

Unconditioned Spaces, Thermal Zoning, and Compartmentalization: Working Against You? Or For You?

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ABSTRACT

Unconditioned spaces are the many peripheral spaces in buildings: attics, basements, crawlspaces, attached garages, mechanical rooms, even closets and ceiling plenums. These spaces can catastrophically impact energy use in buildings, even in green buildings, causing energy penalties of 20-30% or more. Or, through judicious design and construction, they can be used instead to SUPPORT green design, by serving as buffer spaces, essentially insulating a building from outdoor temperature extremes. A variety of strategies can be used to turn these spaces from energy nightmares into constructive elements of a low-energy or zero-energy design building. These strategies include definition and execution of both an outer envelope and an inner envelope; thermal zoning; compartmentalization; infiltration control; turning conditioned spaces into unconditioned spaces; eliminating certain kinds of unconditioned spaces (or moving them outdoors), and more. Come join a discussion of the oft-forgotten spaces that can trip up a well-intentioned green building design, and learn how to turn these spaces into the robust foundation of zero-energy buildings.

BIOGRAPHY

Ian Shapiro founded Taitem Engineering (Ithaca, NY) in 1989. He has led several energy conservation research projects, as well as design and energy projects. He has also led the development of several computer programs which are used in the HVAC, energy, and indoor air quality fields. Prior to starting Taitem Engineering, he worked at Carrier Corporation in Syracuse, in research and development, and holds eight patents from this work. He is the co-author of the book *Green Building Illustrated* (Wiley, 2014).