**Interpretation:** Duct Testing for Shared Pre-conditioning Ventilation Systems

**Designation** 301-2019-020

**Approved:** December 17, 2020 by RESNET SDC 300

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| **Reference:** | | This request for interpretation refers to the requirements presented in Standard: | | | | | | | | |
|  | | ANSI/RESNET/ICC 301-2019 | | |  | | |  | | |
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|  | | Page Number(s): | | | page 31 | | | | | |
|  | | Section(s): | | | 4.2 Energy Rating Reference Home and Rated Home Configurations | | | | | |
|  | | Table(s): | | | 4.2.2(1) Table Note r, | | | | | |
|  | | Relating to: | | | Shared pre-conditioning systems for Dwelling Unit Mechanical Ventilation System Supply Air | | | | | |
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| **B****ackground:** | | When rating a dwelling unit in a multifamily building that has a shared ventilation system with a shared pre-conditioning system (such as a rooftop ERV with heat pump installed in the supply air trunk off the ERV), it is unclear whether the preconditioned air distribution system ducts must be leak tested and entered into modeling software. Table 4.2.2(1) note r. and note k. address shared mechanical ventilation systems serving more than one Dwelling Unit but are not explicit whether the preconditioned air distribution system airtightness must be tested.  Standard ANSI/RESNET/ICC 301-2019, Table 4.2.2(1) notes r. and k. state:  r. When the Rated Home is in a building with multiple Dwelling Units and where Dwelling Unit Mechanical Ventilation System supply air is pre-conditioned by a shared system1 before delivery2 to the Dwelling Unit, that shared pre-conditioning system shall be represented in the Rated Home simulation as a separate HVAC system in addition to the primary space conditioning system serving the Dwelling Unit. The supply airflow delivered to the Rated Home is the only conditioning load that shall be assigned to that shared equipment and shall be determined as described in Table 4.2.2(1), Note k. Accordingly, the capacity of the simulated pre-conditioning equipment shall be the actual capacity pro-rated by the ratio of Rated Home supply airflow divided by total airflow through the actual shared pre-conditioning equipment.  k. Where a shared mechanical Ventilation system serving more than one Dwelling Unit provides any Dwelling Unit Mechanical Ventilation, the following shall be used to determine the Ventilation airflows in the Rated Home.   1. Where shared Ventilation supply systems provide a mix of recirculated and outdoor air, the supply Ventilation airflow shall be adjusted to reflect the percentage of air that is from outside. 2. Where the Dwelling Unit Mechanical Ventilation System is a Supply System or an Exhaust System, and not a Balanced System nor a combination of systems, the Ventilation rate shall be the value measured in the Rated Home or adjusted in accordance with the previous step. 3. Where the Dwelling Unit Mechanical Ventilation System is a Balanced System or a combination of systems, the system airflows shall be analyzed separately in accordance with the previous steps. For software that does not explicitly model multiple, separate Supply and Exhaust Systems, the Dwelling Unit Mechanical Ventilation System shall be modeled as a Balanced System where the Ventilation rate of the Rated Home is the sum of either the exhaust airflows measured in the Dwelling Unit or the sum of the supply airflows measured in the unit, whichever is greater.   1 (Informative Note) Example: a rooftop make-up air unit (MAU), dedicated outdoor air system (DOAS) or shared Energy Recovery Ventilator (ERV) with heating or cooling capability.  2 (Normative Note) “Delivery” includes supply air ducted into the Dwelling Unit, or ducted into the Dwelling Unit’s air distribution system or ducted in directly through the door undercut or other intentional opening. Where the supply airflow cannot be measured, it shall be equal to the measured exhaust airflow or fanCFM, whichever is greater. | | | | | | | | |
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| **Interpretation:** | | Table 4.2.2(1) Note r. States:  “The supply airflow delivered to the Rated Home is the only conditioning load that shall be assigned to that shared equipment…”. Based on this statement the duct distribution system does not need to be entered into the modeling software and no leak testing needs to be performed. | | | | | | | | |
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| **Question:** | Is this Interpretation correct?  If my interpretation is not correct, I will require detailed guidance on the following:   1. How to enter the duct locations? Is it based on the overall duct system locations or the path that the air must take to reach a particular unit? 2. How to test such a system? There is no return in this type of system, so would we test just the supply side from the heating/cooling unit to the dwelling unit? 3. What if we do not have access to the other dwelling units and cannot tape off the ventilation ducts there? | | | | | | | | | |
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| **SDC Answer:** | | Yes | | | | | | | | |
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| **SDC Comments:** | |  | | | | | | | | |