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ENGINEERING AND CONSTRUCTION BULLETIN

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Subject: Energy Policy Act of 2005 - ASHRAE 90.1 Modeling Requirements for Facilities with Heating or Cooling Only.

Applicability: Information

1. The Department of Energy Ruling on the Energy Policy Act of 2005 requires the ASHRAE 90.1 Energy Standard, Appendix G - Performance Rating Method, with some modifications, to be used to demonstrate the energy reduction of a Proposed building compared to that of a Baseline building. The requirements of the Baseline building are outlined in Appendix G. For various sizes of buildings, the Baseline HVAC type is defined. Note that all Baseline HVAC types include both heating and cooling systems. Appendix G also requires that where no heating or no cooling system exists for the proposed building, the nonexistent system will be modeled identical to the system modeled in the Baseline building. So, all conditioned spaces in the baseline and in the proposed design shall be simulated as being both heated and cooled even if the proposed building is heated only or cooled only. Also, temperature and humidity control set points and schedules shall be the same for the Proposed and Baseline building designs.
2. The intention may be to install only a heating system or only a cooling system. However, the method requires that a default system be modeled for the missing system and it must be the same as the Baseline system. Of course, the Standard does not require installing both heating and cooling equipment.
3. According to the ASHRAE 90.1 User's Manual, the concern is that even if not installed initially, it is common for buildings lacking a heating or cooling system to have one added later. Accordingly, both systems must be modeled.
4. The simulation software calculates the hours of unmet load. Appendix G gives the limits to the number of unmet load hours in the discussion on equipment capacity. The method emphasizes that the simulations must show that these limits are not exceeded. Alternatively, unmet load hours exceeding these limits may be accepted at the discretion of the rating authority provided that sufficient justification is given indicating that the accuracy of the simulation is not significantly compromised by these unmet loads.

ECB 2008-3

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5. For a heated only facility, follow Appendix G, but enter the capacity of the cooling systems to be "zero". There will undoubtedly be unmet cooling load hours reported in the simulation output. The rating authority (in this case, the Corps) has the discretion to accept unmet load hours. The unmet hours should be accepted and explicitly acknowledged in the energy analysis.
6. By following the unmet load exceptions mentioned in the ASHRAE 90.1 Appendix G text, no modification of the Appendix G method or the Federal rules is required.
7. HQUSACE Point of contact for this bulletin is Gary Bauer, CECW-CE, 202-761-0505. Jim Martin, CELRL, as the technical point of contact, helped develop and edit this ECB.

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