workplace Electrical Injuries

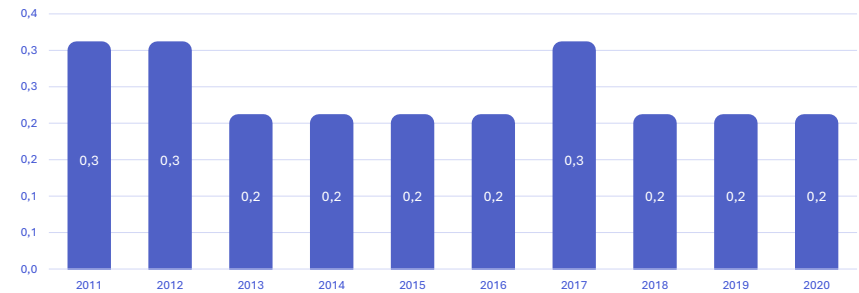
Rate of Non-Fatal Electrical Injuries Involving Days Away from Work per 100,000 Workers, BLS



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## Non-Fatal Workplace Electrical Injuries

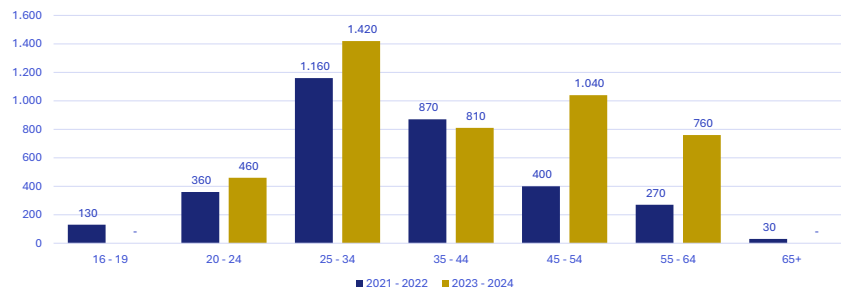
Rate of Non-Fatal Electrical Injuries Involving Days Away from Work per 100,000 Workers, 2011 – 2020, BLS



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## Non-Fatal Workplace Electrical Injuries

Non-Fatal Electrical Injuries Involving Days Away from Work by Workers' Age, BLS



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## Non-Fatal Workplace Electrical Injuries

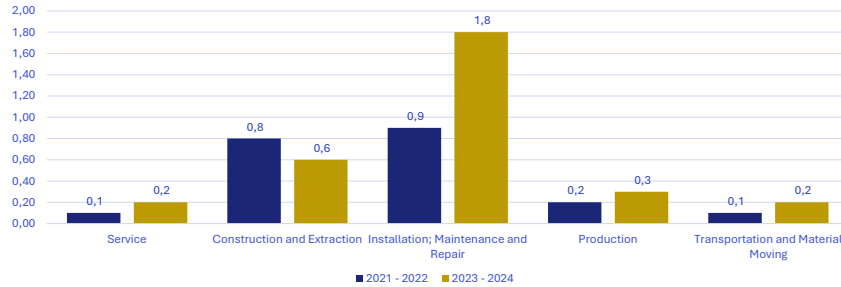
Non-Fatal Electrical Injuries Involving Days Away from Work by Select Occupation, BLS



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## Non-Fatal Workplace Electrical Injuries

Rate of Non-Fatal Electrical Injuries Involving Days Away from Work by Select Occupation per 100,000 Workers, BLS



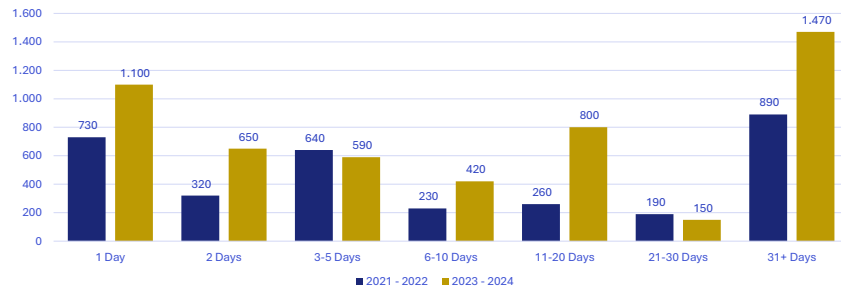
## Non-Fatal Workplace Electrical Injuries

Non-Fatal Electrical Injuries Involving Days Away from Work by Workers' Length of Time at Employer, BLS



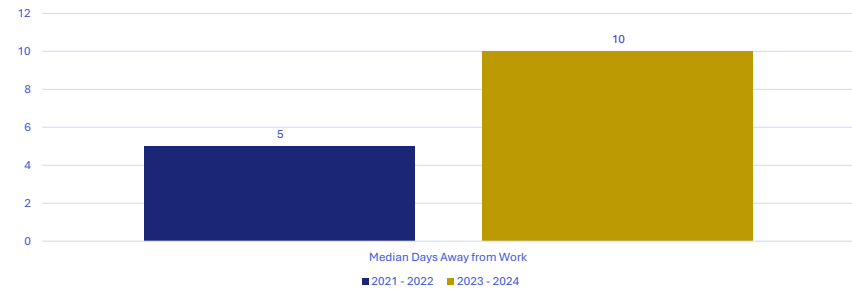
## Non-Fatal Workplace Electrical Injuries

Non-Fatal Electrical Injuries Involving Days Away from Work by Number of Days Away from Work, BLS

