Addendum d to
ASHRAE Guideline 36-2021

Public Review Draft

Proposed Addendum d to Guideline
36-2021, High-Performance Sequences of Operation for HVAC Systems

First Public Review (February 2022)
(Draft shows Proposed Changes to Current Guideline)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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(This foreword is not part of this guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline)

FOREWORD

This addendum addresses an issue with heating control for VAV boxes with hot water reheat coils when $V_{\text{min}^*}$ is zero due to no occupancy indicated by the occupancy sensor in occupied-standby mode. In this case, the zero airflow is carried beyond the deadband into the heating regime for hot water (HW) systems for which $V_{\text{heat-min}}$ is zero, as shown in red:

At the same time, the discharge air temperature setpoint is reset upwards and the HW valve is enabled to maintain that temperature. But without airflow, this is not possible and the heating system will likely go to 100% without impact (other than that due to damper leakage or natural convection). Furthermore, heating may be potentially locked out altogether: with no airflow, the DAT will not rise and the logic below will not allow the airflow to be reset upwards unless the DAT is warmer than the space.

b. From 51% to 100%, if the DAT is greater than room temperature plus 3°C (5°F), the heating-loop output shall reset the active airflow setpoint from the heating minimum endpoint to the heating maximum endpoint.

The solution proposed in this addendum is to add another variable, the lowest possible airflow setpoint allowed by the controls ($V_m$), aka the controllable minimum, to the Heating Minimum endpoint expression during Occupied Mode.

<table>
<thead>
<tr>
<th>Heating minimum</th>
<th>Max $(V_{\text{heat-min}}, V_{\text{min}^*}, V_m)$</th>
</tr>
</thead>
</table>

The result will be as shown in red below:
**Addendum d to ASHRAE Guideline 36-2021, High-Performance Sequences of Operation for HVAC Systems**

**First Public Review**

**Note:** In this addendum, changes to the current guideline are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes. Only these changes are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.

**Addendum d to Guideline 36-2021**

(IP and SI Units)

Modify Table 5.6.4 as follows:

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Occupied</th>
<th>Cooldown</th>
<th>Setup</th>
<th>Warmup</th>
<th>Setback</th>
<th>Unoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling maximum</td>
<td>Vcool-max</td>
<td>Vcool-max</td>
<td>Vcool-max</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cooling minimum</td>
<td>Vmin*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Minimum</td>
<td>Vmin*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Heating minimum</td>
<td>Max (Vheat-min, Vmin*, Vm)</td>
<td>Vheat-min</td>
<td>0</td>
<td>Vheat-max</td>
<td>Vheat-max</td>
<td>0</td>
</tr>
<tr>
<td>Heating maximum</td>
<td>Max (Vheat-max, Vmin*)</td>
<td>Vheat-max</td>
<td>0</td>
<td>Vcool-max</td>
<td>Vcool-max</td>
<td>0</td>
</tr>
</tbody>
</table>