



## Memo to ASHP Stakeholders

### Re: Cold Climate Air Source Heat Pump Specification- Version 2.0

With this memo, NEEP is communicating the finalization of Version 2.0 of the Cold Climate Air Source Heat Pump Specification (“Specification”). This memo includes the details of Version 2.0, the application/delisting process, a summary of the responses we received following the April 4 Proposal and some insight into future evolution of the Specification.

NEEP began discussing potential revisions to the [Cold Climate Air Source Heat Pump Specification](#) with the cold climate metrics sub-committee in the fall of 2015. Based on sub-committee meeting teleconferences, survey results and additional input received over six months, NEEP developed a [Draft Proposal](#) for a new Version 2.0 Specification. The Proposal was publically circulated to ASHP stakeholders requesting review and written comment on April 4, 2016. NEEP received 12 written comments. Those comments informed the final Version 2.0.

The table below indicates the Final Version 2.0 Performance Requirements, compared to both the current requirements and those included in the April 4 Proposal.

Specification Version 2.0 Performance Requirements (Effective date- January 1, 2017) <b>Changes from current specification highlighted in RED</b>	Proposed Specification Version 2.0 Performance Requirements (April 4, 2016 Proposal) <b>Changes from current specification highlighted in GREEN</b>	Existing Specification Performance Requirements
<ul style="list-style-type: none"> <li>Compressor must be variable capacity</li> </ul>	<ul style="list-style-type: none"> <li>Compressor must be variable capacity</li> </ul>	<ul style="list-style-type: none"> <li>Compressor must be variable capacity</li> </ul>
<ul style="list-style-type: none"> <li>Indoor and outdoor units must be part of an AHRI matched system</li> </ul>	<ul style="list-style-type: none"> <li>Indoor and outdoor units must be part of an AHRI matched system</li> </ul>	<ul style="list-style-type: none"> <li>Indoor and outdoor units must be part of an AHRI matched system</li> </ul>
<ul style="list-style-type: none"> <li>ENERGY STAR Certified</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR Certified</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR Certified</li> </ul>
<ul style="list-style-type: none"> <li>COP 5° F &gt;1.75 (at maximum capacity operation) for all ductless systems (single-zone and multi-zone)</li> </ul>	<ul style="list-style-type: none"> <li>COP 5°F ≥2.0 (at maximum capacity operation) for all ductless systems (single-zone and multi-zone)</li> </ul>	<ul style="list-style-type: none"> <li>COP 5° F ≥1.75 (at maximum capacity operation) for all ductless systems (single-zone and multi-zone)</li> </ul>
<ul style="list-style-type: none"> <li>COP 5°F ≥1.75 (at maximum capacity operation) for all ducted systems</li> </ul>	<ul style="list-style-type: none"> <li>COP 5°F ≥1.75 (at maximum capacity operation) for all ducted systems</li> </ul>	<ul style="list-style-type: none"> <li>COP 5° F ≥1.75 (at maximum capacity operation) for all ducted systems</li> </ul>
<ul style="list-style-type: none"> <li>HSPF ≥10 for Single-zone Ductless systems and all Ducted Systems</li> </ul>	<ul style="list-style-type: none"> <li>HSPF ≥10 for Single-zone Ductless systems and all Ducted Systems</li> </ul>	<ul style="list-style-type: none"> <li>HSPF ≥10 for Single-zone Ductless systems and all Ducted Systems</li> </ul>
<ul style="list-style-type: none"> <li>HSPF ≥10 for Multi-zone Ductless systems</li> </ul>	<ul style="list-style-type: none"> <li>HSPF ≥10 for Multi-zone Ductless systems</li> </ul>	<ul style="list-style-type: none"> <li>HSPF ≥9 for Multi-zone Ductless systems</li> </ul>



<ul style="list-style-type: none"> <li>• <b>Lab testing results OR</b> Engineering data for each system must be reported through the attached "<a href="#">Cold Climate Air-Source Heat Pump Performance Information Tables</a>". Incomplete tables will not be considered.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Lab testing results OR</b> Engineering data for each system must be reported through the attached "<a href="#">Cold Climate Air-Source Heat Pump Performance Information Tables</a>". Incomplete tables will not be considered.</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering data for each system must be reported through the attached "<a href="#">Cold Climate Air-Source Heat Pump Performance Information Tables</a>". Incomplete tables will not be considered.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Manufacturers will have the OPTION of reporting how performance data was determined (lab testing or engineering calculations) for 5°F /optional low temperature</b></li> </ul>		

**Effective Date and Mechanics of Applying/Delisting**

Version 2.0 will become effective on January 1, 2017. New products looking to qualify for the Cold Climate ASHP Specification after January 1, must meet the requirements as laid out for Version 2.0. Products currently listed that meet the requirements in Version 2.0 will automatically be carried over to the new list. Manufacturers will not need to re-apply for those products that carry over. Those products that currently qualify but do not meet the Version 2.0 requirements will be removed from the list on January 1, 2017. We plan to maintain an archived list of products that met the original specification prior to Version 2.0.

