

**INTERPRETATION IC 90.1-2001-4 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2001
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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Request from: Mr. Chris Jones (e-mail: <mailto:cjones@islandnet.com>), 14 Oneida Avenue, Toronto, Ontario M5J 2E3. ASHRAE Member 5068556.

Reference: This request refers to ASHRAE/IES 90.1-2001, Subsections 11.4.3 (a) and (d) in combination with Subsection 6.3.6.1.

Background: The HVAC systems for energy cost budget buildings which have zonal systems (e.g., fan coils or distributed heat pumps) typically are designed with make-up air units (MAUs) which provide 100% preheated outdoor air to the terminal units. The existence of MAUs for Systems 5, 6 and 7 in Table 11.4.3A is not explicitly defined, however. Subsection 11.4.3.(a) states “Components and parameters not listed in Figure 11.4.3 and Table 11.4.3A or otherwise specifically addressed in this subsection shall be identical to those in the proposed design.”

If MAUs are intended to be included in these budget building cases, as is typical for most corresponding proposed building designs, it is unclear if heat reclaim should apply to the MAU. The unit to which the preheated outside air is delivered typically has less than 70% of its supply air as outside air, indicating that heat reclaim may not apply. Further, if the make-up air does not cool the outside air (as is typical here) and it preheats the outside air to less than 60°F, then heat reclaim may not apply either according to exception (b). Vagueness is introduced here since *the MAU does not directly serve* the conditioned space but instead pre-conditions the outside air to a terminal heat pump or fan coil.

Interpretation 1: I have interpreted Section 11.4.3 to mean that the budget building model shall include a make-up air system if the proposed building model does. This system shall be modelled with the same characteristics as the proposed building model including heating/cooling efficiencies. Heat reclaim is only to be modelled if the proposed building model includes it.

Question 1: Is this interpretation correct?

Answer 1: Yes to the first sentence. No to the last two sentences.

Comment 1: Energy recovery must be modeled in the budget building, whether it was included in the proposed design or not, unless one of the exceptions to 6.3.6 is applicable. For instance, energy recovery is not required to be modeled in the budget building if the MAU in the proposed design does not cool make-up air nor preheat it to more than 60°F (exception b). If the MAU is a packaged unit or a furnace or any product for which the Standard is regulating efficiency, then the budget model should use the lowest allowed cooling/heating efficiency for the product category.

Interpretation 2: This interpretation holds true for both 90.1-1999 and 90.1-2001.

Answer 2: Yes