



Air Conditioning & Heating

© 2021 Goodman Manufacturing Company, L.P. Houston, Texas · USA

Regulatory Updates for 2023

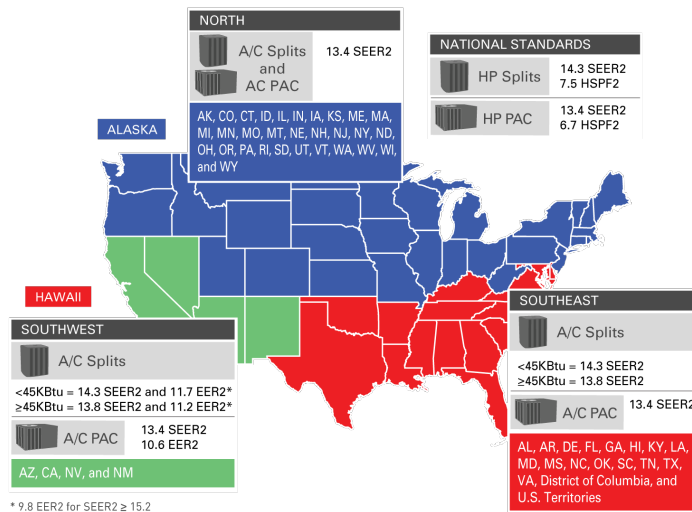


Air Conditioning & Heating

© 2021 Goodman Manufacturing Company, L.P. Houston, Texas · USA

2023 Changes

- Minimum efficiency of ACs and HPs is increasing in 2023



Topic	Current DOE M Procedure	2023 DOE M1 procedure
Applies to Minimum ESP for ducted systems tested with an indoor AMS.	A range of 0.1 to 0.2 in H ₂ O for all ducted systems (0.0 for ductless).	0.5 in H ₂ O for conventional ducted systems (may be lower for others, 0.0 for ductless)
Applies to coil-only systems.	Default fan power is 365 W/1000 cfm.	Default fan power is 441 W/1000 cfm for conventional ducted systems.
Impacts the heating seasonal performance factor calculation.	Building heating load begins at 65°F. For Region IV, nearly 24% of the bin hours are representative temperatures 62°F and 57°F.	Building heating load begins at 55°F. For Region IV, no heating considered above 55°F (so lower temperatures which have lower efficiency drive the rating).
Impacts the building heating load calculation.	Heating load line slope correction factor is for all systems, for all regions.	Heating load line slope correction factor for Region IV is 1.07 for variable-speed and 1.15 for other systems. Other regions have different load lines.
Impacts the heating seasonal performance factor calculation.	17° F db / 15° F wb outdoor temperature is the lowest required heating mode test condition.	5° F db / 3° F wb outdoor temperature is an optional test.

- 2023 regulations are more complex than prior changes because the testing standard is changing to the more strict M1 test procedure
- In addition to the minimum efficiency changes, **all equipment** must be tested and relaunched to the new 2023 standard

7.7% increase in minimum SEER rating

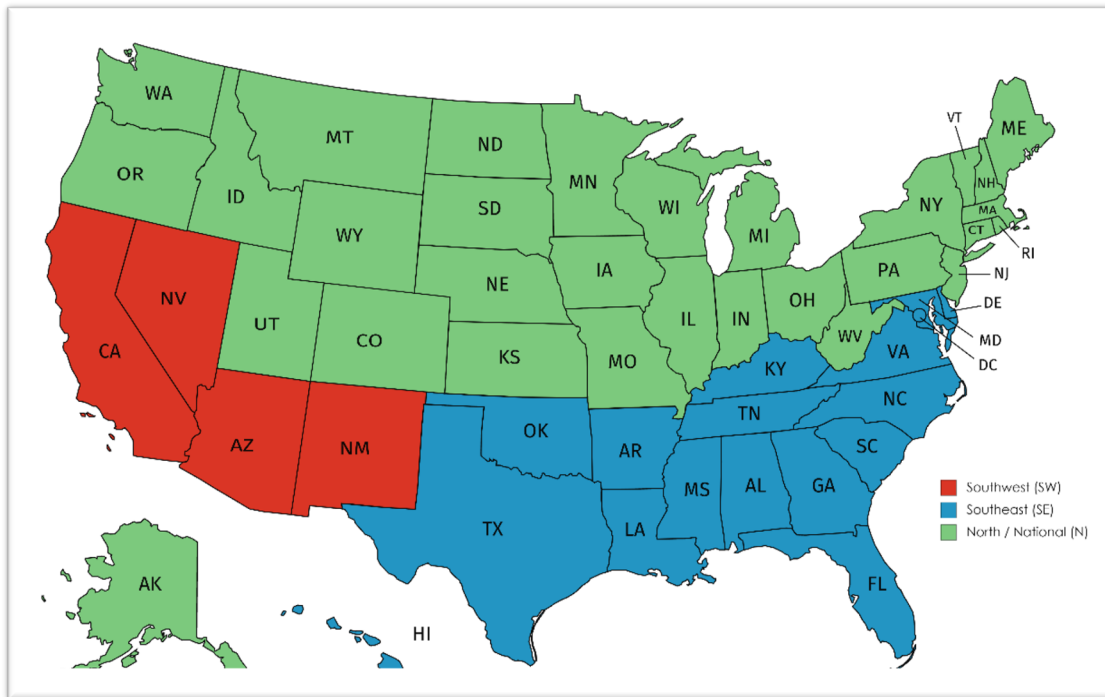
70%+ of current equipment will not rate under new test criteria