Manufacturers are welcome to continue to apply to the current Specification until September 30, 2016. After October 1, 2016, all new applications for listing will need to meet Version 2.0.

**Summary of responses to April 4 Proposal**

- As far as the proposal to; increase HSPF to 10 for multi-zone ductless systems, the addition of a voluntary performance measurement disclosure (tested vs calculated), and the future incorporation of standardized low temp testing, there was general support.
- Our proposal to increase COP5°F to 2.0 was met with opposition by the large majority of respondents (mix of manufacturers and stakeholders). Quick rundown of the issues raised;
  - This increase in COP5°F would result in the removal of popular, high performing systems.
  - Several families of popular products would be broken up, meaning there would be capacity gaps in some popular product lines. Premium lines of ductless equipment will be split apart, effectively sending a signal that we do not recommend right sizing. Customers will inevitably select for qualifying units (at least where programs follow the spec) even if they are not the right size for the application.
  - Multiple manufacturers concerned that there would not be enough time to re-engineer the "failing" systems to meet the Version 2.0 level (by end of the year or early 2017).



- Proposed change to COP<sub>5°F</sub> requirement would not address trade-off between capacity and COP at 5°F. This would penalize those systems that may have prioritized capacity maintenance at 5°F over COP.
- Some manufacturers suggested these changes represented a form of “bait and switch”. They had invested in cold climate technology only to see them potentially removed so quickly.

### **NEEP Commentary**

NEEP believes that the negative market impacts described above currently outweigh the benefits of establishing higher levels of COP<sub>5°F</sub>. While the analysis of the current listings shows a very high rate of meeting the increased level, those systems that are projected to drop off represent parts of larger families and in many cases are considered market leading products by reputation and sales. Based on written comments and follow up conversations with some manufacturers, we are not confident those systems would be re-engineered/replaced within the year.

### **Vision for Future Specification Revision (Version 3.0)**

From the launch of the ccASHP specification over a year ago, there has been an acknowledgement that while the reported performance data is of great value, the lack of a standardized test procedures (particularly at 5°F) has been a key deficiency that all of the stakeholders are interested in overcoming. Two organizations, US DOE and the CSA Group, are in the process of developing and implementing new test procedures for heat pumps. They present potential pathways to achieve improved test procedure accuracy, and more specifically, industry-wide consistency for the 5°F rating point.

- DOE recently published a proposed revision in November, and expect to finalize the test procedure within the next six months (Available mid-2016). Appendix M1 includes a few important improvements, including a voluntary low temperature test (proposal was for 2°F, but input was to adjust to 5°F), but maintains its fundamental flaws associated with variable capacity system modulation. M1 will not be required until 2023, but can be used as soon as the test procedure is published. Questions remain about when the test procedure will be finalized and whether it would provide a pathway to the measurements the specification is trying to capture (i.e. performance at true maximum capacity at 5°F).
- CSA Group in Canada convened a Development Committee in July of last year to develop a “non-ANSI-accredited”, published testing procedure that may be referenced as a voluntary test standard by third parties as soon as it is published. Committee members have reported that the CSA standard will not only include additional low temperature test points to the test but will allow variable capacity systems to in fact modulate during testing, capturing a more accurate representation of field performance. While CSA process has an expected finalization of Q4 in 2016, product test results will need to be accumulated before they can inform any kind of performance threshold. NEEP expects this to take at least 6 months. (usable results expected Mid-2017)

NEEP intends to track and assess the developments related to these two processes. We are hopeful that at least one of these processes will result in an industry recognized procedure to measure performance at lower temperatures. In addition, the CSA procedure may provide additional metrics useful for evaluating cold-climate performance of variable-speed heat pumps. The sub-committee will evaluate the final test procedures and make a recommendation as to whether a future cold-climate ASHP Specification revision should incorporate a new test procedure or any other related metrics available. We do not expect this process of test procedure



finalization and subsequent evaluation to be completed before the middle of 2017. Based on projected time necessary to develop a revised specification and provide lead time to industry to prepare, we do not expect Version 3.0 would be effective until 2018 at the earliest. Please note that these projected dates may change based on evolving circumstances.

**For more information;**

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