

ELECTRICAL MAINTENANCE IN RESIDENTIAL BUILDINGS

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Introduction

While cooking fires are typically the most common type of fires in the community housing sector, electrical fires appear to be increasing in frequency as a result of aging infrastructure. These fires often result in much longer downtimes for housing providers, which affects residents, staff and a housing provider's financial position.

Developing formal electrical preventative maintenance and safety programs can help reduce the likelihood of electrical system failure and fires. This short guide will focus on best practices in electrical maintenance and how to recognize the early signs of problems.

Electrical Maintenance Program

Electrical preventative maintenance routines should be developed in consultation with licensed electrical contractors. They should include, as a minimum, the following:

- ▶ **Switches and Disconnects:** Switches and disconnects having a rating of 300 amps or over and equipment greater than 600V should have maintenance completed every 3 to 5 years. Equipment greater than 13.8 kV should be evaluated every 1 to 3 years.
- ▶ **All main switches should be maintained every 3 to 5 years:** Using a rotating schedule, switches and disconnects should be tested and calibrated, bolts tightened, and contact surfaces tested (Ductor).
- ▶ **Infrared thermography:** Surveys should be conducted every 1 to 3 years by a specialized contractor. The findings report with corrective actions should be maintained on site.
- ▶ **Circuit breakers:** These should be mechanically exercised on an annual basis to ensure they are not binding. If binding breakers are discovered, they will require cleaning, lubrication and possibly calibration (by a qualified electrical contractor). For higher voltage breakers (over 220 volts), a qualified electrician should be contracted to perform the mechanical exercising of the breakers.

Electrical Safety Authority (ESA)

Providers should implement a formal inspection program with the Electrical Safety Authority (ESA). This includes the regular inspections by the ESA and might also include the use of the Continuous Safety Service (CSS) program so that all electrical repair work is properly inspected by the ESA.

Inspections

Property managers should have basic electrical safety inspection checklists, which can be part of overall premises safety and tenant unit inspections. These checklists should flag:

- ▶ Excessive loading on circuits (e.g. numerous appliances plugged into a single receptacle)
- ▶ Power bar piggy backing (e.g. power bars plugged into one another)
- ▶ Inadequate grounding
- ▶ Extension cords used as permanent wiring (extension cords are designed for temporary use and should not be used under carpets or across doorways)
- ▶ Older wiring that may be frayed, cracked or damaged
- ▶ Broken outlets or switches (if hot, there is likely a problem)
- ▶ Combustible storage that is less than three feet away from electrical equipment including breaker panels and transformers

Any deficiencies should be addressed immediately and/or the circuit should be turned off. Only licensed electricians should perform electrical repair work.

Signs of Problems

The following are signs of problems with electrical systems:

- ▶ Fuses or circuits that trip frequently indicate overloading of the circuit or possibly faulty electrical wiring or equipment
- ▶ Dim or flickering lights can be a sign of a loose connection in a lighting circuit, fixture, or your electrical service.
- ▶ Missing third prongs, or two-to-three prong adaptors do not offer adequate grounding and represent a shock hazard

- ▶ Damaged cords can lead to exposed wiring and represent a shock and fire hazard
- ▶ Interior extension cords used outside or the use of extension cords as permanent wiring are a fire hazard

Main Electrical Rooms

Main electrical rooms should:

- ▶ Not contain any combustible storage
- ▶ Have monitored smoke detection to provide an early warning of fire
- ▶ Be equipped with CO² extinguishers designed for Class C electrical fires since they will prevent damage to sensitive equipment if there is a fire

Other Considerations

- ▶ **Ground Fault Circuit Interrupter (GFCI) outlets** should be installed in areas near water (i.e. bathrooms and kitchens) and in exterior areas to reduce the severity of electric shocks. GFCIs should be tested monthly by plugging in a device and pushing the test button; if the device does not turn off, then the GFCI is faulty and should be replaced.
- ▶ **Baseboard heaters** should be checked regularly for excessive dust and nearby combustibles.
- ▶ **Circuit breakers** should be exercised (switched on and off) annually to ensure they operate and are not binding.

For more information, please contact:

HSC Insurance & Risk Management

T: 1.866.440.2492

E: insurance@hscorp.ca