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Reason Statement:

The current language in the 2021 IRC in section M1404 does not contain needed reference to UL 484, UL 1995, or UL/CSA 60335-2-40, the appropriate safety standards that establish requirements for this equipment. Rather the section points to M1411 unnecessarily. M1411 applies to both heating and cooling equipment regardless of the current statement in M1404. This code change replaces the unnecessary reference to M1411, without removing the requirements of M1411, while adding the necessary reference to equipment safety standards. This change is consistent with how other sections in Chapter 14 (M1402, M1403, M1412, M1413) reference equipment safety standards and mirrors the structure of M1403 (Heat Pump Equipment). It also allows the reference to the most up to date UL/CSA 60335-2-40 which includes safety requirements specific to A2L refrigerants.

These changes are especially important in the case of A2L refrigerants, which are expected to increase in use as a substitute for hydrofluorocarbon (HFC) refrigerants. HFCs are extremely potent greenhouse gases and in December 2020 the U.S. Congress passed a new law that will require an 85% economy-wide phasedown of HFC refrigerants over the next 15 years. The phasedown is expected to avoid HFC emissions of 900 million metric tons of CO2-equivalent by 2035. In addition, 9 states - 8 of which adopt the ICC codes - have already prohibited the use of HFC refrigerants in several high volume applications.[1] Human comfort systems account for more HFC use than any other end-use application in the U.S., so a large portion of the HFC reductions are expected to come from them. A2L refrigerants have significantly lower global warming potential than A1-class HFCs, so A2L use is a key part of the HFC reduction plan.

These restrictions on the supply of HFC refrigerant will drive up consumption of A2L substitutes. Permitting use of alternative refrigerants, including A2L refrigerants, in high probability systems for human comfort will enable states and local jurisdictions to meet their heating and cooling needs while also complying with applicable HFC regulations. Without this change, jurisdictions adopting the code will be forced to enact their own amendments to the code in order to support their HFC reduction goals. This code change allows the ICC to provide an off the shelf solution to those jurisdictions.

Residential equipment represents a large portion of HFC emissions. Residential and light commercial air-conditioning make up 22% of nationwide refrigerant emissions,[2] making this change an important piece to addressing the residential use of HFC refrigerants. Without this change, jurisdictions adopting the code will be forced to enact their own amendments to the code in order to support their HFC reduction goals. This change allows the ICC to provide an off the shelf solution to those jurisdictions.

[1] https://www.nrdc.org/experts/christina-theodoridi/states-keep-steady-course-hfc-regulations
[2] https://www.epa.gov/sites/production/files/2015-09/documents/epa_hfc_residential_light_commercial_ac.pdf