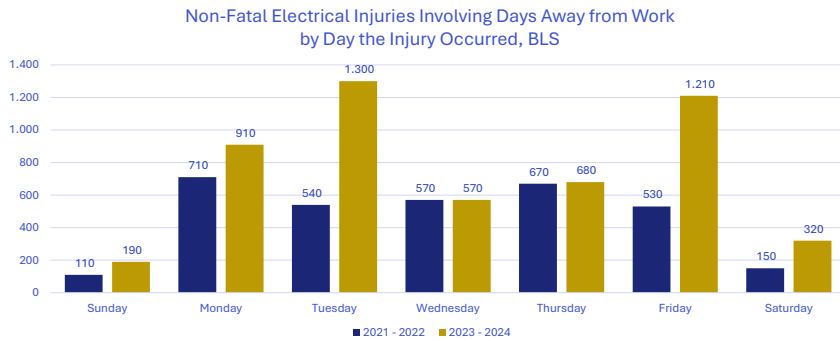


## Non-Fatal Workplace Electrical Injuries

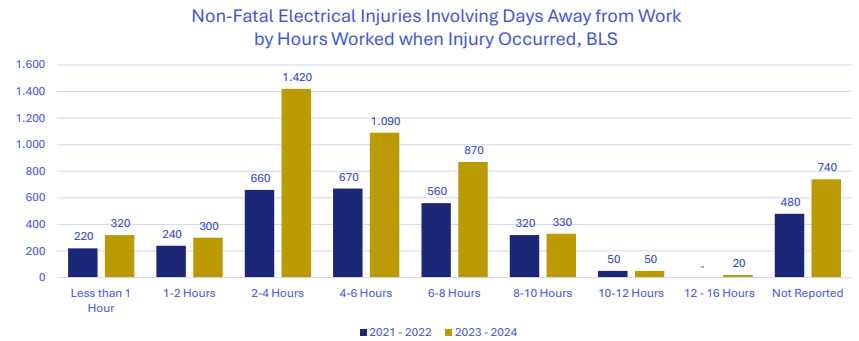
Non-Fatal Electrical Injuries Involving Days Away from Work by Median Days Away from Work BLS



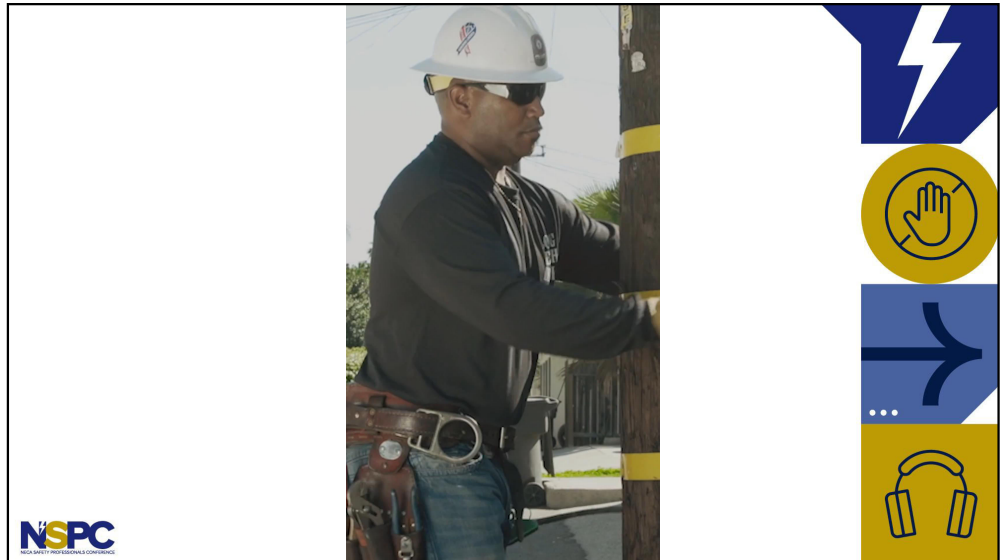
## Non-Fatal Workplace Electrical Injuries



## Non-Fatal Workplace Electrical Injuries

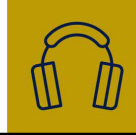


## Conclusion



## Workplace Electrical Fatalities

Leading Cause of Electrical Fatalities	Industry with the Most Electrical Fatalities
<b>Overhead Power Lines</b> <ul style="list-style-type: none"> <li>Accounted for 49% of all workplace electrical fatalities</li> <li>Can be reduced through increased messaging; many workers are unaware of how hazardous they are</li> </ul>	<b>Construction Industry</b> <ul style="list-style-type: none"> <li>Accounted for 51% of all workplace electrical fatalities</li> <li>70% of these fatalities were in non-electrical occupations</li> </ul>



## Workplace Electrical Fatalities

- Worker exposure to electricity will continue and possibly increase
- Overall fatality trend line is steady between 2011 and 2024
  - Of the individual occupations with an increase from 2011 to 2024, **all are non-electrical**
- The number of non-fatal electrical injuries and their days away from work have increased
- Crucial need for proper training for all workers who may encounter electricity
  - Workers should be empowered to speak up if not equipped for a task



## Thank you

**Daniel Majano**  
 Electrical Safety Foundation International  
 Daniel.Majano@ESFI.org

**Evan Jones**  
 Electrical Safety Foundation International  
 Evan.Jones@ESFI.org

