

# MINHERS Addendum 71f, SEER2 and HSPF2 Conversions

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<b>Date Approved:</b>	February 10, 2023
<b>Voluntary Compliance Date:</b>	March 12, 2023
<b>Mandatory Compliance Date:</b>	March 12, 2023
<b>Transition Period:</b>	(Replaces Interim Addendum 71i)
<b>Proponent:</b>	SDC 300
<b>Organization:</b>	RESNET

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## **Purpose:**

The US DOE has adopted revised energy efficiency ratings for air conditioners and heat pumps referred to as SEER2 and HSPF2. HERS Index rating software utilize the SEER and HSPF efficiency ratings for the Index calculations and Addendum 71 provides factors for converting SEER2 and HSPF2 to SEER and HSPF respectively. The factors are incorporated into accredited software so calculations are adjusted automatically. The Addendum also adds criteria for modeling air distribution systems located within the CSV with a DSE = 1.0.

Note: MINHERS Addendum 71 amends ANSI/RESNET/ICC 301-2019 and applies while 301-2019 is the basis for the RESNET HERS Index. While the conversion factors are the same, ANSI/RESNET/ICC 301-2022 Addendum C-2023 will establish the SEER2 and HSPF2 conversion criteria when ANSI/RESNET/ICC 301-2022 is adopted as the basis for the RESNET HERS Index.

## **Amendment:**

***Modify MINHERS Chapter 3 section 303.1 as follows:***

*Add the following Exception:*

**Exception 7: RESNET Home Energy Ratings shall be calculated using the modifications of Standard ANSI/RESNET/ICC 301-2019 as follows:**

*Add the following definitions to standard ANSI/RESNET/ICC 301-2019:*

Heating Seasonal Performance Factor 2 (HSPF2) – A standardized measure of Heat Pump efficiency, based on the total heating output of a Heat Pump in Btu and divided by the total electric energy input in watt-hours and under test conditions specified by the Air Conditioning and Refrigeration Institute Standard 210/240 2023.

Seasonal Energy Efficiency Ratio 2 (SEER2) – A standardized measure of Air Conditioner efficiency based on the total cooling output of an Air Conditioner in Btu/h, divided by the total electric energy input, in Watt-hours, under test conditions specified by the Air Conditioning and Refrigeration Institute Standard 210/240 2023.

*Modify standard ANSI/RESNET/ICC 201-2019 section 4.4.4 as follows:*

**4.4.4. Air Source Heat Pumps and Air Conditioners.**

**4.4.4.1.** For Heat Pumps and Air Conditioners where a detailed, hourly HVAC simulation is used to separately model the compressor and evaporator energy (including part-load performance), the back-up heating energy, the distribution fan or blower energy and crank case heating energy, the Manufacturer’s Equipment Performance Rating (HSPF and SEER<sup>1</sup>) shall be modified to represent the performance of the compressor and evaporator components alone.<sup>2</sup> The energy uses of all components, including compressor and distribution fan/blower and crank case heater, shall then be added together to obtain the total energy uses for heating and cooling.

For Heat Pumps and Air Conditioners with the more recent Manufacturer’s Equipment Performance Ratings (HSPF2 or SEER2) available, and HSPF or SEER are not available, these ratings shall be converted to HSPF and SEER values by dividing HSPF2 or SEER2 by the conversion factors in Table 4.4.4.1(1). If the type of equipment is not determined, the conversion shall default to the “Ducted Split System” factors. All calculations, including Equation 4.1-1a, shall use HSPF or SEER values as made available by the Manufacturer or converted as specified in this section.

**Table 4.4.4.1(1) SEER2 and HSPF2 Conversion Factors<sup>3</sup>**

<u>Equipment Type</u>	<u>SEER2/SEER</u>	<u>EER2/EER<sup>4</sup></u>	<u>HSPF2/HSPF</u>
<u>Ductless Systems</u>	<u>1.00</u>	<u>1.00</u>	<u>0.90</u>
<u>Ducted Split System</u>	<u>0.95</u>	<u>0.95</u>	<u>0.85</u>
<u>Ducted Packaged System</u>	<u>0.95</u>	<u>0.95</u>	<u>0.84</u>
<u>Small Duct High Velocity System</u>	<u>1.00</u>	<u>Not Applicable</u>	<u>0.85</u>
<u>Ducted Space-Constrained Air Conditioner</u>	<u>0.97</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
<u>Ducted Space-Constrained Heat Pump</u>	<u>0.99</u>	<u>Not Applicable</u>	<u>0.85</u>

<sup>1</sup> (Normative Note) For Commercial Variable Refrigerant Flow (VRF) Multi-Split Air Conditioning and Heat Pump Equipment, use IEER in place of SEER.

<sup>2</sup> (Informative Note) Such approaches are described in Cutler et al. 2011 and Fairey et al. 2004.

<sup>3</sup> (Informative Note) Conversion factors developed by AHRI, and adopted by RESNET.

<sup>4</sup> EER and EER2 are not required in this Standard for equipment relevant to this table, but the values are shared here for informative purposes.

*Modify the Thermal Distribution Systems row of Table 4.2.2 (1) as follows:*

**Table 4.2.2(1) Specifications for the Energy Rating Reference and Rated Homes**

<p>Thermal distribution systems</p>	<p>Thermal Distribution System Efficiency (DSE) of 0.80 shall be applied to both the heating and cooling system efficiencies.</p>	<p>Forced air distribution systems duct leakage to outside tests<sup>w,x, y, z, yy</sup> shall be conducted and documented by an Approved Tester in accordance with requirements of Standard ANSI/RESNET/ICC 380 with the air handler installed, and the energy impacts calculated with the ducts located and insulated as in the Rated Home.</p> <p>Forced air distribution systems duct area shall be the same as the Rated Home<sup>aa</sup>.</p> <p>For ductless distribution systems <u>or distribution systems in CSV with the supply-side having a total length that does not exceed 10 ft., inclusive of both ductwork and building cavities used for distribution</u>: DSE=1.00</p> <p>For hydronic distribution systems: DSE=1.00</p>
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