KENTUCKY
State FACE Program
Fatality Assessment & Control Evaluation

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

REPORT#: 20KY065 **REPORT DATE:** 4/12/2021

Field Technician Dies after Contacting Downed Power Line

INCIDENT HIGHLIGHTS

DATE:
November 4, 2020

TIME:
2:00 PM

VICTIM:
Age: 31
Sex: Male
Occupation: Field Technician

INDUSTRY/NAICS CODE:
Engineering Services/541330

EMPLOYER:
Engineering Firm

SAFETY & TRAINING:
Formal safety training program

SCENE:
Private residence

LOCATION:
Kentucky

EVENT TYPE:
Electrocution

SUMMARY

On Wednesday, November 4, 2020, a 31-year-old male field technician was surveying utility poles when he discovered a downed power line. As the victim attempted to move the power line, it became energized and electrocuted the victim, resulting in his death.

READ THE FULL REPORT> (p.5)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Lack of hazard awareness
- Insufficient procedures
- Lack of training

LEARN MORE> (p.6)

RECOMMENDATIONS

Kentucky FACE investigators concluded that, to help prevent similar occurrences, employers should:

- Employers should consider development of policies and procedures that specify the standard operating procedures for employees who encounter a downed power line.
- Employers should consider implementing a job hazard analysis procedure.
- Employers should provide annual hazard awareness training to employees.

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Fatality Assessment and Control Evaluation (FACE) Program

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of employer, employee, or any party involved.

This Case report was developed by the Kentucky Fatality Assessment and Control Evaluation (FACE) Program. Kentucky FACE is a NIOSH-funded occupational fatality surveillance program with the goal of preventing fatal work injuries by studying the worker, the work environment, and the role of management, engineering, and behavioral changes in preventing future injuries. The FACE program is located in the Kentucky Injury Prevention and Research Center (KIPRC). KIPRC is a bona fide agent for the Kentucky Department for Public Health.

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INTRODUCTION

On Wednesday, November 4, 2020, a two-person crew was tasked with surveying utility pole placement in order to develop engineering plans. During the course of their duties, a downed power line was discovered that resulted from a recent windstorm. One of the employees, the victim, attempted to move the power line but discovered that it was tangled in a nearby tree. As the employee worked to remove the entangled power line, it became energized and electrocuted the victim as he held the wire.

EMPLOYERS

The employer is an engineering firm founded in 2014 and consists of 22 total employees. The firm specializes in surveying, analyzing and mapping of utility poles, and operates in multiple states across the US.

WRITTEN SAFETY PROGRAMS and TRAINING

A company representative stated that their employees receive CPR training, first aid training, OSHA 10-hour training, online electrical safety training and traffic safety training. The company does issue each of their employees a company safety manual; however, they declined to provide specifics on the content of the manual.

WORKER INFORMATION

The victim was a married, 31-year-old male with one daughter. He had a high school diploma and had been employed with the company as a field technician for two years and three months.

INCIDENT SCENE

The incident occurred on the front lawn of a private residence. The residence is located in a neighborhood, inside the city limits of a large metropolitan area. Residential homes are situated side-by-side with a two-lane highway dividing the neighborhood. Utility poles are situated on each side of the highway in the front yard of the homes. The majority of the overhead wires in this area run parallel with the roadway. The overhead wires crossover the highway at several points with smaller wires branching off to other parts of the area.

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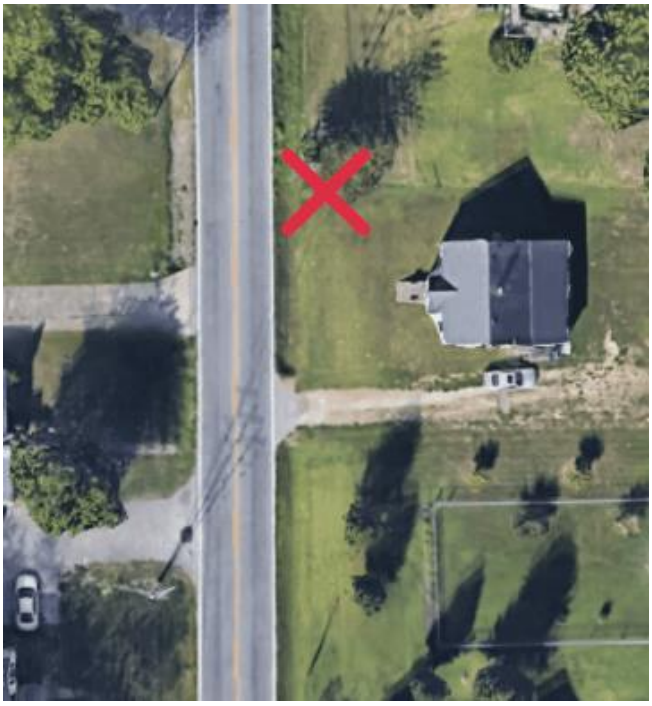

Photo 1. Google image of the location where the incident occurred. "Kentucky city street," by Google, Digital Image.

