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City of Milwaukee
Common Council
Office of Alderman Jim Bohl
Zoning, Neighborhood and Development Committee
City Hall, Room 205,
200 E. Wells St.,
Milwaukee, WI 53202

Chairman Bohl and Committee Members,

I have recently been made aware of an ordinance change that is proposed for the City of Milwaukee (File 121804) to be considered by the Zoning and Neighborhoods Committee on November 20, 2013. I feel the changes to the requirements for "items which do not need permits" for electrical related work that are part of the language should be removed. This ordinance change may create additional hazards to persons and property from the installation and use of electricity. The State of Wisconsin Department of Safety and Professional Services and Wisconsin Administrative Code are very clear that work done under the requirements of the Wisconsin Administrative Code is to be completed by qualified persons and receive proper inspections. The changes to the Milwaukee Ordinance will remove the requirements that are clear under the State Administrative Code.

The portion of the proposed ordinance description of the language under the initial listing item number two states that "Items which do not require permits include:.....2. Minor Installation of wiring or equipment." This language is much too vague to apply to a specific installation. There is no defined interpretation of this language and may violate WI Administrative Code SPS 316.010 and SPS 316 Subsection Part IV 316.940. Any installation of new wiring, extensions, or alterations is subject to installation by qualified persons and proper inspection. The permit process that a municipality adopts provides a method for verifying that proper persons are installing these electrical installations using wiring methods that meet the minimum standard of safety under the provisions of the Wisconsin Electrical Code SPS 316 and the Adopted NFPA 70 National Electrical Code®. To put language into a municipal code that is not clearly defined is irresponsible and should be removed from this proposed ordinance change.

The New language developed as PART 1.1.5.b States;

Installation of wiring or equipment that operates at less than 100 volts, or is for networked powered broadband communications systems, except when any such installation is located in a plenum, penetrates fire-rated or smoke-protected construction or is a component of any the following:

- b-1. Fire alarm system.*
- b-2. Fire detection system.*
- b-3. Fire suppression system.*
- b-4. Smoke control system.*
- b-5. Elevator fire safety control system.*
- b-6. Access or egress control system or delayed egress locking or latching system.*
- b-7. Fire damper.*
- b-8. Door control system.*

It is often a misconception that low voltage power systems are unable to cause fires or create a condition where a person is subject to conditions where electrical shock can be received. One example that makes this a false assumption is installation of low voltage photovoltaic systems which are extremely hazardous as they can contain enough energy to start fires and provide voltage in certain conditions to cause personal injury or death during an electrical shock or electrocution event. These systems have a special equipment article of the National Electrical Code® that designates additional prescriptive rules toward these installations. Article 690 of the NEC covers the specific installation of Photovoltaic systems. Additionally these low voltage photovoltaic systems do not always have provisions to disconnect power during a short circuit or fault event as they are power sources and the energy derives its power from sunlight which cannot be turned off. If the language proposed is adopted, the installation of these systems may be allowed without proper permits. The verification of qualified persons installing the systems and inspection for proper installation and compliance with Codes and Standards through a permit process can minimize any hazards to person and property. Without this process of permits and inspections these systems may be installed with violations of the minimum requirements of safety stated in the WI Administrative Code and National Electrical Code®.

The installation of low voltage systems for HVAC controls, security systems, closed circuit television systems, public address, Audio Visual Systems and other building control and automation systems may fall under the requirements of Article 725 of the National Electrical Code. The additional special conditions identified by Article 725 of the National Electrical Code® identify that specific standard of installation practices need to be followed for the installation of these low voltage systems. The misapplication of these National Electrical Code® rules where separation of low voltage from line voltage systems is not adhered to or power supplies are used that are not of the proper power limited type can create conditions to which line voltage can be accidentally applied to these low voltage systems during improperly installed, abnormal operation or fault conditions. These improper installations create risk of electric shock and fires from overloaded conductors. The change to the language under the current proposed language does not clearly address these hazards to persons and property. The inability of a municipality to require permits for these installations does not provide the municipality the ability to verify if qualified persons are completing this work and that proper inspections are provided for these installations.

The installation of communication systems, community antenna television systems, network power broadband communication systems are also covered in the National Electrical Code in Articles 800, 820

and 830 and have specific installation requirements required for maintaining access to equipment and installations using properly installed supports, separation from power and light conductors, use of listed equipment and securement methods. The exemption of permit processes to require the installation of these systems by qualified persons and verification or proper installations through the inspection process may create hazards to persons and property. It is often witnessed by persons that work on or near or inspect these systems that they are haphazardly installed and supported by items that are not designed for support of these wiring systems. (i.e. sprinkler piping, natural gas piping, plumbing piping, and other systems.). The installation of these systems also have additional requirements for grounding and bonding to the existing building electrical systems due to the event that if a surge or lightning event is created outside of the structure. These abnormal conditions can be transmitted to the inside of structures where if supported by a natural gas systems and improperly grounded may additionally increase the hazard of fire to these occupancies.

