

Exception: If it can be proven by engineering calculations that heating is not required above 30°F (due to economizer or other reason), a reversing valve is not required.

Note: Show the proposal using ~~strikeout~~, underline format. At the start of each section, give one of the following instructions:

- Revise as follows:
- Add new text as follows:
- Delete and substitute as follows:
- Delete without substitution:

Supporting Information:

Purpose: To address replacement units specifically. There are thousands of opportunities to upgrade Denver to heat pumps during the most economical time to transition – replacement. These costs are minimal during replacement. The purpose of requiring reversing valves on all air cooled unitary air conditioning units is to allow operation with 100% electric source of heating during more temperate months. Although supplemental gas heat may be required during peak conditions, this requirement will reduce the overall emission of CO2 for heating.

However, this will not require the replacement unit to be sized for heating, so existing electrical service will not be affected.

Sunsetting this requirement when Energize Denver or a more stringent code is adopted is anticipated.

Reasons: The only difference between a heat pump and cooling only is a reversing valve and some piping. Utah power implemented this as a rebate as they realized the grid is cleaner at mild heating temperatures and the CO2 emission reduction is dramatic. The 30 deg requirement is to recognize that on commercial buildings there may not be a heating requirement until 30 deg or below.

Substantiation: Backup available upon request.

Note: This section MUST include these items:

- **Purpose:** State the purpose of the proposed amendment to physical, environmental and customary characteristics that are specific to the City and County of Denver (e.g., clarify the code; revise outdated material; substitute new or revised material for physical, environmental and customary characteristics; add new requirements to the code; delete current requirements, etc. to reflect physical, environmental and customary characteristics that are specific to the City and County of Denver)
- **Reasons:** Clearly justify the change to current code provisions, stating why the proposal is necessary to reflect physical, environmental and customary characteristics that are specific to the City and County of Denver. Proposals that add or delete requirements shall be supported by a logical explanation that clearly shows why the current code does not reflect physical, environmental and customary characteristics that are specific to the City and County of Denver and explains how such proposal will improve the code.
- **Substantiation:** Substantiate the proposed amendment based on technical information and substantiation. Substantiation provided which is reviewed and determined as not germane to the technical issues addressed in the proposed amendment shall be identified as such.
- **Bibliography:** Include a bibliography when substantiating material is associated with the amendment proposal. The proponent shall make the substantiating materials available for review.

Referenced Standards:

None

Note: List any new referenced standards that are proposed to be referenced in the code.

Impact:

This measure will result in savings of 50-60% in CO2 emissions due to the increased efficiency of heat pump operation. Adding a reversing valve (heat pump capability) has minimum impact on overall equipment costs. The typical cost for adding a reversing valve is \$110 per nominal ton of cooling capacity.

Note: Discuss the impact of this proposal in this section AND indicate the impact of this amendment proposal for each of the following:

- The effect of the proposal on the cost of construction: Increase Reduce No Effect
- The effect of the proposal on the cost of design: Increase Reduce No Effect
- Is the proposal more or less restrictive than the I-codes: More Less Same

Departmental Impact: (To be filled out by CPD staff)

Note: CITY STAFF ONLY. Discuss the impact of this proposal in this section AND indicate the impact of this amendment proposal for each of the following:

- The effect of the proposal on the cost of review: Increase Reduce No Effect
- The effect of the proposal on the cost of enforcement/inspection: Increase Reduce No Effect