MILWAUKEE FIRE DEPARTMENT
Operational Guidelines

Approved by: Chief Mark Rohlfing 2019

6.0 – ELECT (Electrical Trouble)

Units Dispatched: **E or (T or R)**

GENERAL

When operating at *ELECT* assignments, personnel should be primarily concerned with firefighter safety as it pertains to potential electrical and/or thermal burns, as well as the potential for fire spread occurring as a result of the original electrical problem. Proper PPE and appropriate electrical circuit isolation will provide a high margin of safety.

Make note of weather conditions, particularly the presence of lightning, prior to and during *ELECT* assignments. Lightning strikes can be responsible for brief power surges and can become more serious, resulting in structure fires.

Many *ELECT* assignments result when an occupant observes sparking, arcing, or smoking from or near an electrical outlet, electrical switch, light fixture, or circuit/fuse panel. The panel is generally an ideal location to begin your investigation. Interview the occupant(s) to determine their observations during or prior to the event which caused them to call the Fire Department. Ask if lights briefly flickered or suddenly got brighter, both indicators of a power surge. In occupancies with old screw-type fuses, or panels with a 30 amp or higher fuse/breaker installed on a 20 amp circuit, an overload may have occurred without tripping the fuse or breaker. This can result in smoldering wires, insulation, or outlets elsewhere in the circuitry and needs to be thoroughly investigated using the TIC and conventional methods.

Find out if any recent repairs had been made to the electrical circuit or equipment involved. Make note of any obvious overload of outlets, as indicated by the presence of outlet multipliers or multiple extension cords. Employ your TIC to locate high temperatures at the ballasts of fluorescent light fixtures, a common cause of electrical burning odor; this will speed the process of locating the cause of the alarm, particularly in large commercial or office-type occupancies.

Compact fluorescent bulbs (CFL) can produce a frightening situation for an occupant, prompting a call for our services. According to the EPA, it is not uncommon for a CFL to produce a limited amount of smoke and odor at the end of its useful life, or if it is used improperly or defective. A flashing arc internal to the fluorescent tube or ballast may occur and, in some cases, a significant distortion of the plastic material may happen. The EPA states that this is not a fire hazard, and that the safety measures built into the bulb are managing the heat and preventing subsequent hazard. If called for this type of incident, simply shut off the power to the light and recommend to the occupant that they appropriately dispose of the CFL bulb and have it replaced.

Prior to accessing or extinguishing the affected area, We Energies recommends we shut down the master breaker at the panel to secure electricity to the entire structure. Isolation of a specific circuit would only be indicated after a thorough investigation reveals a non-

emergent situation, and it is determined that the occupant(s) or business would be unduly affected by a general loss of electricity. At large commercial or industrial structures, work closely with on-site personnel so as to not impact their operations needlessly. In any situation in which an electrical circuit or main breaker must be shut down, request via dispatch that WE Energies-Electric respond. Also, if any evidence of electrical theft or electrical meter tampering is observed or suspected, request 10-53 response in addition to WE Energies-Electric.

Observe the suspected site for sparking, arcing, or smoking. The darkening or blistering of paint nearby could indicate fire in a stud, joist, or rafter channel. Use deliberate salvage and overhaul techniques to locate, confine, and extinguish a fire of this nature. This would include passing the back of your hand over potentially affected areas to note heat as well as employing the TIC to observe obvious temperature differentials. If fire has extended beyond the control of the single Engine Company, request a *Full Assignment* and operate according to *FULL (Full Assignment)* operating guidelines.

After shutting down electricity at the main, remove any outlet plates, bezels, or covers to investigate the extent of the problem. This will often reveal a shorted or scarred wire or component not otherwise visible. If the interior of the outlet, switch or fixture box shows no other scarring or evidence of fire and the adjacent wall and ceiling surfaces are cool to the touch, no additional exploration is generally required. If the paint has blistered and heat is present, wall or ceiling inspection holes are indicated. Apply extinguisher agent or water at this point to prevent fire growth. Begin near the problem and work outward until reaching clean, unburned surfaces. Protect the property by doing as little damage as possible.

Where able, investigate rooms directly above to identify the presence or absence of smoke or fire. Where ceiling fans or light fixtures are involved, be sure to access any attic space above the problem to ensure that there is no smoldering occurring in the insulation or joists. This is especially problematic where blown-in insulation is used.