The installation of some lighting systems can be installed at low voltages that are below 50 volts nominal. It is often a misconception that these low voltage lighting systems are safe and that they do not create any condition of which a fire or personal injury hazard. These systems are used often in homes, retail stores, swimming pools, under cabinet lighting and other areas where the decorative lighting is required. These lighting systems can contain lighting sources that have halogen lamps that have an internal operating temperature that exceeds 250°C (482°F). Often the outer surface of an exposed lamp can be as high as the internal operating temperature for an enclosed fixture. Most paper and wood products have an auto ignition temperature below these temperatures. The low voltage lighting systems for landscaping may often be used improperly near swimming pools and spas. These lighting systems have power supplies that if they come in contact with pool water or wet pavement areas near these pool and hot tub areas can create severe electrocution hazards. The misapplication of lighting installations that do not comply with the requirements of the Wisconsin Electrical Code and National Electrical Code® can indeed create a possible fire hazard to occupancies and electrocution hazards. The exception to requirements of permits for any low voltage system would create an exception to permits where these installations are made which is irresponsible decision of behalf of the Health and Safety of City of Milwaukee residents.

The New Language developed as PART 1.1.5.f States;

f. Ordinary repairs, including the following:

f-1. Window replacement in a one- or 2-family dwelling, unless one or more of the following is true:

f-1-a. The size of the window opening is being changed.

f-1-b. The window is required to be fire-rated.

f-1-c. The dwelling is a city-designated historic structure or located in a city-designated historic district.

f-2. Replacement of plumbing fixtures in all use groups without alteration of water supply and distribution systems, sanitary drainage systems or vent systems.

f-3. Replacement of general-use snap switches, dimmer and control switches, 125 volt-15 or 20 ampere receptacles, luminaries (lighting fixtures), and ceiling fans in one- or 2-family dwellings and within residential units of multifamily buildings.

f-4. Replacement of mechanical appliances, provided the equipment is not fueled by gas or oil, in one- or 2-family dwellings or serving residential units of multifamily buildings.

f-5. Replacement of unlimited quantities of roof covering or siding for one- and 2-family dwellings, and replacement of 100 square feet or less of roof covering in all other use groups.

f-6. Replacement of roof decking on one-and 2-family dwellings without modification to framing members.

f-7. Installation or replacement of floor finishes in all occupancies.

f-8. Painting, papering, tiling, carpeting, cabinet or countertop installation, and similar finish work.

f-9. Replacement of Class C interior wall or ceiling finishes in institutional, educational and assembly uses, and replacement of all classes of interior wall and ceiling finishes in all other occupancies.


f-10. Other repair work deemed by the commissioner to be minor and ordinary and which does not adversely affect public health or safety.

There is a concern with the language that is adopted as part of this ordinance change. The replacement of electrical devices is often done by homeowners currently unlawfully without permits. These replacements may be completed by persons that are responsible for the integrity of the systems that are part of their premises owned electrical equipment. Often these replacements may be completed where existing ungrounded systems are present as part of the original old wiring systems. When devices and wiring are changed, the opportunity for errors to be made during the replacement process may leave receptacles and lighting systems installed without proper methods of grounding and bonding and subsequent dangerous electrical systems. In addition the National Electrical Code requires that the receptacles installed in dwellings in many places to be of the tamper resistant type and/or provide ground fault circuit interrupter (GFCI) protection. These additional requirements may be forgone due the availability of products that are available of lesser cost. If a homeowner chooses to replace receptacles without proper permits and inspection they alone assume all liability for the repercussions of any improperly installed components until the property is sold, and any improper wiring is provided as a hazardous inheritance to any subsequent property owner. This increases the need for installations that are done under the requirements of the State of Wisconsin Administrative Code SPS 316.010 "Construction, **repairs**, additions and changes to electrical equipment and conductors shall be made by qualified persons only." If qualified persons are to complete the replacements of these devices they are also inspecting and evaluating the conditions and integrity of the existing electrical systems. The process of permits and inspections will insure that these repairs are completed properly and do not create any additional hazards to persons or property arising from the use and installation of electrical equipment. When creating an exception to these permit requirements this would permit persons not associated with the dwellings to change devices in these premises that may be hazardous and without verification of qualified persons completing the work the City will only allow for substandard conditions that create hazards to health and safety of the residents.

It is my interpretation and understanding of this proposed language that the City of Milwaukee Common Council will be acting irresponsibly if these proposed ordinance changes are forwarded and approved. The responsibility of the Common Council is to provide residents in the City of Milwaukee a place to live, work and play that is not a hazard to health and safety. These changes do not in any way create conditions of undue financial burden to businesses or residents when electrical work is completed with proper permits. The process of permits may be difficult in some circumstances I would fully support a blanket permit fee for certain installations that cover installations to which have ongoing work or where permit fees may incorporate more than 10% of the total project costs. The requirements for permits and inspections are an important part of the process of governing the people so that we all can enjoy a higher quality standard of living.

I am providing these comments as a concerned City of Milwaukee resident, certified commercial electrical inspector and a full time faculty member at the Milwaukee Area Technical College. My expertise in the areas of electricity and the electrical codes pertaining to electrical installations may be considered as expert witness to the hazards that arise from the installation and use of electricity in the City of Milwaukee. My experience in electrical inspecting in municipalities other than Milwaukee and providing the necessary training at MATC to create qualified persons is credible to the above expressed concerns. Please feel free to contact me regarding any of these concerns.

Sincerely,



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