

PROPOSED RULE/CODE CHANGE REQUEST

Michigan Department of Licensing and Regulatory Affairs Bureau of
Construction Codes/Operations Section

Submission Options:

PO Box 30254, Lansing, MI 48909
Phone: 517-241-9303
Email: LARA-BCC-Rules@michigan.gov

DATE:		ACTION:	
<input type="checkbox"/> Check if you are a Small Business APA 306 of 1969 MCL 24.207a "Small business" defined. Sec. 7a. "Small business" means a business concern incorporated or doing business in this state, including the affiliates of the business concern, which is independently owned and operated and which employs fewer than 250 full-time employees or which has gross annual sales of less than \$6,000,000.00.			
NAME:		REPRESENTING:	
ADDRESS:		CITY:	STATE: ZIP:
PHONE:	FAX:	EMAIL:	

RULE/CODE SECTIONS/TABLES/FIGURES PROPOSED FOR REVISION (Note: If the proposal is for a new section, indicate "new")

PROPOSED LANGUAGE: Show proposed text in accordance with the following format: ~~Strikeout~~/**Bold & underline proposed added text**

REASON: Thoroughly explain the need and reason for the proposed change to include the following:

- Identify the problem.
- Explain the rationale for the proposed change.
- Describe the environmental impact.
- Is the proposed change comparable to federal rules or national or regional standards in similarly situated states, based upon geographic location, topography, natural resources, commonalities, or economic similarities? If the proposed change exceeds standards in those states, explain why and specify costs and benefits.
- Identify individuals and groups affected by the proposed change and the impact on these groups.
- Are there any reasonable alternatives to the proposed change? If so, please provide those alternatives.
- What is the fiscal impact for the proposed change? Provide a cost/benefit analysis.
- Estimate the actual statewide compliance costs of the proposed rule.
- What are the primary and direct benefits of the rule?
- Estimate any cost increases or reductions to businesses, individuals, groups, or governmental units as a result of the rule.

As well as any other information appropriate to assist with a clear understanding of the issue. During the rulemaking process, the need and reasoning of all proposed rule changes should be identified. By including a detailed explanation, the general public will gain a better understanding on all aspects of the proposal. Providing an explanation on the need and rationale for the proposal is optional; however, MCL 24.245 requires the department to provide proper justification for each proposal. Without this important information, the department may not be able to document appropriate justification and merit for a proposal. For further information, please refer to the Administrative Procedures Act of 1969.

Back Up/Graphic Material Included

PROPOSED LANGUAGE:

210.8(F) Outdoor Outlets.

For dwellings, all outdoor outlets other than those covered in 210.8(A) Exception No. 1, including outdoor outlets installed at the following locations and supplied by single-phase branch circuits rated 150 volts or less to ground, 60 amperes or less, shall be GFCI protected:

- (1) Garages that have floors located at or below grade level
- (2) Accessory buildings
- (3) Boathouses

If equipment supplied by an outlet covered under the requirements of this section is replaced, the outlet shall be supplied with GFCI protection.

Exception No. 1: GFCI protection shall not be required on lighting outlets other than those covered in 210.8(C).

Exception No. 2: GFCI protection shall not be required for listed HVAC equipment. ~~This exception shall expire September 1, 2026.~~

Exception No. 3: Listed Class C SPGFCI protection shall be permitted for listed HVAC equipment. If a Class C SPGFCI is provided, the disconnect serving the HVAC equipment shall be marked "Warning: Class C SPGFCI Protection Provided for HVAC Unit."

Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit-Interrupters*, for further information. SPGFCIs marked "HF" or "HF+" do not trip when the frequency weighted differential current is less than the specified value for a Class C, Class D, or Class E SPGFCI.

REASON:

The requirements of this section have been very contentious since it was introduced in the 2020 NEC. When it was first implemented, multiple states experienced large numbers of GFCIs tripping which shut down air conditioning and heat pump units. Due to the problems experienced by the first states to adopt the 2020 NEC with the new section, almost every other state that adopted that edition modified or deleted Section 210.8(F).

The 2023 edition would have required this section to be enforced in full except for the intervention of the NFPA Standards Council following an appeal. In their decision from August 2022, the Council, which acts like a court of last resort in the NFPA code development process, commented that the section has been at the heart of multiple processed Tentative Interim Amendments (TIAs), as well as extensive Task Group work since it was introduced. According to the Council, the appeal does present a clear and substantial basis upon which to overturn the results yielded by the NPFA standards development process. It cannot be overemphasized how significant this statement is, and it shows that not all model code changes should be accepted at face value.

Despite this finding and ongoing GFCI tripping issues, the exemption for listed HVAC equipment was not extended despite the quickly approaching expiration date of September 1, 2026. Jurisdictions should be aware of this date, because it is highly unlikely the compatibility issues explained below will be resolved by then. To fully address the issue, the standards that govern GFCI protection as well as HVAC equipment need to be updated in a coordinated manner, and that process is not close to completion.

Continued expansion of GFCIs to all areas of a home is not justified. Finished living areas of basements are not as hazardous as areas such as bathrooms or kitchens where people use small appliances near sinks and tubs, and no data was presented to prove otherwise. GFCI receptacles were first required in the 1987 edition of the code and expanded to the entire unfinished area of basements in the following

edition. For the past 30 years, this provision has been adequate which highlights the lack of any known benefit gained by expanding GFCIs to all areas of finished basements. (See Figure 1.)