Photo 2. Picture which notates the location the victim was standing when he was electrocuted. Photo property of Kentucky FACE.

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Photo 3. Picture of utility pole which was being surveyed by the victim and his colleague. The pole pictured housed the wire which had broken loose and ultimately electrocuted the victim. Photo property of Kentucky FACE.

WEATHER

The temperature was approximately 68°F at the time of the incident. The humidity was 39% with a southeast wind at 8-mph and no precipitation. Weather was not determined to be a factor in the incident (Weather underground, 2020).

INVESTIGATION

On November 4, 2020, a two-person crew departed their out-of-state place of business en route to a Kentucky metro area with the task of surveying power lines to develop future engineering plans. The job site was a residential area with homes located on each side of a two-lane highway. Due to the placement of the utility poles and their proximity to the highway, the job required them to work in the front yards of private residences. The employees worked their way from pole to pole, collecting data such as pole height, distance between poles, and each pole's proximity to the highway. The data collected would later be utilized to develop engineering plans for the installation of fiber optic cable. Throughout the course of their duties, the crew encountered a downed power line, which investigators determined was likely from a recent windstorm. According to a company representative, the downed power line was entangled in a nearby tree that sat approximately eight feet from the utility pole. The company representative stated that after the victim located the downed line, he worked to free it from the tree. Although the line was not initially energized, at some point in the process of untangling the wire, it became energized and delivered an electric shock to the victim, killing him instantly. As the victim maintained contact with the wire, his clothing caught fire, and his body was burned.

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CAUSE OF DEATH

According to the death certificate, the cause of death was high voltage electrocution.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. Kentucky FACE investigators identified the following unrecognized hazards as key contributing factors in this incident:

- Lack of hazard awareness
- Insufficient procedures
- Lack of training

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should consider development of policies and procedures that specify the standard operating procedures for employees who encounter a downed power line.

Discussion: According to the company, the victim had completed an online electric safety course, hosted by a third party upon being hired, two years and three months earlier. In this particular case, the victim had broad-spectrum training of general electrical safety, which was taken online. An example of a policy that may have prevented this particular fatality could simply read, “Downed power lines are dangerous, always assume a downed line is energized. If a downed line is located or observed, do not approach or touch the line. Leave the area immediately and contact a supervisor to report.” The policy should identify the hazard, step to minimize or avoid the hazard and clearly identify the expectation of what is expected of the employee if the situation arises. OSHA also provides “rules to live by” when dealing with a downed electrical line that may be beneficial to incorporate into a company policy or procedure. The rules are as follows:

- Do not assume that a downed power line is safe simply because it is on the ground or it is not sparking.
- Do not assume that any wire is a harmless telephone, television, or fiber-optic cable, and does not carry lethal current.
- Treat everything electrical as energized until tested and proven to be de-energized.
- Never go near a downed or fallen electric power line.
- Electricity can spread outward through the ground in a circular shape from the point of contact. As you move away from the center, large differences in voltages can be created.
- Never drive over downed power lines. Assume that they are energized.
- If contact is made with an energized power line while you are in a vehicle, remain calm and do not get out unless the vehicle is on fire. If possible, call for help.
- If you must exit any equipment because of fire or other safety reasons, try to jump completely clear, making sure that you do not touch the equipment and the ground at the same time. Land with both feet together and shuffle away in small steps to minimize the path of electric current and avoid electrical shock. Be careful to maintain your balance (OSHA Fact Sheet, 2018).

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To help avoid future similar events, employers should develop standard operating procedures that specify what actions employees are to take when a downed power line is encountered and restrict employees from engaging in activities in which they are not adequately trained to complete.

Recommendation #2: Employers should perform a job hazard analysis.

Discussion: Prior to the employees arriving on scene, the company had no knowledge of a downed power line in the area in which the employees were required to work. The lack of awareness presented the employees with an unexpected hazard in which they were unprepared to address appropriately and safely. Implementing a job hazard analysis process can help employers identify safety hazards that may be present and unique to a particular worksite prior to performing a job. OSHA defines a Job Hazard Analysis (JHA) as "*a technique that focuses on job task as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment"* (OSHA, 2002). A properly executed JHA of the worksite would have exposed both known hazards and hazards that are likely or could be present in the future. It is probable that a company whose primary function is to survey utility poles may observe or encounter a downed power line at some point throughout the course of his or her duties. A JHA would allow the company to analyze these risks, proactively develop a procedure for addressing the risk of a downed power line, ensure employees have the proper personal protective equipment, and allow for adequate training of employees prior to placing them in a risky environment. A JHA can be specific to a particular site as well, not just a task. Often times, a new work site can expose new risk which may be unique. Performing a JHA anytime employees are required to work in a new area or job site would likely have exposed the downed power line. After discovering the hazard, employers could have made the decision to eliminate the hazard by not allowing employees on the premises until the hazard was removed or allowed adequate time to develop a plan to complete the task in a safe manner. A JHA may also surface the need for additional policy and procedures. As an example, perhaps calling the utility company prior to beginning work at a new site to check for reports of downed lines would be a logical procedure to implement, once the hazard had been identified in the JHA process. To ensure employee safety, employers should perform job hazard analysis on the task they require their employees to perform and prior to working at new locations which may have unknown hazards.

