

DOCKETED

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Unico comments on requirements for duct insulation in conditioned spaces

Additional submitted attachment is included below.

June 17, 2021

California Energy Commission

1516 Ninth Street, Docket Office, MS-4
Sacramento, CA 95814
docket@energy.ca.gov

Re: Docket Number 21-BSTD-01 2022 Energy Code Update Rulemaking

Dear Commissioner McAllister and Energy Commission Staff:

On behalf of Unico, Inc. we submit the following comments in response to California Energy Commission's (CEC) draft code language (Express Terms) for the 2022 Energy Code, Title 24 Parts 1 and 6 dated 5/6/2021, specifically the changes listed in Section 150.0(m)1B.

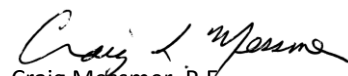
Unico is a small manufacturer committed to designing and manufacturing efficient and comfortable cooling and heating systems utilizing small ducts. We are a leader in the small-duct high velocity (SDHV) system industry. These products are used in renovation of older homes and in new high-performance homes. Our ducts are 2 inch or 2.5-inch diameter insulated flexible ducts that fit inside a wall or ceiling cavity to avoid compromising the architecture of the home.

We appreciate that CEC did an in-depth review of duct insulation inside wall cavities as reported in the Analysis Study dated March 5, 2021. The conclusions of the report mirror our experience. Ducts inside cavities, even if inside the conditioned space should be insulated. Our ducts have an aluminized mylar vapor barrier with a low surface emissivity (approximately 0.1). We do this to minimize thermal losses; however, as the Case Study reports, condensation will still occur unless insulated to at least R-3.0. Our standard duct insulation is an R-3.3 with optional models with R-4.2, R-6.0 and R-8.0. Only the R-3.3 fits inside a 2x4 wall cavity. Therefore, we have recommended our standard duct for over 35 years. Its importance was made apparent to us when an installer removed the insulation in a basement ceiling application then complained that the ceiling showed lines of mold following the ducts. This verified the importance of insulation even inside a conditioned space.

We found it interesting that the Case Study found that surface emissivity strongly influences surface temperature such that a shiny surface (low emissivity) requires more insulation. The report also confirms that lower surface emissivity reduces thermal losses. From an energy and performance view, we believe thermal losses are equally important as avoiding condensation. Thermal losses even if inside the conditioned envelope create uneven temperatures that encourage behavior changes that reduce overall system efficiency (adjusting thermostats to achieve temperatures where you need). Therefore, we recommend that all ducts within a wall cavity have R-3 insulation, not just ducts with low surface emissivity.

Thank you for opportunity to comment.

Best regards,



Craig Messmer, P.E.

V.P. Engineering
Unico, Inc.