



## ***Back-Feed Awareness & Working Safely Around Downed Electrical Wires***

***eSource Newsletter***  
***July Edition 2021***

***Electrical hazards multiply for workers involved in cleanup and recovery efforts following major disasters and weather emergencies. Life-threatening danger exists around downed and low-hanging electrical wires which can still be energized following a storm.***

### ***Safety First - Always***

Consider all electrical equipment, lines and conductors to be energized. Circuit Protection Devices do not always open when a power line falls into a tree or onto the ground. Reclosures automatically try to reset circuits and restore power when it is interrupted. Even if electric lines are not sparking or humming, fallen electric lines can electrocute you if you touch them or the ground nearby.

### ***Energy***

Downed wires can energize other nearby objects, such as fences, water pipes, bushes and trees, buildings, and telephone/CATV/ fiber optic cables. Even manhole castings and reinforcement bars (rebar) in pavement can become energized by downed wires. During storms, wind-blown objects such as canopies, aluminum roofs, siding, and sheds can also be energized by downed wires.

### ***Back-Feed***

**The improper connection of portable generators to a building's electrical system is one way hazardous back-feed conditions are created!**

Back-feed is a hazardous condition created when temporary sources of electricity (such as a generator) are connected to the damaged permanent system causing electricity to flow inside and outside a structure through connected lines and equipment. In emergency conditions, portable generators should only be used as standalone sources of power, and (except for properly wired by-pass or isolation connections) not connected to a building's electrical system. If a generator is connected to a building's electrical system, it must be done with a properly installed main breaker bypass to prevent electricity from flowing out of the building and into downed power lines.

Some other sources of back-feed include:

- Circuit ties / switch points
- Pole mounted transformer banks
- Pad mounted transformers
- Capacitors
- Lightning
- Downstream events

**(Continued)**

## **Rules to Live By**

- 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.

## **Utility Requirements**

Developing a safe worksite by maintaining the current through the body at a safe level now becomes the task of all involved. First and foremost, utility management and the Safety Department must determine what they consider to be the maximum safe level of current flow allowable through the worker. Or, stated another way, the maximum allowable voltage that can be considered safe that can be developed across the worker must be specified. There was no standard or widely accepted maximum allowable body current. A value of 50 V is commonly used but is not a requirement. This upper limit of exposure is a key consideration in selecting the size of protective equipment. Each worksite and each situation may be different, with each utility accepting a different margin of safety. To develop a safe worksite requires the cooperation of several departments within the utility. The Engineering Department must supply an approximate level of fault current expected at an individual worksite or within an assigned working region.

Engineering must also provide the maximum time that a fault current may flow at the identified sites. The Operations Department must develop appropriate work and equipment maintenance methods. The Purchasing Department, in cooperation with the Standards Group, must acquire appropriate safety equipment for issue and use by the workers.

## **Training**

Utilities must use workers who possess the necessary skills to safely perform their jobs. Linemen have different skill levels. Typically, an electrical worker's employer or the union formally defines each skill level. The levels typically consist of apprentice through journeyman. Formal plus on-the-job training and tailgate conferences expand the training and skill of apprentices and remind experienced linemen of approved safe work methods.

Many utilities have prepared internal publications to outline work rules and practices, approved for use by their utility. Others may not have a formal set of rules in place, relying rather on experienced linemen and the tailgate conference, required by OSHA before beginning work each day.

Worker safety is everybody's job. OSHA regulations in place, penalties for accidents can be severe and may affect a broad range of personnel throughout the utility if a lack of training is determined to be the cause.

## **Equipment**

The utility must provide adequate equipment for the worker to perform the task in a safe, yet efficient manner. Depending upon its size, a utility typically has a person or department making equipment-purchasing decisions. Many utilities rely on national consensus standards to define equipment requirements. Some utilities have safety departments working in conjunction with those responsible for purchasing. They may have their own set of performance specifications drawn from several standards to meet their individual needs. Adequate equipment to perform safe de-energized line maintenance includes voltage detectors, personal protective grounding assemblies made up with clamps, ferrules and cable with strengths and ratings to meet the safety needs of the worker.

For additional information on Back-Feed Awareness please contact Duane Richardson at [duane@imea.com](mailto:duane@imea.com) and / or phone: (765)366-5506.

## EVENT CALENDAR

**August 24-25, 2021**

**IMEA Transformer Theory and Connections Workshop**  
**Mishawaka, Indiana**

Register Today! [www.imea.com](http://www.imea.com) / workshops

**August 30 – September 3, 2021**

**IMEA 613 Advanced Construction and Maintenance Workshop**

**Class # 100118**

**Mid-America Science Park (Scottsburg, IN.)**

Register Today! [www.imea.com](http://www.imea.com) / workshops

**September 20 - 24, 2021**

**IMEA 612 Intermediate Construction and Maintenance Workshop**

**Class # 093019**

**Mid-America Science Park (Scottsburg, IN.)**

Register Today! [www.imea.com](http://www.imea.com) / workshops

**September 27 – October 8, 2021**

**IMEA 610 Wood Pole Climbing Workshop**

**Class # 092721 (Lebanon Utilities)**

Register Today! [www.imea.com](http://www.imea.com) / workshops

**October 12 – 15, 2021**

**IMEA Annual Business Meeting & Vendor Expo**  
**Embassy Suites Hotel & Conference Center**  
**Noblesville, IN.**

Register Today! [www.imea.com](http://www.imea.com) / events

**October 26 – 27, 2021**

**IMEA Supervisor Safety Workshop / All About OSHA / IOSHA**  
**Lebanon, IN.**

Register Today! [www.imea.com](http://www.imea.com) / workshops



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**SAVE THE DATE!**

EMBASSY SUITES HOTEL & CONFERENCE CENTER

**OCTOBER 12– 15, 2021**  
**IMEA ANNUAL MEETING**  
**& VENDOR EXPO**

WE LOOK FORWARD TO YOUR PARTICIPATION! PART OF GREAT WORK IS IMPROVING YOUR SKILL SET, CREATING BETTER EMPLOYEE COMMUNICATION, OR LEARNING ABOUT THE SUCCESSES OF OTHERS AND APPLYING THEM TO YOUR WORKPLACE.