Recommendation #3: Employers should provide hazard awareness training to employees annually.

Discussion: According to The National Fire Protection Association (NFPA), 1,651 workers died as a result of electrical injury between 2007 and 2016, which is nearly 3.5 deaths per week over a nine-year period (National Fire Protection Association, 2018). Electrocution occurs rapidly and often times without warning leaving the victim helpless and unable to act, which is why proper hazard awareness training is critical for workers who could potentially be exposed to electric shock. Although the victim had received web-based, electrical safety training through a third-party upon being hired, it is particularly important that electrical shock hazard awareness training occur on an annual basis. Hazard awareness training that is specific to the types of exposure the employee is likely to encounter should also be implemented. This training should include company specific policies and procedures that have been developed and aligns with the expectations the company has for the employee's response to electrical hazards. Each employee subject to being exposed to the hazard should receive training; the training should include a form of validation that the employees understand and should reoccur on an annual basis to combat complacency. The Kentucky Department of Workplace

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Standards, Division of Occupational Safety and Health Education and Training can often assist with the development of training or provide training at no cost in many situations. A training request can be submitted online by clicking here.

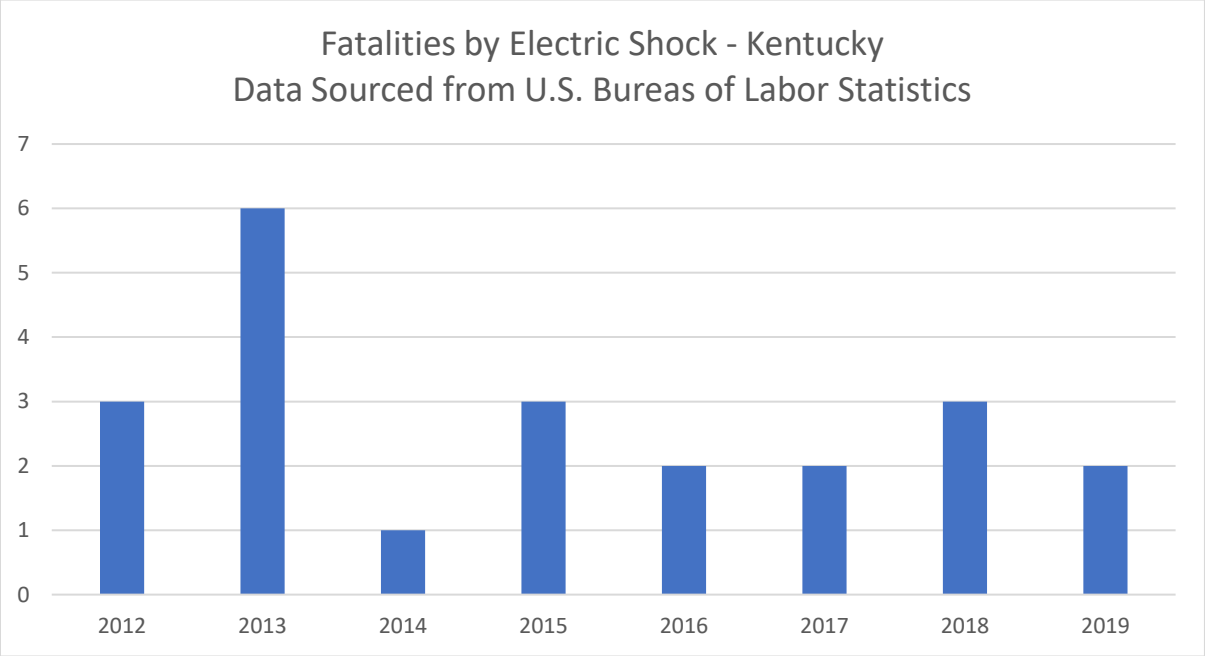

Chart 1. Chart displaying annual number of work-related, fatal injuries by electric shock in Kentucky 2012 -2019. Data Obtained from https://data.bls.gov/PDQWeb/fw

Chart created by KY Face.

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PROGRAM FUNDING

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INVESTIGATOR INFORMATION

This investigation was conducted by Beau Mosley, Fatality Investigator, Fatality Assessment and Control Evaluation, Kentucky Injury Prevention and Research Center, University of Kentucky, College of Public Health.

ACKNOWLEDGEMENTS

The Kentucky FACE Program would like to thank the involved company for their assistance with completion of this report and Jess Staggs, CDS for consultation on applicable regulatory guidance.

SURVEY

Please click here to take a brief, anonymous survey concerning this report. We appreciate any feedback you may have