

**INTERPRETATION IC 90.1-2007-16 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2007
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2007, Section G3.1.1 and Table G3.1.1A, regarding Baseline HVAC Systems for mixed use buildings.

Background: The project that brought about this interpretation request is a mixed use school building which is proposed to have a water to air heat pump system serving 16,000 square feet of classrooms at ground floor, and an in-floor radiant heating system serving the 33,000 square feet three-storey student dormitories on top of the classrooms. The third note in Table G3.1.1A states:

“Where attributes make a building eligible for more than one *baseline* system type, use the predominant condition to determine the system type for the entire building.”

Our preliminary energy analysis shows that the energy consumed in the class portion is larger than the student dorm portion even though the air conditioned area of classrooms is smaller than the student dorms. Therefore, our predominant condition to determine the system type for entire building should be System 3- PSZ-AC. However, the ASHRAE/IESNA 90.1-2007 Section G3.1.1 Exceptions a. states that: “Use additional system type(s) for nonpredominant conditions (i.e., residential/nonresidential or heating source) if those conditions apply to more than 20,000 ft² of conditioned floor area.”

Our interpretation of this note is that since the predominant system of the proposed building is classrooms and the non-predominant system (in-floor radiant heating only system) of the proposed building is serving the residential building, two baseline HVAC systems (System 3- PSZ-AC for classrooms and System 1- PTAC for student dormitory) shall be modeled. However, in ASHRAE 90.1-2007 User’s Manual referring to this section (Page G-23) states: “If a building has both residential and nonresidential spaces with their total conditioned spaces both greater than 20,000 square feet, for instance a residential tower with retail and restaurants at the base, then the HVAC system type is determined separately for the residential and nonresidential portions.” We believe that the standard takes precedence over the commentary for that standard; therefore, we still building two separated baseline as mentioned above.

Interpretation: In the case of the mixed use school building above two baseline HVAC systems shall be modeled, one for the classrooms and one for the student dormitory.

Question: Is this interpretation correct?

Answer: No

Comments: As described in a 90.1-2007 formal interpretation response from March 31, 2012, the predominant condition is determined only by the area served. Thus, the predominant

condition for the example provided above is the 33,000 ft² residential area. The 16,000ft² classroom spaces below must use the same system type as the residential since it does not meet the 20,000ft² requirement of section G3.1.1 exception a.