Mandatory requirements for HP switchover temperature (530)

IECC®: R403.1.2

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2021 International Energy Conservation Code

Revise as follows:

R403.1.2 Heat pump supplementary heat (Mandatory).

Heat pumps with supplementary electric resistance heaters shall have controls that~~except during defrost, prevent supplemental heat operation when the~~ capacity of the ~~heat pump compressor can meet the heating load.~~ limit supplemental heat operation to only those times when one of the following applies:

1. The vapor compression cycle cannot provide the necessary heating energy to satisfy the thermostat setting.
2. The heat pump is operating in defrost mode.
3. The vapor compression cycle malfunctions.
4. The thermostat malfunctions.

Reason: The use of electric resistance heaters as backup heating devices can significantly increase winter energy consumption, and air source heat pumps can effectively provide heating without such devices including the cold climate regions in the United States. Also, Daikin has observed that it's common for heat pumps to be installed with electric resistance heaters configured to operate in conditions where sufficient heating capacity is available from the heat pump alone. This results in reducing the operation hours of heat pumps and increasing the operation hours of electric resistance heaters. Such setting of heat pump systems will fail to yield expected reduction of GHG emissions and result in higher energy consumption and longer peak demand events. Therefore, Daikin proposes to revise R403.1.2, which defines the use of electric resistance heaters as supplementary heat for heat pumps, to prevent such practice. See attached letter for more background information justifying this modification.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.

Requiring the use of the switchover temperature controls will not increase nor decrease the cost of construction - however, it will result in energy savings and lower utilities costs for the end -user.