6. Tech Tip: eQUEST Modeling – Ventilation Approaches
ENERGY STAR MFHR Guidelines

Section 3.14.1 (aligned with 90.1 Section G3.1.2.9):
• Baseline Systems 1 & 2 fan electrical power for supply, return, exhaust, and relief fans shall be 0.3 W/CFM

Section 3.14.2 (aligned with 90.1 Table G3.1 Section 4)
• Baseline System 1 & 2 fans must be modeled as running continuously

MFHR Guidelines Section 3.14 includes 3 examples of typical designs; in all cases, the baseline PTAC fans run continuously.
Modeling Baseline PTAC Fans in eQUEST
Modeling Baseline PTAC Fans in eQUEST

- Enter OA flow on zone level to have PTACs running continuously instead of cycling with load.

- Ventilation rate must be based on Section 3.12.2 of HRMF Guidelines.
Example 1: Proposed Design w/Cycling PTACs and Exhaust Ventilation

1: PTACs no longer provide ventilation, and cycle with heating/cooling load
2 & 3: Exhaust flow equal to baseline OA CFM or as specified, whichever is greater; make-up via infiltration (e.g. trickle vents)
4: Exhaust fan power as specified
Example 2: Proposed Design with HW Baseboards and Exhaust Ventilation
Impact on Fan Energy May be Significant

Similar outcomes are expected for proposed designs with fan coil units and VRF heat pumps.
Easy Baseline Fan Energy QC Check

50,000 [CFM] X 0.3 [W/CFM] X 8760 [hr/yr] ~ 130,000 kWh
Common Mistakes

Modeling continuously running exhaust fans in addition to 0.3 W/CFM baseline PTAC fan power allowance
Common Mistakes

Exaggerated baseline design flow due to Design Day sizing and ....
.....incorrect Design Day settings

TABLE D-1 U.S. and U.S. Territory Climatic Data (Continued)

<table>
<thead>
<tr>
<th>State/City</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Elev. ft</th>
<th>HDD65</th>
<th>CDD50</th>
<th>Heating Design Temperature</th>
<th>Cooling Design Temperature</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1.0%</td>
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<td>73.97 W</td>
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</tbody>
</table>
Common Mistakes

Exaggerated baseline design flow due to Design Day sizing and ....
...modeling internal loads at 100% during Cooling Design Day
Baseline Fan Flow Sizing Tip 1

• DO NOT enter Cooling DD / Heating DD, to have eQUEST size the flow based on the annual peak load
Baseline Fan Flow Sizing Tip 2

Baseline system design supply airflow rates must be based on a supply-air-to-room-air temperature difference of 20°F \((G3.1.2.9.1)\)