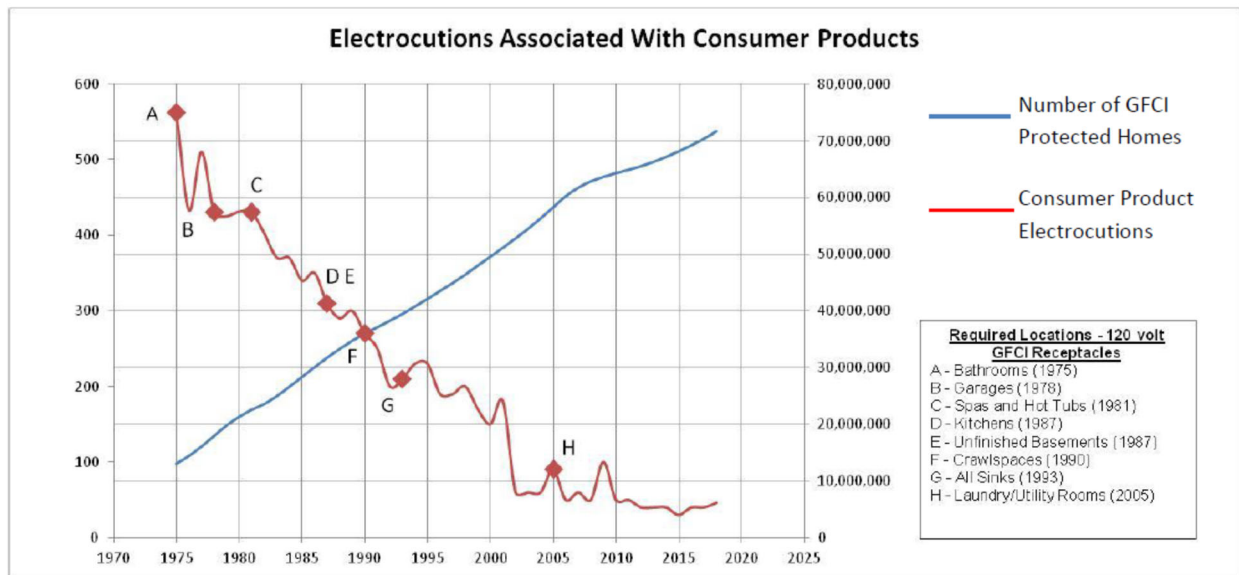


Figure 1: GFCI Protection in Homes Versus Electrocutions 1975 to 2018 (Source: A NEMA Ground Fault Personnel Protection Section Article entitled “GFCI Receptacles: Consumer Protection Personified” June 2020, Revision 2).

Air conditioners and heat pumps are essential equipment for maintaining healthy indoor temperatures and humidity levels. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. The issue of GFCI protection not being compatible with listed HVAC equipment was known at the time it was initially approved for the model code.

The bottom line is: Until both equipment and component standards are updated, designers, installers, AHJs, and consumers are forced to choose between an operational installation or one that is compliant with the unamended NEC. Continued GFCI tripping creates an economic hardship for those involved to resolve these issues and can cause significant duress for new homeowners who must keep resetting the breaker to maintain healthy humidity and temperature levels in the home.

Additional Technical Substantiation

UL 943 (*Standard for Ground-Fault Circuit-Interrupters*) requires that Class A ground-fault circuit-interrupters are capable of tripping at a minimum of 6 mA and could be as low as **4 mA**. UL 60335-2 (*Standard for Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers*) allows a maximum leakage current value of **10 mA** for appliances accessible to the general public. This lack of coordination between standards is what is leading to the nuisance tripping that consumers are dealing with. HVAC equipment can have a leakage current higher than what would trip a Class A GFCI, but the touch current remains at safe levels.

What is concerning are the number of fatalities (no cooling during a heat wave period) due to nuisance trips associated with GFCI protection of HVAC equipment.

Facts to Consider		Sources
No. of Homes with HVAC Units in US (Estimated)	100 million	https://www.eia.gov/consumption/residential/reports/2009/air-conditioning.php
US Population Age 65 and over	17%	https://censusreporter.org/profiles/01000US-united-states/
Temperature Where Heat Exhaustion or Stroke Can Occur	104° F	https://www.mayoclinic.org/diseases-conditions/heat-stroke/symptoms-causes/syc-20353581

Five conditions were identified that affect interoperability which have yet to be fully examined. This highlights the fact that a solution to the issue is unlikely to be found prior to the 2026 expiration date for the current exception as currently shown in the model code.

Conclusion

When Section 210.8(F) was added to the 2020 NEC, almost every state that it modified or deleted the requirement. The equipment incompatibility issues identified above still exist and will not be resolved by September 1, 2026. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm.

Similar amendments have been adopted in 9 states: Arkansas, Connecticut, Georgia, Massachusetts, New Hampshire, New Mexico, Oregon, South Dakota, and Utah. Many other states have dealt with Section 210.8(F) in ways other than code amendments.