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September 27, 2021

Chair Andrew Klein
Washington State Building Code Council
1500 Jefferson St SE
Olympia, WA 98501

RE: IN SUPPORT OF HEAT PUMP SPACE AND DOMESTIC WATER HEATING

Dear Council,

I'm a licensed mechanical engineer with McKinstry and have 15 years of experience in HVAC design, construction, and energy management. I strongly support this proposal as its currently written and I would like to see the full package of commercial energy code proposals sent out for public comment.

In this letter I'd like to specifically address some common objections to this measure.

Regarding Utility Reliability:

A concern is that a combination of severe cold and widespread use of electric resistance backup equipment will cause massive peak loads on the grid, making it harder for utilities to ensure reliable service.

On the demand side: The design community is seeing increased interest in, and implementation of, proven technologies like heat recovery and thermal storage specifically to limit peak load demand. For buildings in the much more population dense climate zone 4, we have ample modeling data that indicate electric backup heating equipment included in heat pump system designs very seldom operates, even during peak climatic events. On the supply side, [the National Association of Regulatory Utility Commissioners](#) reports a dramatic increase in the implementation of utility scale energy storage, and companies like EDO are now providing active building demand management for utilities to "wrap around the meter." Adoption of this code language works in concert to make these measures more effective and broadly deployed across the built environment.

Regarding the proposed sizing limits on electric equipment being arbitrary or unreasonable:

Adding specific equipment size limits is a simple way to forces designers and practitioners to collaboratively improve the entire building, considered as a system. It accomplishes energy conservation thru both limiting equipment size and limiting the use of non-optimally efficient equipment.

Regarding concerns that heat pumps systems don't work effectively in extreme low temperatures:

There are variety of systems and equipment currently on the market that have demonstrated heating performance in temperatures as cold as any found in Washington state. By the time this code section might be adopted, there will almost certainly be even more products available at increasingly competitive price points. I have first-hand experience with systems that I designed and installed operating more efficiently than electric resistance heat at temperatures below zero Fahrenheit.



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Regarding concerns that requiring heat pumps adds cost and eliminates choices for cost effective heating:

In a huge variety of cases heat pump systems only add cost when compared to a strictly code-minimum, heating-only system choices. Furthermore, most cost parity comparisons rarely account for the additional cost of providing a gas service and gas piping systems inside the building, or the additional risks associated with using natural gas in buildings. As demonstrated by the recent heatwave, demand for air conditioning in addition to heating will become increasingly necessary in response to a more extreme climate- making heat pump systems easily the most cost-effective space conditioning solution.

Thank you for considering, and ultimately adopting, this important code language.

Sincerely,

Skander Spies, P. E.*
(*licensed in WA & MT)
Senior Engineer