Best Practices – NEAT Model for Multifamily Housing

Date: Revised January 5, 2017

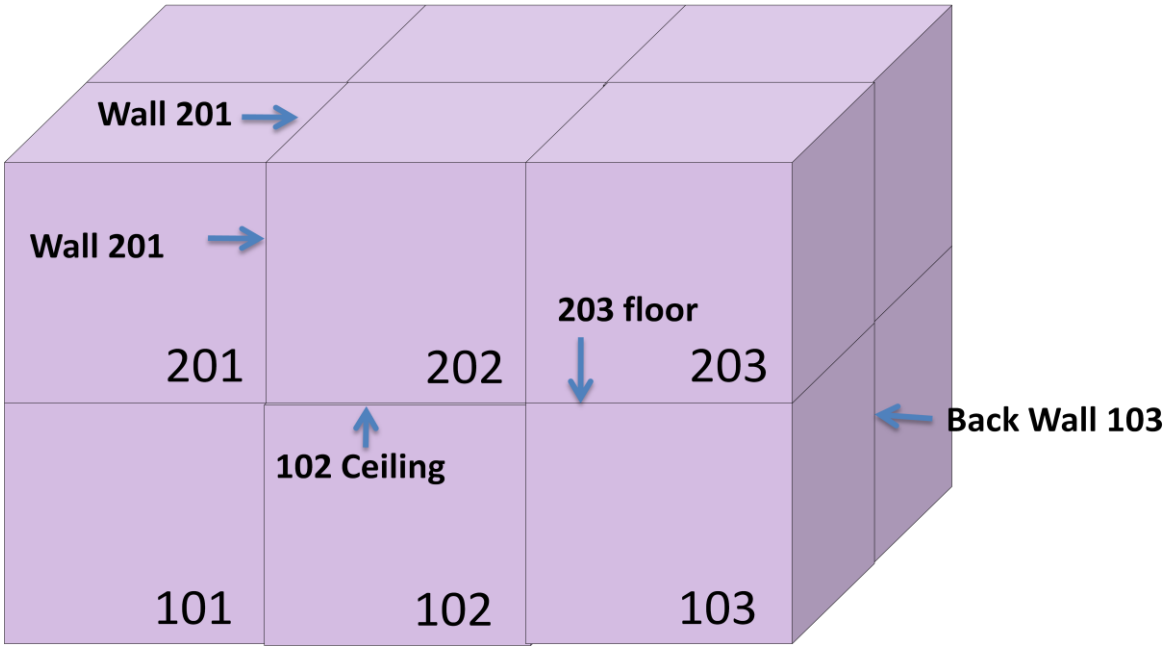
Subject: NEAT: Model for Multifamily Housing

Problem or Question: How do you enter the correct information into the energy audit for walls or floors that are adjacent to conditioned space?

Discussion: If a wall, floor or ceiling is entirely adjacent to a conditioned space (for example, next to the apartment over or up or next door); do not enter the wall into the energy audit at all (the energy audit only needs one wall and one mechanical [heating or cooling] system to function properly). You should only enter wall or floor data if and only if it is:

1. Exposed to the ambient (outside or foundation).
2. Exposed to a buffer-space (unconditioned or semi-unconditioned hallway or garage).
3. Exposed to an attic.

Take a look at the attached diagram. In this case you can leave walls that are adjacent to conditioned space out of the energy audit program. The energy audit will accommodate for this omission and treat the unit as if there is no energy loss to this wall (which is generally true). Each of the walls, floors, or ceilings pointed out in the diagram would not be modeled in the energy audit (right wall in 201, ceiling in 102, floor of 203, and back wall of 103). This is also the case for all other walls adjacent to conditioned space in the diagram. For example, 202 would only have one wall and one ceiling modeled in the energy audit; this would be the front wall (with the door entry and windows, etc.) and the ceiling. The floor, back wall, and side walls would not be modeled in energy audit.



Clearly, you may have a situation where the units with more walls to the outside will need more weatherization efforts than those units more on the inside of the structure. 201 & 203 have more surfaces to the outside; 202 & 102 have more surfaces to the inside. Thus 201& 203 will require more weatherization measures (at higher costs) than 202 and 102. This is consistent with the DOE and TDHCA concept of weatherizing the whole building based on the "whole building assessment."

http://www.tdhca.state.tx.us/ea/wap.htm

Two other important factors need to be considered. Units on either side of a common wall often model differently in the energy audit so do not be surprised when the HVAC of one unit "ranks" but the other does not. Additionally, HVAC systems in units that have the benefit of being adjacent to conditioned spaces often do not rank in the energy audit because the load on the HVAC system is considerably lower. "Older" or "overworked" HVAC systems often "rank" to be replaced in the units with more walls on the outside of the structure. However, in a unit that has most walls inside the structure, the same type and age HVAC system may not rank in energy audit and the HVAC system may perform just fine (after weatherization measures have been installed).

Recommendation Summary: Do not model walls, ceilings, or floors in the energy audit that are between two conditioned spaces. The program will accommodate for this and assume no heat or coolness loss through those walls. The energy audit will run properly with only one wall and one HVAC system (if the other walls, floor, and ceiling are adjacent to conditioned space).