

**DOCKETED**

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*Comment Received From: Unico, Inc.  
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**Unico Comment on Buried Duct R-factor**

*Additional submitted attachment is included below.*

August 9, 2023

California Energy Commission (CEC)  
Docket Unit, MS-4  
Re: Docket No. 22-BSTD-01  
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(Docket 22-BSTD-01 delivered electronically)

Re: Docket 22-BSTD-01 – Buried Duct, R-factor

Dear CEC Staff:

Unico, Inc. respectfully submits the following comments to the California Energy Commission (CEC) August 15, 2023 final CASE report – Single Family Buried Ducts concerning the 2025 Pre-Rulemaking for Building Energy Efficiency Standards Energy Code (Title 24, Part 6).

Unico is a leading manufacturer of small-duct, high-velocity systems under the brand name Unico System. Our products are sold throughout the U.S. and Canada, primarily in homes with little or no room for large ducts or to improve distribution efficiency by keeping the ducts inside the conditioned space.

Unico fully supports the CEC's CASE report on buried ducts. However, it does not appear that CEC considered very small ducts, common with small-duct high-velocity systems. The branch ducts connected to the main plenum duct are less than 3-inch diameter. When considering the effective R-factor for ducts, using flat wall heat transfer equations is inappropriate for very small ducts. The International Code Council (ICC) reviewed the thermal losses and determined that, for ducts less than 3-inch diameter, the calculated R-factor (using flat wall analysis) may be less than required for large ducts, of which using flat wall analysis is acceptable.

The ICC published the minimum R-factor in PMG Listing Criteria for Small-Duct, High-Velocity Air Distribution System (ICC-ES LC1001-2009), which sets the R-factor for small ducts at an R-4.2 wherever an R-6 is required for large ducts; and R-6 instead of R-8.

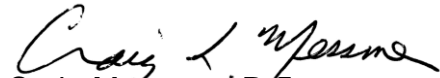
We propose a similar exception in the 2025 Title 24, Part 6 Table 150.1-A. "For ducts less than 3-inch diameter, the R-factor shall be R-4.2 instead of R-6, or R-6 instead of R-8."

The effective thermal heat loss will still be better than a large duct because small ducts are much more easily and buried deeper than larger ducts, and the real thermal losses as calculated using cylindrical heat transfer are less than the R-factor would indicate.

Should you require further information, we would be delighted to discuss these matters in more detail.

Thank you for your attention to this matter.

Sincerely,



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