At the completion of an *ELECT* assignment at which the main breaker has been shut down, advise the occupant(s) that they are not to re-energize the main breaker as doing so could cause a fire. Also, advise and document that they are to have the problem repaired by a qualified electrician prior to re-energizing the main breaker. If a main breaker has been shut down and weather or other conditions will make the building uninhabitable, check with occupants to ensure they are able to make other temporary living arrangements with family or friends.

If an *ELECT* assignment originates because of an issue at a WE Energy or other utility substation or switching station (above or below ground), never attempt to access any enclosed panels, vaults, manhole covers, or other enclosed areas. In these cases, establish a perimeter (request additional resources as needed) and prevent any access to surrounding wires, metal fence lines, guide wires, or railings.

If a large electrical fire is underway or occurs after MFD arrival at a WE Energies facility, clear occupants from any affected exposures and focus on perimeter and exposure control. Ensure that the apparatus is not parked on top of any manhole covers on arrival. DO NOT, under any circumstances, approach or apply water to these installations until they have been declared de-energized by We Energies personnel. Further, do not stare at arcing or

burning electrical equipment as the intensity of the light can cause permanent vision damage.

In the case of fire burning in an underground utility vault, the Officer should special call for WE Energies Electric and the Dry Chemical Unit to the scene via dispatch. The Dry Chemical Unit is pulled by the Chemical Supply Unit, both of which are presently assigned out of Station 11 with the Hi-X Foam Unit. The Dry Chemical Unit contains 2 – 150 pound multi-purpose dry chemical extinguishers, each discharged through a 50 foot 1" rubber hose with a 1⅜" shut-off nozzle. The discharge range is approximately 40 feet. **After** WE Energies personnel have verified that all electricity has been shut down to the affected vault, the Dry Chemical Unit can be deployed to knock down and extinguish fire. Members should operate from the surface, using the reach of the stream to extinguish the burning materials. Responding personnel should remember that many utility vaults, especially in the downtown area, are deceivingly large and contain multiple levels, creating maze-like 'death trap' conditions for firefighters.

If the cause of the *ELECT* assignment is determined to actually be an appliance issue, operate according to the *APPL (Appliance Fire)* response guidelines.

If an *ELECT* assignment is found to involve any WE Energies equipment, such as wires, poles, or transformers, refer to and operate according to the *WIRES (Wires Down)* or *POLEF (Pole Fire)* response guidelines as indicated.

An outstanding reference for all members to review is the WE Energies publication provided to all fire stations and attached to this SOG on the MFD Homepage as SOG 6.1: WE Energies 1st responder guide.

ENGINE

OFFICER Tools: Full PPE with SCBA, portable radio, flashlight, TIC, halligan tool Duties: Initiate Command, direct apparatus placement, begin size up and investigation
HEO Tools: Full PPE, portable radio Duties: Engine and pump operations as needed
NOZZLE Tools: Full PPE with SCBA, portable radio, axe, door chocks, 6' pike pole Duties: Circuit or fuse panel control
BACKUP Tools: Full PPE & SCBA, portable radio, multi-purpose dry chemical, CO_2, and/or pressurized water extinguisher, flathead axe, door chocks Duties: Investigate with Officer, extinguish fire if present at Officer's direction

The Engine HEO shall place the apparatus in a flexible location, parked well out of the way of any wires and not over any manhole or vault covers (particularly where We Energies or other utility installations are the source of the problem). The Engine HEO shall monitor the assigned incident talk group and act upon requests from the Engine Officer, which may

include relocating the apparatus, assisting the Nozzle FF with the stretch of a proper length and size hoseline for the situation, and/or operating the pump.

The Officer will investigate for the cause as indicated above and will communicate with dispatch to request additional resources as needed. The Officer will travel with the Backup FF.

The Nozzle FF will locate the circuit/fuse panel and communicate via handheld radio with the Officer for additional instructions. The Nozzle FF will then be available for overhaul tasks as directed by the Officer.

The Backup FF will travel with the Officer to assist with identifying the source and extent of the problem as indicated above and with extinguishing any fire as directed by the Officer **after** the electricity is secured.