

From: [Timothy Ballo](#)
To: ["Jon McHugh"](#)
Cc: [Julianna Wei \(YWei@trcsolutions.com\)](#); [Abhijeet Pande \(APande@trcsolutions.com\)](#); [Hunt, Marshall](#)
Subject: RE: Federal preemption of requirements for sealed combustion furnaces
Date: Thursday, April 03, 2014 1:53:29 PM

Jon,

I don't have a perfect read on this, because I'm not sure that it's an issue that's ever come up before. I don't do a ton of work on codes, but my understanding is that the typical approach in a baseline design for codes is to go into much less detail. So the heating system might be a furnace or heat pump, just so long as it's at the minimum EPCA level. Going into more detail on what specific equipment is used in the baseline building seems to me to be uncharted territory. But maybe I'm mistaken on this.

The general rule is that, once there is a DOE standard in effect for a product, "no State regulation concerning the energy efficiency, energy use, or water use of such covered product shall be effective with respect to such product unless the regulation ... is in a building code for new construction" that meets certain requirements set out in EPCA. 42 U.S.C. 6297(c)(3). One of the requirements that the code must meet, to avoid EPCA preemption, is that "If the code uses one or more baseline building designs ... and such designs contain a covered product subject to [a DOE standard], the baseline building designs [must be] based on the efficiency level for such covered product which meets but does not exceed" the DOE standard. 42 U.S.C. 6297(f)(3)(D). I think the key here is that the "If" applies to both the use of baseline building designs in the code and also to the use of DOE-covered products in any baseline designs.

So if you're asking whether a gas tankless water heater can be the exclusive option to provide hot water in the baseline building design, I think the answer is most likely yes. As long as the gas tankless unit's EF is at the minimum DOE level there's a decent argument that the code doesn't conflict with EPCA's requirements. Manufacturers/homebuilders might still argue that the baseline building can't exclude minimally compliant storage water heaters (or electric water heaters) as an alternative to the tankless unit. And excluding an option for storage water heaters from the baseline design does seem at least a little bit like the state imposing a design requirement on water heaters. But the language in EPCA quoted above does not compel the state code to include any particular covered products in its baseline designs – it just says that if they're in the baseline, they need to be at the minimum level.

If you're asking whether the baseline building could also use the tankless unit to provide water for space heating, I think the answer is the same. It's most likely OK because this is not explicitly contrary to EPCA's criteria for a code requirement that avoids preemption. But this does seem to be going just a bit further. Now, none of the minimally compliant space heating products in EPCA show up in the baseline design. Still probably OK though.

Selecting a heat pump as the space heating source in the baseline design seems OK under the same reasoning as the tankless water heater. Now, it's minimally compliant furnaces that are being left out of the baseline design, but again, nothing says the baseline has to include a gas furnace option.

Thanks.

-Tim

From: Jon McHugh [mailto:jon@mchughenergy.com]
Sent: Thursday, April 03, 2014 1:25 PM
To: Timothy Ballo
Cc: Julianna Wei (YWei@trcsolutions.com); Abhijeet Pande (APande@trcsolutions.com); Marshall Hunt (mbh9@pge.com)
Subject: RE: Federal preemption of requirements for sealed combustion furnaces

Tim,

The issue is that we regulating the efficiency of the building envelope and the location of HVAC ducts and the air handler. The efficiency of the envelope is compromised if we bring in combustion air ducts and the efficiency of duct system is compromises if we bring the air handler outside of the conditioned space.

The options we have are:

- The sealed mechanical closet (and accounting for typical losses from this approach)
- Sealed combustion equipment (potentially this is preempted)
- Combined water heating and space heating (hot water coil in air handler served by minimally compliant water heater)
- Minimally compliant heat pump
- Ductless air systems (i.e. mini-splits)
- Hydronic systems (i.e. radiant)

The Energy Commission is looking at tankless water heaters as the prescriptive and performance baseline as there is a minimum federal efficiency standard for tankless water heaters. Is this in your opinion preempted?

If the above approach for water heaters is not preempted could we do the same thing and use heat pumps as the baseline?

Jon McHugh, PE

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From: Timothy Ballo [mailto:tballo@earthjustice.org]
Sent: Thursday, April 3, 2014 9:31 AM
To: Jon McHugh
Cc: Julianna Wei (YWei@trcsolutions.com); Abhijeet Pande (APande@trcsolutions.com)
Subject: RE: Federal preemption of requirements for sealed combustion furnaces

Jon,

Sorry for the slow response. I'm still sifting through emails that came in while I was on vacation. If an installer could isolate the combustion air supply for a non-sealed furnace I think there would be no preemption problem. The code would be requiring an installation measure, not prohibiting

the use of EPCA-compliant non-sealed equipment. But my limited knowledge of the technical issues leads me to believe that converting a furnace to sealed combustion is not really feasible and may present safety concerns. A flat prohibition on atmospheric combustion seems to leave no option for those furnaces that meet DOE standards without using sealed combustion. It's essentially a state design requirement for the furnace – one not imposed by EPCA, and therefore likely preempted.

There may be an argument that because furnaces are not one of the products for which EPCA permits DOE to impose design requirements, EPCA has left space for the states to impose design requirements on furnaces, but that seems like a longshot to me. The more likely interpretation is that EPCA blocks both DOE and the states from imposing design requirements on furnaces.

One caveat to the above is that EPCA preemption applies to state codes that concern the energy efficiency or energy use of covered products. There might be another way to get at the combustion air issue – e.g., some sort of indoor air quality/fire safety code requirement might be able to do the same thing without creating an EPCA preemption issue.

On whether a water heater can be used for space heating in the base case, EPCA requires that any baseline building designs need to be based on minimally compliant covered products. 42 U.S.C. 6297(f)(3)(D). Under a literal reading of that requirement, it applies to prevent only the use of above-minimum products in base case designs, e.g., 92% AFUE furnaces. A state code baseline design that uses a minimally compliant water heater in place of a furnace seems to be a gray area. It's not what the statute explicitly prohibits California from doing, but it has an effect very similar to doing what the statute explicitly prohibits California from doing, in that the code would exclude minimally compliant furnaces from the base case design.

Happy to discuss further. Thanks.

-Tim

From: Jon McHugh [<mailto:jon@mchughenergy.com>]
Sent: Monday, March 31, 2014 10:13 PM
To: Timothy Ballo
Cc: Julianna Wei (YWei@trcsolutions.com); Abhijeet Pande (APande@trcsolutions.com)
Subject: Federal preemption of requirements for sealed combustion furnaces

Hi Tim,

We are looking at a requirement that air handlers and ducts have to be in the building conditioned space. As a result we would like to require that all furnaces be sealed combustion or that heating be provided a different way (i.e. a hot water coil in the air handler served by a minimum efficiency water heater, a minimally compliant heat pump etc.). The AHRI database seems to indicate that sealed combustion efficiency equipment except for very few outliers are at efficiencies that are higher than the minimum federal efficiency levels and even the few that are at the minimum efficiencies levels they are very small and most are for manufactured housing.

So if we say that we don't care how you heat the space but you must not use atmospheric

combustion can AHRI or others comeback at us and say we are violating federal preemption? Is there any problem with setting the base case as a combined water heating and space heating system with a residential central air handler?

Jon McHugh, PE

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