Entire equipment product line will require retesting per new criteria

All AC & HP require new tops to meet 2024 safety standard

DOE Energy Conservation Standards for Split AC 2023

Split System AC, 5 ton and less single phase



<u>Split System AC</u>		Built Before 2023						Built 2023+		
		Install b4 2023			Install 2023+			Install 2023+		
		N	SE	SW	N	SE	SW	N	SE	SW
SEER	13	Y	N	N	Y	N	N	Illegal to sell in the U.S.		
	14	Y	Y	N	Y	N	N			
	14 SW EER**	Y	Y	Y	Y	N	N			
	15+	Y	Y	Y	Y	Y*	N			
	15+ SW EER**	Y	Y	Y	Y	Y*	Y*			
SEER2	13.4	Okay to rate to SEER2 prior to 2023 as long as meet the new minimum efficiencies.						Y	N	N
	14.3							Y	Y	N
	14.3 SW EER2**							Y	Y	Y
	15+							Y	Y	Y
	15+ SW EER2**							Y	Y	Y

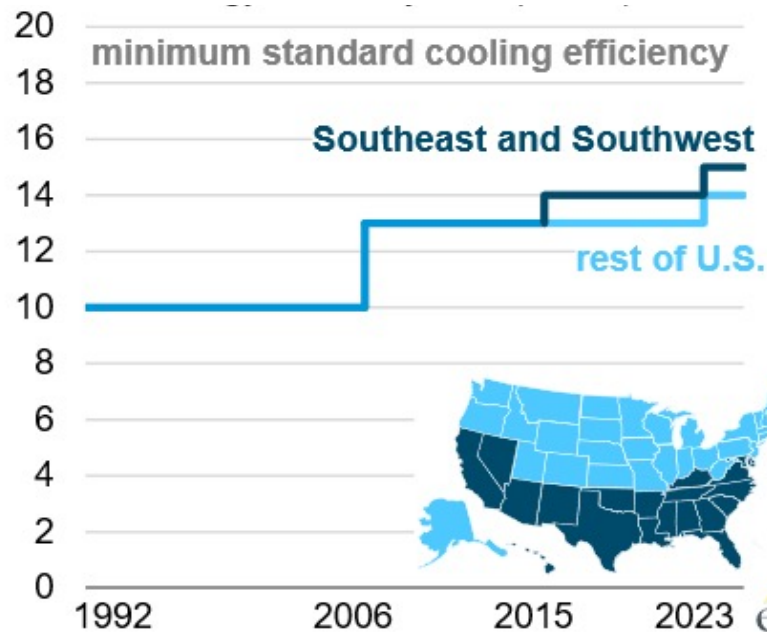
*See Phase In Phase Out Plan.

** See Standards Table for Requirements

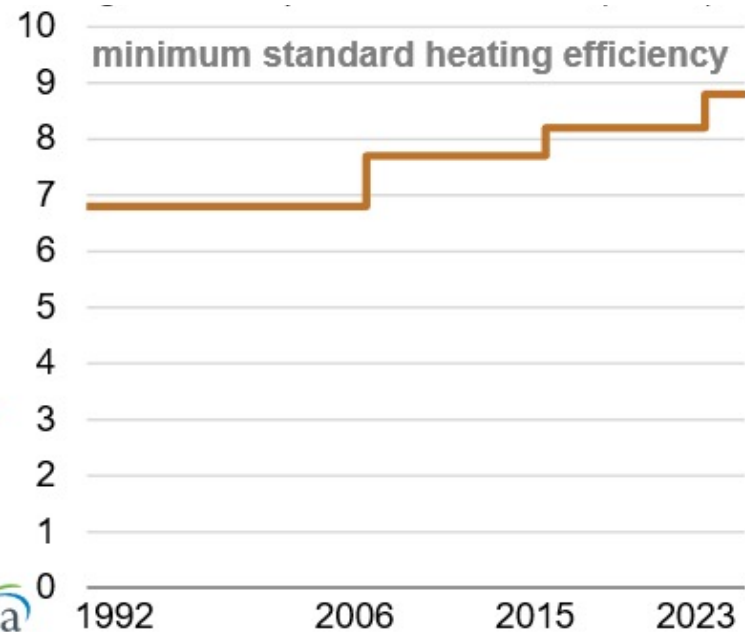
- All combinations of the split system AC have to make ratings for a given region in order to be installed in that region.

Historical Regulatory Changes

Minimum Cooling Efficiency Standard - SEER



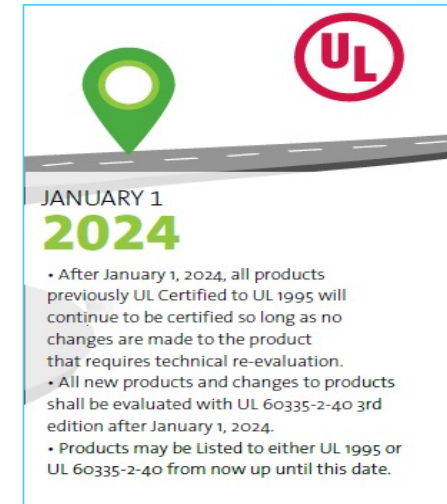
Minimum Heating Efficiency Standard - HSPF



The impact of these changes on price will be more significant than the 2015 regulation changes, but less drastic than the changes in 2006

Transition from UL-1995 to UL-60335-2-40

- Post 01/01/2024 we can not manufacture products with UL1995 4th edition.
- Post 01/01/2024, all products needs to meet UL60335-2-40 if any changes are made to product that needs technical re-evaluation.
- Compliance evaluation and certification for active products post 01/01/2024
 - Air Handlers & Heater Kits
 - Case Coils
 - Outdoor Units (AC & HP)
- Products launches post Q2 FY2022 will be with UL60335-2-40 to avoid change over with in 8~12 months.



Developing Products to Get Us There



AlumaFin7™