

**INTERPRETATION IC 90.1-2019-3 OF
ANSI/ASHRAE/IES STANDARD 90.1-2019
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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Request from: Michael Tillou, Pacific Northwest National Laboratory, 111 Amherstdale Road, Buffalo, NY 14226.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IES Standard 90.1-2019, Section G3.1.3.7, regarding Appendix G type and number of baseline chillers.

Background: A multifamily building design has 63 floors of residential apartments totaling 420,000 sq.ft. assigned to baseline system type 1 (PTAC with DX cooling) and 10 floors of non-residential space totaling 134,500 sq.ft. assigned to baseline HVAC system type 7 (VAV with chilled water). Table 1 summarizes the simulated peak cooling loads, including oversizing, of the baseline HVAC systems in the project.

Section G3.1.3.7 asks users to select the number and type of chiller for baseline HVAC systems 7,8,11,12, and 13 based on the, “*building* peak cooling load”. In this case Section G3.1.3.7 implies chillers for the baseline building need to be selected based on the peak cooling capacity of both DX PTAC units and chilled water VAV systems. Typically, chillers are selected based on the required peak cooling capacity of just chilled water coils and would not include the peak cooling capacity of the DX coils.

Based on the requirements of Section G3.1.2.2.1 the modeled chiller plant capacity will be based on the coincident load, which for this example is 228 tons and is independent from the requirements used to determine the number and type of chiller using Section G3.1.3.7.

Table 1 – Summary of loads and system capacities.

Cooling Source	Coincident Peak Cooling Load and 15% oversizing in accordance with Section G3.1.2.2.
	Tons
System Type 1 DX	598
System Type 7 CHW	228
Building Total	826

Interpretation No.1: The number and type of baseline chillers using Table G3.1.3.7 shall be based on the *building* peak cooling load including areas of the building served by both system type 1 and system type 7. The baseline building design should include two water cooled centrifugal chillers.

Question No.1: Is this interpretation correct?

Answer No.1: Yes.

Comments: Based on the actual language in the standard this is the correct interpretation. In practice a designer would select the type and number of chillers based on the plant capacity and not the total building capacity.

Interpretation No.2: The number and type of baseline chillers using Table G3.1.3.7 shall be based on the *building* peak cooling load that only includes areas of the building served by system type 7. The baseline building design should include one water cooled screw chiller.

Question No.2: Is this interpretation correct?

Answer No. 2: No.

Comments: Based on the language in the standard this is not the correct interpretation. ECB understands these rules can result in a baseline building chiller plant that is not reflective of common design practice and they are working on revised language to address it.

Interpretation No.3: ASHRAE/IES 90.1-2016 uses the same language requiring that chiller sizing be based on the *building* peak cooling load. Therefore, the answers to Question 1 and Question 2 also apply to a project using ASHRAE/IES 90.1-2016 Appendix G.

Question No.3: Is this interpretation correct?

Answer No. 3: Yes.