

DOCKETED

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Corrected energy saving calcs for embedded fans

Additional submitted attachment is included below.

Daikin Applied Comments: Commercial and Industrial Fans and Blowers (CIFB)

Subject: Docket # 17 AAER-06

These comments are submitted by Daikin Applied in response to California's proposed appliance efficiency regulations for CIFBs. Daikin Applied is headquartered in Plymouth, Minnesota, manufactures commercial HVAC

Table A9 energy savings and Table A12 consumer benefits are overstated for the following reasons.

- Regulating a component does not save energy especially in a regulated product. If a more efficient fan component is required then other components will be cost reduced to maintain the required, overall unit efficiency per the following examples. Note that almost all imbedded panel fans, as well as SAFs in very large rooftops, are installed in California regulated products due to Title 20 minimum efficiency tables.
 - Confidential pages 2-8 show how DX coil and SAF options can be juggled to maintain the same, overall efficiency for an 80 ton rooftop. If FEI must increase from 117% to 125 % then the DX coil would be cost reduced and no energy would be saved.
 - Confidential pages 9-15 show how DX coil and condenser fan options can be juggled to maintain the same, overall efficiency for a 40 ton rooftop. If a 10% more efficient condenser fan is required then the DX coil would be cost reduced and no energy would be saved.
- DOE analysis was intended to represent average, nationwide, fan performance and about 33% of current fans must be re-selected or redesigned for better efficiency at EL3. California has better than nationwide, average fan efficiency because of Title 20 and 24. Therefore California has already saved much of the fan energy that extrapolates from DOE analysis.

Condenser fans should be excluded from regulation. The condenser fan's primary function is facilitating heat transfer and fan efficiency improvements often are counterproductive.

- Reducing turbulence and directing flow generally is good for fan efficiency but bad for heat transfer.
- Condenser fan energy consumption is about 10% of the system energy consumption as documented in the confidential, 40 ton rooftop data.
- This concept was explained by the Cooling Tower Institute, accepted by the ASRAC Committee, and the same logic also applies to air cooled condensers.

Thank you for considering Daikin Applied comments. Please contact me if you have any questions.

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